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Original Articles.

RENAL TUBERCULOSIS: DIAGNOSIS AND INDICATIONS FOR OPERATION.

BY LINCOLN DAVIS, M.D., BOSTON.

The diagnosis of surgical diseases of the kidney presents one of the most intricate problems of modern surgery It is a problem, however, of peculiar fascination in that it is capable of being worked out to an accurate solution to a far greater degree than are most surgical problems, if full advantage is taken of recent advances in the use of the x-ray and the cystoscope, in conjunction with careful chemical, microscopic and bacteriological examination of the urine.

Tuberculosis is one of the commonest and most important of the surgical affections of the kidney, and its recognition and treatment present, perhaps, the greatest problem of all. Within the last few years the subject of the pathogenesis of tuberculosis of the urinary tract has claimed the study of the foremost medical authorities all over the world, whose exhaustive clinical and pathological investigations and animal experimentations have resulted in the complete overthrow of previous theories, and have afforded a rational basis for the modern surgical treatment. It is now very generally agreed that tuberculosis of the kidney is, in the vast majority of cases, of hematogenous origin, and primary in that organ as far as the urinary tract proper is concerned, and that from the kidney the process tends to extend in the direction of the urinary current down the ureter to the bladder, which is involved secondarily. Tuberculosis is probably never actually primary in the kidney, as far as the whole body is concerned, in the sense that the initial tuberculous lesion occurs in that organ. Other and earlier foci probably always exist, either in the lungs, bronchial lymph nodes, or elsewhere; these foci may be clinically quiescent and yet allow of the escape of sufficient tubercle bacilli into the blood stream to secondarily infect the kidney. It is possible for the kidney to become infected by direct extension from neighboring tuberculous organs, especially from a tuberculous spine; this is quite an exceptional occurrence, however, and presents problems of its own, which do not require consideration here.

Little is now heard of ascending tuberculosis, by which is meant a process primary in the bladder, which ascends the ureter, and secondarily involves the kidney. This was the prevailing theory of infection ten years ago, and was taught with conviction by the very best authorities. More careful observation has shown that this mode of infection, while theoretically possible, is practically of very rare occurrence. In the first place, the existence of primary tuberculosis in the bladder is of extreme rarity, if not unknown; in the second place, it seems to be impossible for tubercle bacilli to make their way up the ureter against the urinary stream, and it is only in cases where the ureteric orifice has become occluded by the disease in the bladder, resulting in stasis, and hydronephrosis, that the ureter and kidney become secondarily infected by direct extension from below. That under these conditions such an infection may occur, is shown by a remarkable case reported by Rovsing,[1] in which a tuberculous process primary to one kidney descended the ureter of that side to the bladder, extended across the latter to the opposite ureter which it ascended as far as the second kidney, but without actually infecting that organ. While the authenticity of this case is beyond question, it represents merely the very rare exception which exists in every rule. Although primary tuberculosis of the bladder is practically unknown, bladder tuberculosis arising from direct extension from neighboring tuberculous organs, as from tuberculous peritonitis or tubes, or especially from a tuberculous prostate, without involvement of the kidney is by no means rare. Were it not so, it would be a simple matter, and approximately correct, on account of the practically negligible rarity of primary bladder tuberculosis, to conclude that in every case in which tuberculous urine was voided, the kidney was at fault.

The source of bladder tuberculosis arising by extension from a tuberculous pelvic peritonitis or from tuberculous Fallopian tubes is usually sufficiently evident from the characteristic signs and symptoms of those affections; moreover, it is uncommon. Tuberculosis of the male genitalia, on the other hand, is frequently a factor of considerable complication. Tuberculosis of the epididymis, vesicle and prostate is of frequent occurrence, and may occur simultaneously with, and independently of, a focus in the kidney. It is usually of hematogenous origin and may be primary in any of the three above-mentioned genital organs, or it may extend from one to the other, always in the direction of the secretory stream, finally involving the bladder as well.

From my own experience in the male urinary clinic in the Out-Patient Department of the Massachusetts General Hospital, it seems to me that the epididymis is by far the commonest site for tuberculosis in the male genito-urinary tract, and that the prostate is infected almost as often as the kidney in men. This I know is contrary to the usual view. I am aware that the clinical estimation of the relative frequency of different sites of tuberculosis in the genito-urinary tract is liable to gross errors. Clinical statistics on this subject are especially apt to err on the side of limiting the disease too narrowly, inactive or slight processes in one organ being overlooked in the presence of more active lesions in other organs. On the other hand, statistics derived from autopsy material are equally misleading in the other direction on account of the well-known tendency of tuberculosis to become general as it advances to a fatal result The truth lies somewhere in the middle ground between the two.

Post-m rtem records show unilateral kidney tuberculosis to be unusual; it occurred only three times out of 61 cases of renal tuberculosis in the post-mortem examinations tabulated by Walker at the Johns Hopkins Hospital[2]; yet clinically, the large number of cures reported after removal of a tuberculous kidney indicate that it is common. Autopsy records make tuberculous epididymitis rare, while every clinician knows it to be common.

Granting that tuberculosis is of frequent occurrence in the male genital tract, and that it may be primary there, its importance in this connection is on account of its tendency to spread to the urinary tract. A primary focus in the epididymis tends to extend along the vas to the testicle and prostate, eventually involving the bladder also, as is abundantly borne out by clinical experience, as well as animal experiment. With the involvement of the prostate, or perhaps even before that occurs, pus appears in the urine and all the symptoms of a tuberculous cystitis supervene, a condition which is difficult to differentiate from a tuberculous cystitis of renal origin. Particularly puzzling are those cases in which there are simultaneous and independent tuberculous foci in the kidney and genital organs, to which class the following case seems to belong:

J. L., a young man twenty-one years old, came to the Out-Patient Department on Sept. 12, 1903, with a history of painful and frequent micturition of about one month's duration. There had been no previous gonorrhea. The general condition was fairly good. Testicles normal; by rectum the prostate felt hard and irregular. The lower pole of the right kidney was palpable but not tender. The left kidney could not be felt, and there was no tenderness or rigidity in that flank. The urine was slightly alkaline and turbid with pus. Tuberculosis was suspected, and a guinea pig was inoculated with the urinary sediment. The pig died of sepsis within a few days, making the test inconclusive. The patient was then treated with sounds and bladder irrigation, but did not do well, in fact, the symptoms became aggravated, blood appeared in the urine, and the temperature was elevated. On Nov. 30, 1903, a second guinea pig which had been inoculated with the urine was found on examination to be tuberculous.

A diagnosis of tuberculosis of the prostate was then made, local treatment countermanded, and an outdoor life advised. The patient went to northern Maine and lived there for about three years under favorable hygienic conditions. From time to time he reported at the clinic. He made quite steady progress, the general health improving, and the urinary symptoms subsiding largely; he occasionally had slight pain in the left side, and the pus persisted in the urine. At the time of one of his visits, on April 4, 1905, I made a cystoscopic examination of the bladder, which was reported as follows: "Prostate projects markedly into bladder cavity, irregular in outline and injected. Whole trigonum appears inflamed, left ureteral orifice on the edge of inflamed area. Right orifice not seen." Apparently there was nothing found at this time suggesting a renal infection.

Shortly after this the patient felt so much better that he returned to the vicinity of Boston, and took up the life of a carpenter. He was symptomatically well, but pus and tubercle bacilli persisted in the urine. More than a year elapsed before I saw him again, in July, 1907. At this time his general health was excellent, he had no symptoms and was working hard; the urine, however, contained much pus. Both kidneys were palpable but not tender. The prostate was somewhat harder than normal, but without enlargement, tenderness or noticeable irregularity. The bladder held 6 oz. without pain, pretty good evidence that it was not extensively involved. The cystoscope showed the bladder mucous membrane to be pale, without ulcerations; both ureteral openings normal; from the left a cloud of pus, completely obscuring the field, issued at intervals; the ureteral jet from the right side was apparently clear, but it was impossible to be sure of this. The prostate was slightly injected, otherwise normal.

A few days later, the right ureter was readily catheterized and about 8 cc. of urine containing a few flocculi was obtained. Under the microscope the sediment was found to contain no pus, very rare blood corpuscles, and many globular epithelial cells. A guinea pig was inoculated with the sediment and did not develop tuberculosis. There were no ill effects from the catheterization. The patient was recommended to the House for operation, and on Sept. 6, 1907, I removed the left kidney which was much enlarged and consisted of a lobulated sac of pus lying high up under the ribs. A portion of the ureter was removed, — this was not affected. The patient left the hospital on Sept. 30, with a small discharging sinus; the urine was practically clear, with only a few shreds, and the outlook seems favorable for a complete cure.

In this case, the disease was undoubtedly present in the kidney from the start, being obscured by the urgent symptoms on the part of the bladder and prostate in the early stages, and by the complete lack of symptoms in the later stages. The diagnosis might have been made much earlier if more attention had been directed to the cystoscopic appearances of the ureteral orifices and effluxes, and less to the condition of the prostate.

Sometimes the diagnosis of tuberculous kidney is easy from the physical signs alone, as in a case which presents a tuberculous family history with a story of general malaise and lassitude, with fever and loss of weight, with frequent and perhaps painful micturition, examination revealing a tumor in the loin, tender on palpation, and a urine loaded with pus and perhaps a little blood.

Sometimes the diagnosis is difficult, as in the case reported, the symptoms being mild and the signs obscure, the disease progressing for several months or years without apparent impairment of the general health. A pyuria without symptoms is always very suggestive of kidney involvement, and should call for investigation.

Uncommonly, hematuria is the first and only symptom, as in the following case:

H. R., twenty-seven years old, married, was seen in the Out-Patient Department, Feb. 18, 1906. Previous history was negative except for fistula-in-ano two years ago. Suddenly, on the previous day, while in apparently perfect health, began to pass bloody urine. There were no other symptoms of any kind. Examination showed a fairly developed and nourished young Hebrew. There were scars in the neck, which he said had existed since childhood; he did not know their origin. The external genitalia were normal; the prostate not remarkable; the kidneys were not palpable; there was no tenderness in either flank. The urine was bright red and contained a large percentage of blood. A cystoscopic examination of the bladder was made at once; this showed the bladder wall to be normal; from the right ureter a jet of blood issued at regular intervals; from the left ureteral orifice the urine was clear. Both ureteral orifices were normal.

He was admitted to the hospital; the bleeding continued in spite of rest in bed, and became alarming, so that it was deemed best to operate at once. Meanwhile, acid-fast bacilli had been found in the urinary sediment in great numbers, although there seemed to be but little pus. On Feb. 20, Dr. G. W. W. Brewster operated, cutting down on the right kidney which appeared normal; the vessels were then temporarily clamped and the kidney split; still no lesion appeared. On account of bleeding from the nephrotomy wound it became necessary to do a nephrectomy. After removal, the kidney was completely split and a small cavity surrounded by calcareous material, with erosion of a small vessel, was found at the extreme upper pole. The microscope showed unmistakable tuberculosis, and some of the material injected into a guinea pig reproduced the disease. The patient made an uneventful convalescence and when last seen, several months later, was in excellent general condition, with a small sinus in the loin, which was discharging slightly.

Perhaps the greatest source of error in the diagnosis of renal tuberculosis is that the severe symptoms on the part of the bladder, which is so commonly secondarily involved, mask the more obscure but primary disease of the kidney.

It is a good rule never to be satisfied with the diagnosis of tuberculosis of the bladder, and especially so in women.

Particularly unfortunate are those individuals, by no means few in number, as pointed out by Rovsing, who develop an unrecognized tuberculous lesion of the kidney and bladder in the course of a chronic gonorrhea, for the latter disease masks the former, and the treatment appropriate for it, such as the use of sounds and irrigations, are especially inappropriate, to say the least, for tuberculosis.

The tuberculin test is of but little value in the diagnosis of renal tuberculosis. If there is extensive disease of one or both kidneys, it is distinctly dangerous. A positive reaction merely means that tuberculosis exists somewhere in the body, which is of but little help; a negative reaction may be of some value.

Whenever tuberculosis of the urinary tract is suspected, careful examination of the urine for pus and tubercle bacilli is indicated. Recent investigations[3] seem to show that it is possible for tubercle bacilli to be excreted in the urine of tuberculous individuals through sound kidneys, hence the importance of finding pus as well as bacilli. Both pus and tubercle bacilli will be found in the urine in all cases of renal tuberculosis, except where the lesions are so incipient as not to have got into communication with the uriniferous ducts, and secondly, in the rare condition of complete obstruction of the ureter of a tuberculous kidney; this latter condition, which is usually only temporary, will surely announce itself, however, by other unmistakable symptoms. Miliary tuberculosis of the kidneys does not, as a rule, produce pus and tubercle bacilli in the urine, but such cases are unsuitable for operation and need not be considered.

By far the best test for the presence of tubercle bacilli in the urine is the inoculation test: 20–30 cc. of the suspected urinary sediment, taken under sterile precautions, is injected into the subcutaneous tissues of a guinea pig. The great objection to this test is that it requires from four to six weeks to obtain a result.

The finding of tubercle bacilli in the urine is not as difficult as seems to be generally considered. The chief trouble lies in excluding the smegma bacillus which, I believe, cannot be differentiated accurately by any method of staining. Contamination by this bacillus may be practically always avoided by drawing the urine with a sterile catheter, after careful cleansing of the genitalia. The sediment should be allowed to settle by gravity in a large beaker for a few hours, after which it may be further settled in the centrifuge. If, after the examination of one or two smears, no tubercle bacilli are found, it is more profitable to make another examination on a subsequent day, rather than to spend hours over a single specimen.

The finding of pus and tubercle bacilli in the urine is but the first step towards a diagnosis; the next question is the location of the process within the genito-urinary tract, and this urgently calls for the use of the cystoscope. I believe that the cystoscope should be used in every case in which there is question of operation. Usually, simple cystoscopy will suffice to determine the renal source of the disease. But this is not enough; we must know not only that one kidney is diseased, but that the other is present and functionally sound, if a nephrectomy is contemplated.

Abundant clinical experience has shown, and particularly that of the last few years, that in properly selected cases nephrectomy gives splendid results in tuberculosis of the kidney. There would be little justification for nephrectomy if it was true that the renal disease was secondary to a primary focus in the bladder, which would remain after the operation to infect the other kidney. Our present knowledge, however, that the kidney is practically always the primary focus, and that the disease secondarily affects the ureter and bladder, not only puts the operation of nephrectomy on a rational basis, but strongly indicates an early operation before the secondary changes in the bladder have become irreparable. In fact radical removal seems to be the only treatment for this condition, offering hope of permanent cure. Spontaneous healing of tuberculosis of the kidney, unlike tuberculosis in various other organs, appears to be extraordinarily rare, if not unknown. Conclusive cases are lacking in the literature. More light is greatly needed on the subject. It seems to be pretty generally agreed, however, that hygienic measures which are so valuable in treating tuberculosis situated elsewhere in the body, seem least effective in arresting the process when in the kidney. Why this should be so is hard to say. I have seen at least one striking case of it, in a young woman, whose pulmonary disease had become arrested by sanatorium treatment, while the disease in the kidneys and bladder was progressing steadily. Senator[4] says, "When renal tuberculosis is not amenable to operative treatment, we know of no other termination than death; at least recovery must be rare." If this is true, as it seems to me, the question presents itself at once in every case, Is op rative treatment indicated, and if so, what form of operation is best? Resection of the tuberculous focus is dangerous on account of hemorrhage, and uncertain as to removal of the entire disease. Nephrotomy is merely a palliative measure, and should be followed by a nephrectomy to obtain a cure, the secondary nephrectomy being as a rule more difficult than a primary one would have been.

Complete nephrectomy, with removal of ureter when diseased, is the operation of choice for unilateral tuberculosis of the kidney.

What are its indications and contra-indications? First and foremost, the presence of a second sound, or at least functionable, kidney must be assured.

The affection of the second kidney with tuberculosis, even to a slight extent, is an absolute contra-indication, I believe. In the first place, it is extremely difficult to determine to what extent the second kidney may be involved; if much affected, any operation is out of the question; but even if slightly affected, nephrectomy of the other kidney offers no hope of permanent cure, if the generally accepted view as to the incurability of renal tuberculosis by measures other than surgical is correct. It is under these conditions that nephrectomy with drainage of the tuberculous abscesses has its usefulness.

It becomes then of paramount importance to learn of the condition of the second kidney, and it is by advances along this line of knowledge that modern surgery has achieved its recent splendid results in this field.

As already stated, simple cystoscopy will usually allow of a diagnosis as to the renal source of tuberculous pus, as distinguished from prostatic or vesical sources. Fenwick[5] has laid great stress on the value of ureteral meatoscopy, as he calls it, in the diagnosis of tuberculosis of the kidney. He has found characteristic appearances of the ureteral openings, such as "golf-holed" orifice, ulcerated orifice, etc., in 74% of proved cases, and has deduced certain laws on the subject. While the evidence is of unquestionable presumptive value, it should not be relied upon without furthur corroborative signs. In my own comparatively limited experience I have certainly several times seen tuberculous urine coming from absolutely normal looking ureteric orifices, and I have no doubt that the opposite is also true as affirmed by Rovsing and Kummell.[6] Of even more value than the appearance of the ureteric orifice, in my opinion, is the character of the ureteral efflux, *i. e.*, whether clear or cloudy. A careful study of the ureteral jets with the cystoscope will often furnish sufficient data to warrant proceeding with nephrectomy without recourse to the ureteral catheter. For instance, when the bladder is but little, or not at all, affected, and the medium is clear, it will sometimes be possible with the cystoscope to see thick pus exuding from one ureteric orifice, especially when pressure is made over the affected kidney; while from the opposite ureter, a strong, clear, glycerin-like jet may be observed at regular intervals. If the mixed urine shows a good percentage of urea, and there be no contra-indication in the general health, then I believe it is afe in such a case without further examination to go ahead with nephrectomy. It is surprising with what accuracy small flocculi may be detected in the ureteral efflux with a good cystoscope, if the medium is clear. It is true that the secretion of clear urine is not a guarantee of renal health, since a kidney affected with nephritis, new growth, or hydronephrosis may secrete clear urine; yet for practical purposes if definite indications of such diseases on the part of the second kidney are lacking, such as the presence of a tumor, or insufficiency of the renal function, it may be assumed to be sound.

There are many cases, unfortunately, in which, on account of inflammation of the bladder wall, intolerance, bleeding, etc., it is imposs ble to determine with any degree of accuracy the character of the ureteral streams. In all cases in which there is any doubt on the matter, it becomes of the greatest importance to collect the urine from each kidney separately. The various ingenious bladder segregators, though of value in many affections, are of very little use for this purpose in tuberculosis, for the reason that the bladder is so often involved secondarily. When this is the case, the use of the apparatus is apt to be not only prohibitively painful, but also fallacious, in that if the bladder infection extends beyond the median line, which so often occurs, it would be inferred from the results of segregation that the kidney disease was bilateral, which is not necessarily the case. Moreover, if the floor of the bladder is involved and thickened, it is almost impossible to make the septum of the instrument (such as the Luys) fit closely enough to prevent leakage from one side to the other.

There has always been a considerable prejudice against ureteral catheterization, especially in tuberculosis, on account of the alleged danger of infecting a sound ureter. Although the passage of a ureteral catheter through an infected bladder, or a medium containing tubercle bacilli, into a sound ureter is not an ideal procedure, yet in skillful hands the danger seems to be practic lly very slight. As far as I know, not a single authentic case of infect on from this source has been reported.

It has been suggested as a substitute for double ureteral catheterization, to catheterize only the ureter of the kidney which is known to be diseased and to collect the urine from the other by a catheter lying in the previously emptied bladder. This procedure is liable to the same sources of error as segregation, when the bladder itself is affected with the disease; it is also open to the objection that urine always will flow alongside the ureteral catheter and so reach the bladder and contaminate the result. So that in many instances the exigencies of the case seem to warrant the theoretical risk involved in catheterization of the supposedly healthy ureter.

The urine obtained by the ureteral catheters should be subjected to careful chemical, microscopic and bacteriological tests. If the urine from one ureter is free from albumin, pus and bacteria and contains a good percentage ot urea, then the kidney of that side may be given a clean bill of health, and the other kidney, if tuberculous, removed. The presence of albumin, without pus and bacilli, in the secretion of the second kidney, the first being tuberculous, does not contra-indicate nephrectomy, since the albuminuria may be of toxic origin, and if so, will disappear with removal of the suppurating focus. Too much importance should not be ascribed to the presence of microscopic blood in the sediment, as it may result from the instrumentation; although this is not necessary and is to be deprecated, a certain number of ureteral cells will always be found. The presence of pus alone, in the urine of the second kidney, is a forbidding sign and calls for careful search for tubercle bacilli and the guinea pig test. If the latter is negative, a nephrectomy, while not positively contra-indicated, is dangerous.

It is in such cases as these that one might look to the newer tests of the functionating ability of the kidney, as the phloridzin test and cryoscopy of the blood, and the urine, for further proof. A bitter controversy is still being waged over these tests. Casper[7] and Kummel are their chief champions, while Rovsing leads a host of adversaries.

The tests are complicated and delicate, and susceptible to many external influences, particularly cryoscopy of the blood, which on that account is practically unreliable. Cryoscopy of the urine, and the phloridzin tests are admitted by their advocates to be valuable only when used in conjunction with ureteral catheterization, and hence are subject to the limitations of the latter. These tests have not as yet been adopted generally, and it remains to be proven that they are of more value in estimating functional ability than the simple estimation of urea. My own experience has been too limited to allow of any conclusions as to their use.

Ureteral catheterization in the presence of tuberculosis of the bladder is not always possible even for the very elect, Rovsing failing in 19 out of 56 cases. Where it cannot be done, and simple cystoscopy is likewise unsatisfactory, the necessity of knowing that a second sound kidney is present demands exploratory incision.

It should be emphasized, however, that this method is not only more dangerous than ureteral catheterization, but greatly inferior to it in the results yielded. Only the grossest lesions can be detected by palpation of the kidney, and no estimate whatever as to the functionating ability of the organ is afforded. The second case reported illustrates well the uncertainties of the method.

Having determined, as far as the nature of the case permits, that the renal tuberculosis is unilateral, to what extent is secondary involvement of the bladder a contra-indication to operation? It is a well known fact that after removal of the primary focus in the kidney, the secondary tuberculous infection of the bladder will heal spontaneously in many cases. In cases in which this does not occur, Rovsing lately has achieved remarkable results by his carbolic acid treatment of the disease in the bladder, so that he does not now regard tuberculosis of the bladder a contra-indication, however widespread it may be, so long as it is confined to the superficial layers, and has not invaded the muscular coat and perivesicular tissue. I have had no personal experience with this method and have not seen any reported instances of its use by others, but Rovsing's endorsement entitles it to serious consideration and trial.

As to the contra-indications imposed by complicating genital tuberculosis, an active process in the substance of the prostate gland should be so considered, probably also active double tuberculous epididymitis; inactive processes, even if quite widespread, in the genital tract, or an active process confined to one epididymis, do not contra-indicate nephrectomy, as long as there is a second sound kidney

Contra-indications on the part of the general health are the same as for any major operation.

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THE VALUE OF VACCINE THERAPY TO THE GENERAL PRACTITIONER IN THE TREATMENT OF BACTERIAL DISEASES.*

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With the steady progress of medical science in the last few years, new methods of diagnosis and of treatment are being continually evolved. Many of these have proved of immense practical value, not only to the scientist, but also to the general practitioner. Each new method, therefore, should be accorded a thorough trial, in order that its value diagnostically and therapeutically may be ascertained and its limitations defined. In this field, the conservative type of mind is of value for, "by making haste slowly," many exaggerated claims will not be made and many disappointments avoided. The eager haste of many an exploiter has wrecked a new remedy when a more deliberate consideration would have placed a proper valuation upon it. No cure in medicine is absolute; quinine does not cure every case of malaria, nor mercury every case of syphilis. Neither will the bacterial vaccine cure all cases of acne, nor every patient with cystitis.

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On the other hand, the ready condemnation of skeptical scientists of every new method will deprive the general practitioner — who leans on the laboratory worker for guidance — of many valuable additions to his armamentarium, for many years. The use of tuberculin is a case in point. At first heralded as a cure for phthisis by a number of men who had not learned its limitations, it speedily fell into disuse by the medical profession, as their claims could not be substantiated. Today, after fifteen years of practical disuse, we are only beginning to appreciate how valuable a means we have in it for diagnosis and treatment in most forms of tuberculosis.

The principle underlying all vaccine therapy is, as pointed out by Wright, "the scientific exploitation for therapeutic uses of the protective machinery with which the body is equipped." It is, then, the object of the bacterial vaccine to set in motion this machinery to its fullest extent. To accomplish this, active stimulation of those agencies which produce the antibacterial substances in the blood serum must take place, and through them increase leucocytic activity. In this way, the body is protected against bacterial invasion, and when infection has occurred it is more readily overcome. Among these protective substances in the blood, we have those of bacterial nature, bacteriolysins, agglutinins and opsonins. The latter is the only one whose amount can be ascertained at present, and the effect upon it of inoculation determined. It is probable, however, that these other substances are increased or diminished to about the same extent as the opsonic content of the blood, and their relative amount can probably be estimated.

The opsonic index of a serum is our guide as to the amount of circulating opsonin, and this index is more or less accurate according to the methods of technic and the experience of the individual. Clinical symptoms, however, must be the guide of the general practitioner not skilled in laboratory technic, and these are of great value in regulating the dosage of vaccine. The composition of a bacterial suspension is as important in determining the results in a case, as is the composition of various drugs in the effects they produce. The bacterial vaccine consists of the specific organism isolated in pure culture and, after destruction by heat, suspended in normal salt solution. To prepare it we cultivate the bacterium on suitable media at 37.5° for the proper length of time. When a profuse growth is obtained, this is collected in salt solution and sterilized at 60° C. This amount of heat is sufficient to kill the organism, but not to cause chemical protoplasmic changes. By comparing the number of organisms in solution with the number of red corpuscles per cubic millimeter in the normal blood, the strength of the bacterial vaccine is determined. A sufficient amount of this standardized suspension is then added to sterile salt solution in such quantity as to give proper concentration.

When the source of infection is not obtainable, and we have every reason to believe that the infection is due to the staphylococcus, a standard vaccine may be used if the opsonic index shows a lowered body resistance to this organism. The amount of vaccine required to increase the lowered standard of resistance or to produce artificial immunity, varies according to the age, the personal characteristics of the patient and the invading micro-organism. The child requires a much smaller dose for stimulation than the adult, and the immunizing machinery of some individuals is much more rapidly set in motion than in others. The type of infection, its duration, extent and severity are all important factors in determining the amount of a vaccine to be given.

The lesion that is in communication with the large lymph spaces of the body readily gives up its toxic products into the general circulation, and by this more or less constant absorption, auto-inoculation takes place. In such a patient there is much more sensitiveness to artificial inoculation. Where the general condition of a patient is good, response to inoculation is much more effective than in the case where exhaustion of the protective machinery makes stimulation almost impossible.

There should never be the association of two methods of stimulation going on at once in the body, — that from toxic absorption and by artificial vaccination. The first should be reduced to a minimum by rest and non-irritation of the affected part, and then the results of the injections of vaccine can be more accurately determined.

The type of infection running an acute course is not very favorable for vaccine treatment. In these cases, the disease is short and self-limited, and the general stimulation of the body by the toxemia is all that is required to aid in producing a cure.

In the cases of systemic infection, something may be accomplished by vaccine treatment, as here the whole volume of blood dilutes the toxic stimulant and more is required to cause the increase and production of opsonins by the subcutaneous tissue. Wright has reported several cases of endocarditis cured by vaccine therapy. Here the blood culture gave the offending organism. The sooner inoculation is begun, after the acute symptoms have subsided, the better the results. The localized lesion offers the best chance for a cure, but, if allowed to remain too long, the thick pyogenic membrane and granulations formed retard lymph flow into the focus of infection, and the blood charged with anti-bacterial substances is hindered in its local action. Pus contains a much smaller amount of opsonin than the circulating serum, and by evacuating it and allowing an influx of lymph to the focus, we hasten its cure. When the organism is virulent and can be readily obtained in pure cultures, a stronger vaccine is produced, as attenuation is avoided, and the body more quickly and effectually responds to treatment. The indifferent results of many workers have probably been due to the failure to insure the use of pure cultures and from the loss of toxic potency in the vaccines used.

The size of the dose and the interval between injections depend upon the organism. The average dose of the staphylococcus in the adult is six hundred million organisms, repeated every fourth day. In beginning treatment, it is well to give one half the dose and increase as rapidly as required. The study of the ebb and flow of the opsonic tide has shown that the wave of increased resistance lasts about three days, and to prevent the succeeding ebb, the dose must be repeated. The same is true of other bacteria to a lesser degree, some requiring longer intervals between inoculations and smaller doses.

The method of clinical control of vaccine dosage has been used by Trudeau at Saranac Lake for years in the use of tuberculin, and our results with this method have not led us to see the necessity of a change. We have used small, gradually increasing, weekly doses of Koch's T. R. tuberculin or Trudeau's Bacillary Emulsion, beginning with 1-10,000 of a milligram and steadily increasing in amount. By this method and by closely following clinical symptoms we have avoided reactions, and a degree of immunity for tuberculin has been obtained which is highly desirable. Patients will take 10 to 40 mgm. of tuberculin without constitutional disturbance. When an overdose has been given, a reaction or negative phase occurs, as shown by temperature, general pains, nausea, vomiting, or diarrhea. If this accidentally takes place, we omit the tuberculin for a week or two and then return to one-half of the offending dose and work up again.

We have employed tuberculin as a routine therapeutic measure at the Massachusetts General Hospital and at the Samaritan Day Camp for over a year in selected cases. Only those with persistent temperature or recent hemorrhage have been excused from the treatment. At the Day Camp, we have about 35 patients — all having phthisis — who are receiving tuberculin weekly with good results. Several cases after six to eight months' treatment in sanatoria, still with active signs, are clearing up by the use of tuberculin at our Camp. Our arrested cases return to shop and home and do not relapse even after months of work in unfavorable surroundings, because, we believe, of the resistance conferred by injections of tuberculin used over a series of months. At the Massachusetts General Hospital in the treatment of tubercular iritis, adenitis, prostatitis and lupus vulgaris, as well as in pulmonary tuberculosis with tuberculin, all have given very encouraging results. These cases have been followed clinically and clinical symptoms have been our guide in giving repeated and enlarged doses. In no case have we seen harm done, and even in the rare cases where a reaction has been produced, the subsequent exhilaration has more than made up for the slight untoward symptoms.

In many cases where the organism has been other than the tubercle bacillus, we have had the opsonic index as a guide to a greater or less extent, not because we always believed it necessary, but in order to follow a difficult case more closely. Some cases we have only given periodic inoculations, at an interval of three or four days, and controlled the dose by clinical symptoms. In no case where bacterial vaccines have been used, have we seen the least harm. The back in the scapular region or the abdomen has been the region selected for injection, and the vaccine put in subcutaneously. The constitutional effect of a good sized dose of vaccine generally shows itself in twenty-four hours. There may be malaise, slight general muscular pain and headache. Only twice have we seen a rise of temperature with nausea, vomiting and diarrhea, and that in children. These symptoms readily pass off and they are followed by a sense of well-being most gratifying to the patient, lasting several days.

The necessity for cultivating the infecting organism from the lesion not only aids in treatment, but in diagnosis. The case of J. W. is of interest in this connection. The child entered the Children's Hospital for empyema following pneumonia. Operation was done and drainage instituted. The sinus discharged for several weeks, and when first seen by one of us was still oozing pus from a small wound. A culture was made in order to prepare a vaccine for treatment. It happened that the boy was given 1,500 units of antitoxin on the same day, as is customary every three weeks, to children in this hospital to prevent an outbreak of diphtheria. The culture showed a pure growth of the diphtheria bacillus, and the antitoxin was all that was needed for treatment, as the sinus closed in about two days. Those cases where the staphylococcus vaccine has been used by us, include acne, generalized skin infection, boils, puerperal sepsis, carbuncles, osteomyelitis, empyema and secondary infection of the lung.

Case I. A woman thirty-five years old, by occupation a nurse, who had had acne for seventeen years and was frequently prevented from working because it was so severe and extensive, came for treatment. She had been treated with little benefit by several dermatologists, and hydrotherapy alone had given any relief. Examination showed a well-nourished woman with numerous indurated acne lesions involving the face, back and chest. A culture from one of them showed a pure growth of staphylococcus albus and a vaccine was prepared.

July 18, 1907. Index, .79. Patient inoculated with 150,000,000 organisms. The next day there was slight general malaise and depression and tingling in the extremities.

July 22, 1907. Index, 3.1. Feels better. No new lesions. Several old ones healed. Inoculated with 300,000,000 organisms.

July 27, 1907. Index, 1.07. Inoculated, 450,000,000 bacteria.

Aug. 1, 1907. Index, 2.3. Inoculated, 450,000,000 bacteria. No recurrences. Skin of chest and back is much improved. Feels stronger.

Aug. 5, 1907. Index, 1.9. Inoculated, 450,000,000 bacteria. Steady improvement. Back clear. Only one or two lesions on chest. One recurrence on face.

Aug. 10, 1907. Inoculated, 600,000,000 bacteria.

Aug. 14, 1907. Inoculated, 800,000,000 bacteria.

Aug. 18, 1907. Inoculated, 1,000,000,000 bacteria.

Steady improvement continued. Skin of face and body practically clear, less harsh and softer. General strength better than for many years. She has since returned to New York and has done well, receiving the vaccine once a week or ten days for some time.

CASE II. Woman. Age, twenty-five years. Acne of chin said to have been obtained in a hair-dressing parlor. Faithful treatment with ointments with only temporary benefit. Culture showed staphylococcus aureus and albus. A vaccine containing these organisms was prepared. Opsonic index, .904. First inoculation, 300,000,000 organisms. This was rapidly increased to 600,000,000 and injections given every four days. After three weeks' treatment the face entirely cleared up, and the patient has since been well. The interesting point in this case was that a stock vaccine of staphylococcus only gave slight temporary relief, but a specific, non-attenuated vaccine produced a cure.

CASE III. J. L. Boy four and one-half years. Entered Children's Hospital Jan. 25, 1907, with history of pneumonia three weeks before. Pain persisted on the right side. The day following entrance an operation was performed and one pint of green pus evacuated from the right chest. The child's temperature dropped, but the discharge persisted, and after three weeks he became thin and exhausted and in a serious condition.

Culture from the discharge showed only the staphylococcus aureus.

Feb. 15. Index, 1.3. Inoculated, 50,000,000 staphylococci.

Feb. 17. Index, 1.49. Inoculated, 100,000,000 organisms.

Feb. 20. Index, 1.59. Inoculated, 100,000,000 organisms. Discharge from wound very scanty. Child stronger. General condition improved.

Feb. 21. Index, 1.21. Inoculated, 100,000,000, and this dose repeated regularly every four days. From this date improvement was steady. The sinus closed in about ten days. Appetite returned. Gain in flesh was rapid, and he was soon running about the ward looking the picture of health. The index taken several times after the sinus had healed was persistently high, showing that the increased resistance to the staphylococcus from the vaccine was not of a few days' duration, but extended over some weeks at least.

CASE IV. A woman of fifty-one years has suffered several years with chronic, universal eczema of exfoliative type. Previous to this she had had numerous attacks of more or less localized eczema, some of which started with arsenical wall paper poisoning. She had gradually improved under careful diet in the past two years. Four or five months before beginning treatment she had an acute exacerbation, which was more or less controlled by use of an ointment, but left parts of the skin — especially on the face and neck — thickened and tender, and the deep glands were swollen and tender to touch. The rectum and lower colon gave considerable trouble by being tender from the passage of large amounts of mucus. The patient was anxious to try the vaccine treatment to see if relief could be obtained. The staphylococcus aureus was cultivated from the scales of the skin and also from the urine and a specific vaccine prepared.

June 15, 1907. Index, .5.

June 17, 1907. Inoculated in the back with 300,000,000 staphylococci. That night she was restless. Back a little sore. Tingling in neck and arms and passage in next twenty-four hours of considerable quantities of mucus from bowels.

June 19, 1907. Index, 1.20. Feeling better.

June 21, 1907. Inoculated, 400,000,000 staphylococci. Previous sensations following the injection recurred, but were less marked. Has noticed scales coming off neck and fingers.

June 23, 1907. Index, 1.37. Old fissure behind the right ear better and healing. Scaling of skin more marked.

June 25, 1907. Inoculated, 600,000,000 organisms. Following day, discomfort in bowels. Passed large mucus sheets. Glands in neck less tender.

June 26, 1907. Index, .5. (Negative phase.) This shows dose of vaccine sufficient.

June 29, 1907. Inoculated, 600,000,000 organisms. Large sheets of old skin coming off exposed parts of body. Feeling much stronger. Can do more work and not tired so easily.

July 1, 1907. Index, 1.08.

July 3, 1907. Inoculated, 600,000,000 staphylococci.

July 5, 1907. Index, 1.4.

July 7, 1907. Inoculated, 600,000,000 staphylococci. Large glands have now practically disappeared. Skin softer and smoother and fissures between fingers and behind ears healed. Has greatly improved in strength and feels very well. Bowels cause little if any discomfort.

July 16, 1907. Index, .94. Has returned home feeling finely. Her own physician is to continue weekly dose of vaccine for one month. The report from him lately received says the patient has enjoyed the best health this summer in years. Her general condition is excellent.

CASE V. A girl of eighteen years, who had been under treatment for one and one-half years in the Good Samaritan Hospital and Day Camp for advanced tuberculosis. Both lungs were involved at the apices and also the lower half of the left lung. Here a cavity developed with characteristic signs over an area about two inches in diameter. Under treatment the general condition gradually improved. Gain in weight and strength was marked and tubercle bacilli disappeared from the sputum ten months ago. The signs of cavity have persisted with only a slight diminution in extent, and morning expectoration of about two and one-half ounces daily occurs. It was with the idea of stopping this expectoration that treatment was undertaken.

Aug. 16, 1907. Sputum collected in sterile bottle after careful washing of the mouth with peroxide of hydrogen. Cultures after twenty-four hours showed a nearly pure growth of staphylococcus aureus. Opsonic index, .65 to staphylococcus. A specific vaccine of the unattenuated organism was made and 200,000,000 injected into the arm. No constitutional effect was produced.

Aug. 23, 1907. Index, 1.8. Inoculated, 600,000,000 organisms. Cough and expectoration unchanged.

Aug. 29, 1907. Inoculated, 800,000,000 organisms and the dose repeated every four days for three weeks. Examination showed no diminution in size of cavity, but the increase of coarse râles about it. Expectoration remained unchanged. The vaccine has been steadily continued in increased doses up to 12,000,000,000 organisms. This dose has produced no general disturbance. There has been no improvement. In this case we have failed, but largely, we believe, through mechanical causes. If we could have had good drainage of the cavity and a non-impeded lymph flow into it instead of through a thick wall of fibrous tissue, we might have hoped for better results. One interesting fact in the case was that a pure culture of staphylococcus aureus was obtained from an old lung cavity.

Case VI. We have said that, although some favorable cases have been reported of systemic infections treated by vaccines, they are few and the results generally not promising. Case VI illustrates this point. A girl of eleven years entered the Children's Hospital June 15. 1907. The temperature was elevated, child delirious and signs of infection present over the left tibia. The diagnosis of osteomyelitis was made and an operation performed. The tibia showed extensive involvement and was thoroughly cleaned out and drained. A culture showed a pure growth of staphylococcus aureus. Index to it was .89. On account of the severe symptoms and as the child was very toxic, small doses of vaccine were given beginning with 50,000,000 organisms.

June 17. Negative phase very marked. Pulse elevated and some cyanosis and dyspnea. Child not so well.

June 18. Index, .62. Inoculated, 150,000,000 organisms. Little if any constitutional symptoms. No attempt at repair of the wound and no formation of pus. Tissues have hardly reacted at all. Temperature high and irregular and child semi-conscious.

June 19. Index, 1.06. Condition unchanged.

June 20. Inoculated, 150,000,000 staphylococci. Signs of metastases in several joints of the body. General condition worse.

June 21. Foci of infection present in jaw and several fingers. Temperature high, 103°–105°. Child died.

Here we had an acute septic case with intense toxemia and the development of pyemia. Inoculations were of no apparent benefit.

Case VII. A boy of four years. Entered Children's Hospital, April 13, 1907. For five weeks he had been complaining of abdominal cramps and these were followed by swelling of the right hip.

April 16, 1907. Swelling incised and about twelve ounces of thick pus evacuated. Abscess found just beneath the fascia behind the great trochanter. Culture showed staphylococcus aureus.

April 19. Opsonic index to staphylococcus, 1.14.

April 23. Opsonic index to staphylococcus, 1.11.

April 24. Opsonic index to staphylococcus, 1.09. Inoculated, 200,000,000 organisms.

April 29. Less spasm and tenderness in hip.

April 30. Index, .94. Inoculated, 200,000,000 organisms. No constitutional symptoms.

May 3. Inoculated, 200,000,000 staphylococci. Index, .66.

Practically no discharge. Wound nearly healed. From this date inoculations were given periodically and the child went to the Convalescent Home in about ten days in good condition.

Case VIII. A woman of about fifty-five years. Previous health good, but never very strong. About a year ago general weakness began. In the course of from eight to ten months lost about forty pounds in weight. Has been troubled with discoloration of left foot and considerable pain in both legs. About two weeks before entering one of the Boston hospitals the left foot began to swell and several boils developed on the dorsum and discharged. Several abscesses also formed about the ankle. Two smaller ones developed one on the outer side of the tibia and one over the upper inner portion of the left thigh. These were opened and drained. In spite of good care the areas of infection extended and in about ten days the tendons of the left foot were very extensively exposed and the other areas showed deep discharging sinuses. The general condition was serious. Examination of the urine showed about 6% of sugar with diacetic acid and acetone present. A diabetic diet as strict as consistent with the patient's condition was instituted. A culture from the wound of the foot showed a growth of staphylococcus albus.

July 31, 1907. Opsonic index to staphylococcus albus, .702. Inoculated, 150,000,000 from specific vaccine.

Aug. 4, 1907. Index, .6. Inoculated, 300,000,000 organisms.

Aug. 5, 1907. Patient had a restless night. Considerable discomfort in wounds from burning and tingling. No temperature or nausea. The wounds begin to look better. Slough coming away.

Aug. 8, 1907. Index, .98. Inoculated, 600,000,000 staphylococci. Improvement noticeable. Thigh wound closing in. Granulations more healthy.

Aug. 12, 1907. Index, .81. Inoculated, 600,000,000 organisms. Has evidently turned a corner and is on the road to recovery. Dressings less painful.

Aug. 16, 1907. Inoculated, 700,000,000 organisms. Patient has noticed since vaccine treatment began that finger nails which were broken and surface irregular are growing out normally. Hair also seems to be falling out less.

Aug. 20, 1907. Index, 1.18. Inoculated, 700,000,000 organisms.

Aug. 24, 1907. Inoculated, 800,000,000 organisms. Thigh wound healed. Wounds on foot are filled with healthy granulations, are much smaller, and tendons are almost all covered in.

Aug. 31, 1907. Index, .8. Doing well. The vaccination gives patient a restless night and as she was doing so well, they were discontinued.

Sept. 11, 1907. Index, 1.161. Foot healed but for a small granulating area on the dorsum about the size of a fifty-cent piece.

The rest of the convalescence has been uninterrupted, and to-day all that remains of deep gangrenous areas on the foot about the size of half the hand is a pin-point sinus down to a deep tendon. The sugar has diminished under diet to about 1–2%. General condition is good. We feel that the patient was rescued from a very serious condition by the aid of vaccine therapy. It has been of interest to watch the improvement in the nutrition of the skin, nails and hair as treatment progressed. The patient thought it made her hair grow, but we cannot substantiate that statement.

Case IX. A boy of one and a half years, well developed and nourished, was taken under treatment on account of general furunculosis of face, back and chest. There had been several previous attacks of short duration. This one began about two weeks previously and was growing worse. Culture from some of the large furuncles gave a growth of staphylococcus albus and aureus. The opsonic index was .7 of normal, and we began with 50,000,000 organisms as the first dose. The index was followed regularly and the dose increased to 250,000,000. The inoculations were given every four days and the index was maintained constantly above normal. Improvement was steady and prompt. The first injection produced irritability, but nothing else in the way of constitutional symptoms, and later none at all. The skin began to clear after two inoculations and this rapidly progressed. As the foci of infection disappeared, not only did the skin lose its harsh, coarse look and feeling, but became soft and delicate like that of the ordinary child. During the course of the treatment a large mass developed under the left jaw about the size of a walnut which was firm and tender. Incision allowed the escape of a few drops of serum. This rapidly healed. After about three and a half weeks of treatment the skin was clear and the general condition good. The child went into the country and has continued well.

Case X. A man of forty years. Laborer. Applied for treatment of a carbuncle on the back of the neck about the size of a fifty-cent piece. The top of the carbuncle was yellow and a little sero-pus oozed from it. The patient absolutely refused to allow it to be incised, although strongly urged to do so. A culture was taken and inoculation of 300,000,000 staphylococci given from a stock vaccine. The case reported the next day. He had had a restless night, but the pain was nearly all gone from the neck, so much so that palpation and motion caused very little discomfort. The carbuncle had broken down and was discharging freely. A dry, sterile dressing was applied. The swelling on the neck rapidly subsided and the redness became localized. On the fourth day a second inoculation of 600,000,000 organisms was given. On the sixth day after treatment was begun the slough came away leaving a clean ulcer. This was rapidly filled with healthy granulation tissue. On the eighth day the same dose of vaccine was repeated as given before, and at the end of ten days the ulcer was covered with a small crust. This came off in about three days, leaving a soft, pliable skin with little if any scar. In this case the patient was saved the necessity of an operation with several painful dressings. The lesion healed rapidly and there was practically no scar.

Case XI. Mrs. C. Twenty years of age. First child. Puerperal sepsis. Labor occurred on Nov. 3, which was long and tedious and was followed by a severe post-partum hemorrhage. Pulse 130. Stimulants and saline infusion were given. Patient did well for three days running a slight temperature varying from 99°–101°. Patient had a severe chill on the fifth day followed by a fever of 104° and pulse 140. Lochia profuse and of foul odor. An intra-uterine douche of sulpho-napthol was given followed by another chill. On the eighth day the temperature came down to 101°. The chills continued each day, and on the tenth day the fever was again up to 104° and the pulse 110. The first dose of staphylococcus vaccine was given (300,000,000 bacteria) on the eleventh day when the temperature was 103° and pulse 110. The vaccine was from a stock culture.

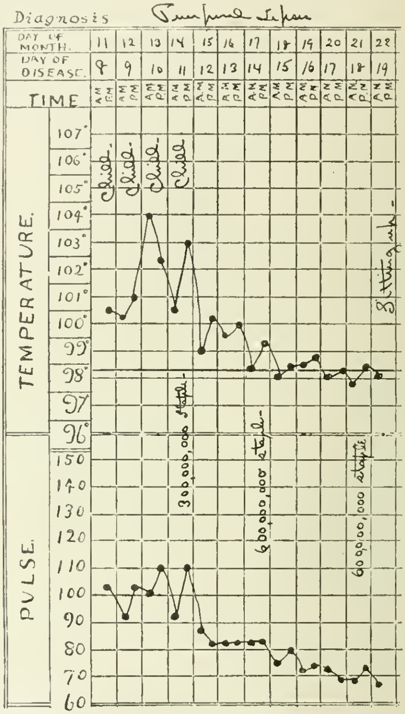
There was no reaction or depression noticed but the temperature on the following day dropped to 101°. There were no chills after the first inoculation. The second inoculation of 600,000,000 bacteria was given on the fourteenth day of the disease and again on the eighteenth day. This vaccine was made from the staphylococcus albus obtained from a swab taken from the uterus. The temperature gradually dropped, reaching normal on the fifteenth day.

There was a decided reaction and depression after the second and third inoculations.

The opsonic index three days after the first inoculation was .801 and after the third inoculation was 1.18. Intra-uterine douches of bi-chloride, 1 to 3000, were continued until the temperature reached nearly normal, and saline infusion was given subcutaneously each day while the temperature was above 100°, then the infusion was given morning and evening per rectum until the temperature reached normal.

The temperature chart that could be obtained is shown on this page.

In this case the vaccine was of great value in supplementing local measures in a woman who was much exhausted, following a severe post-partum hemorrhage and very septic.



Case XII. This is of interest only on account of the action of the vaccine on symptoms occurring in this case. The patient was a strong, active woman of forty-five years. Previously well except for slight interstitial nephritis for two years and an attack of grip about six weeks before the present illness. On May 24, she had a chill following a long exposure to cold. Signs of pneumonia and pleurisy developed at the right base. These signs lasted only for four or five days when they cleared up. Prostration was extreme and the mind dull. Temperature continued irregular and moderately high. During the first part of the second week of illness there was some remission of all symptoms. Shortly, however, endocarditis developed, and this was followed by coma and hemoglobinuria. About the fifteenth day of the disease the breathing became Cheyne-Stokes in type and very labored. The pulse was hard, full and slow. There were other meningeal symptoms. On the seventeenth day of the disease we examined the urine and obtained a pure growth of what proved to be Friedlander's bacillus. The index to this organism was .7. On the eighteenth day of the disease the index was .7, and she was inoculated with 75,000,000 organisms from a specific vaccine. That night the respiration became easier and the Cheyne-Stokes type disappeared. On the twentieth day the index was .98, and an inoculation of 125,000,000 was given. The urine became clear following the inoculation, the meningeal symptoms which had returned again disappeared and the breathing was very natural. On the twenty-first day the index was 2.00, with the patient resting quietly. On the twenty-third day the index was 1.07 and an injection of 150,000,000 organisms was given. A lumbar puncture was done, but nothing obtained. The urine, which had again contained hemoglobin, cleared up as before. The meningeal symptoms did not return. On the twenty-fifth day of the disease the patient died. Opsonic index on this date was 1.32. This case is of great interest in showing the effect of vaccine treatment in a case of systemic infection. The relief of symptoms following inoculation was striking. The opsonic index was well above normal on the day of death in this case, as we have seen it in several others.

The use of the pneumococcus vaccine in the treatment of infections has been of considerable benefit. The technic is considerably more difficult, however, on account of the cultural characteristics of the organism.

Case XIII. A girl of two years entered the Children's Hospital, Feb. 19, 1907. For eight days previous to entrance there had been pain in the right side. On the day before admission the skin broke on the right front of the chest and considerable pus discharged. On the day of entrance a portion of the eighth rib was resected and a few ounces of pus evacuated. The child was thin and weak and in a precarious condition.

Feb. 22. Culture from discharge showed pneumococci. Index to the organism was .6. A stock vaccine was used and 50,000,000 organisms given.

Feb. 23. Index, .25 (negative phase).

Feb. 24. Index, 1.17.

Feb. 25. Index, 2.25. Child brighter. Sinuses discharging freely.

Feb. 26. Inoculated, 50,000,000 organisms.

Feb. 27. Index, .69.

Feb. 28. Index, 2.14. Discharge lessening. Eating better. Decidedly stronger.

March 1. Inoculated, 50,000,000 organisms.

March 2. Index, 1.38. Gaining daily. Inoculations were continued regularly and the child gained rapidly. After about three weeks she went to the country with no discharge from either sinus and in excellent condition.

Case XIV. A boy of three and one-half years entered the Children's Hospital, Feb. 15, 1907. There was a history of pneumonia with a crisis of five days previous to entrance. This was followed by a second rise of temperature, and a diagnosis of empyema was made. The portion of the eighth rib in the posterior axillary line was resected and about a quart of pus evacuated. A culture showed a pure growth of the pneumococcus present.

Feb. 18. Opsonic index, 1.1.

Feb. 19. Patient inoculated with 50,000,000 pneumococci.

Feb. 22. Index, 1.59.

Feb. 23. Index, 1.50. Inoculated, 50,000,000 organisms.

Feb. 24. Index, .45. The child was restless following the last inoculation and the temperature rose to 105°.

Feb. 28. Index, 1.20. Temperature still elevated, but general condition improving.

March 1. Index, .72. Inoculated, 50,000,000. Discharge slight and there has been a steady gain in weight and strength.

March 5. Temperature normal. General condition good.

March 7. Index, 1.2.

March 13. Index, 2.00. Very slight discharge from sinus. Up about the ward. Fairly well. The general gain continued and the sinus rapidly closed. Child sent to the country for a few weeks.

Case XV. A girl of three years entered the Children's Hospital, Feb. 25, 1907, with signs of infection on right thigh. The following day an incision was made and about an ounce of pus evacuated from the femur. A culture from the wound showed the pneumococcus.

Feb. 28. Index, .71 to pneumococcus.

March 1. Fifty million pneumococci given.

March 4. Fifty million pneumococci given.

March 8. Index, 1.1. Condition of wound much improved. Very slight discharge.

March 10. Incision closing rapidly. No discharge.

March 19. Wound healed solidly. Child sent home well.

Infections of the urinary tract are among the most promising for the vaccine treatment. Here bacteria of the colon growth are most frequently found. The following cases are of considerable interest:

Case XVI. A girl of eleven months entered the Infants' Hospital, April 15. For eleven days previous to entrance the child was restless, refused food and ran a temperature from 104°–105°. For three or four days there was painful urination. The napkins were stained brown and the urine had a strong odor. The temperature on admission was 104°, but in three days dropped to normal. The child was put on urotropin for about ten days. Buttermilk was substituted for modified milk. Under this treatment the child's condition improved, but the urine still showed considerable pus and large numbers of bacteria. A culture from the urine showed bacillus Escherich of the colon group in pure culture.

May 11. Index to the organism was 1.36. Child inoculated, 10,000,000 organisms of a specific vaccine.

May 13. Opsonic index, 1.4.

May 15. Inoculated, 50,000,000 organisms.

May 17. Index, 1.62.

May 18. Inoculated, 100,000,000 organisms.

May 21. Index, .92. Urine much less turbid. Child better.

May 23. Inoculated, 100,000,000 organisms.

May 28. Urine shows very little pus and bacteria much diminished. General condition improved. Index, .2. Inoculated, 100,000,000 organisms.

June 1. Inoculated, 100,000,000 organisms.

June 5. Urine shows only a rare cell in the sediment.

June 6. Inoculated, 100,000,000 organisms.

June 7. Urine normal. Child discharged well on June 11. It had regained the 2 lb. lost during its sickness. General condition satisfactory.

In the case with so young a child it was necessary to find the optimum dose before any result could be expected. Here it was 100,000,000 organisms, and after these amounts were regularly given improvement was rapid.

Case XVII. A woman of thirty-three years. Married. About one and one-half years previously, when she was well along during the first pregnancy, had a severe attack of eclampsia which terminated it. The recovery was slow, but after three months she was apparently as well as ever. The urine was normal. After complete recovery she again became pregnant. The urine was followed closely, and the patient was kept upon strict hygiene. In spite of this precaution on exactly the sixth month in the second pregnancy the urine suddenly showed about $\frac{1}{10}$% of albumin. Edema appeared in the face and a miscarriage occurred. The fetus was well-formed, but had been dead a few days. The placenta showed marked thickening of the arteries, with considerable fatty degeneration. The recovery was rapid. The third pregnancy began seven months ago. The patient went along well until the fourth month. At this time, without warning, she was taken suddenly with severe pain in the right lumbar region. Temperature rose to 103° F., and pulse to 120 beats a minute.

Examination. — July 2. Patient restless and perspiring freely. Pain all through the abdomen and back. Tongue coated. Throat negative. Chest negative. Abdomen negative. Considerable tenderness in the right lumbar region. Vaginal examination negative except for an enlarged uterus.

Urine. — High, acid, 1,012. Trace of albumin. Sediment: few blood globules and considerable pus. White count 8,200.

The disease ran an acute course for one week, then the temperature and pulse dropped to normal and the general condition improved. The urine continued about the same, with large amounts of pus, pelvic cells and few blood globules present, in spite of the use of urotropin. A culture from the urine showed a large spore-bearing bacillus with cultural characteristics of the uro-bacillus. A vaccine of this organism was prepared with considerable difficulty, as it required live steam to make it sterile.

July 24. Index to the organism, .8. Patient inoculated, 30,000,000.

July 29. Urine cloudy. Increase of pus for two days after vaccine injection. Inoculated, 50,000,000 organisms.

July 30. Poor night. Pain in right lumbar region. Large amount of pus in night urine, but much clearer this morning.

Aug. 2. Back ache improved. Urine shows some sediment in the morning, but very little during the daytime. Inoculated, 100,000,000 organisms.

Aug. 6. Improved. Urine clear except when first passed in the morning. Inoculated, 100,000,000 organisms. Index, 1.01.

Aug. 10. Better. Inoculated, 100,000,000 organisms.

Aug. 18. Inoculated, 100,000,000 organisms. Looks and feels very much better. No more discomfort in back. Urine normal in appearnnce. Sediment shows only an occasional leucocyte.

Aug. 25. Inoculated, 112,000,000 organisms. General condition good. Free from all symptoms. The patient went into the country at this date and on returning six weeks later had gained 13 lb. The urine was normal and free from any sediment. In this case a vaccine fit for use was only obtained after sterilizing it by live steam in order that the spores might be killed. If this had not been necessary, the duration of the case would probably have been shorter. Nevertheless, this vaccine stimulated the body as shown by increased symptoms referred to the affected part and the rise in the index after inoculation.

CASE XVIII. A child of ten months, previously strong and well, was suddenly taken with vomiting, diarrhea and painful micturition. The temperature ran a high, irregular course from 102° to 104°, and the urine showed blood, pus and a profuse growth of bacteria. The diet was modified and urotropin given. After ten days the acute symptoms subsided and the temperature reached normal. The urine remained unchanged and at times seemed nearly all pus. The stomach and bowels were frequently upset and the child lost weight and strength. After about a four weeks' illness it was decided to try vaccine therapy. The culture for this showed a pure growth of a bacillus of the colon group. On about the thirtieth day of illness the child was given 33,000,000 organisms, the index being 1.66. The following day there was nausea, vomiting and diarrhea, and the temperature rose to 103°. The urine, however, became clear almost immediately. After four days a second dose of 25,000,000 organisms was given with little constitutional disturbance. The general condition begun to improve. Within a week the stomach and bowels were in a good condition. A third dose was given on the thirty-eighth day of the disease. The urine had remained clear with no pus or sediment.

There is now after only three injections of the vaccine no evidence of cystitis, and the general condition is greatly improved.

These cases illustrate in many instances the value of the bacterial vaccine in treatment. Our experience has not been limited to those summarized, but we have also seen marked benefit in a number of other cases of osteomyelitis, empyema, in old appendical sinuses and other affections. The cases of epidemic cerebrospinal meningitis treated gave indifferent results, and the series of cases reported by Rotch were not encouraging. Nevertheless, in earlier cases with the use of specific vaccines, the results might be improved. It seems from our use of the vaccine treatment it is of considerable benefit in a large majority of suitable cases when treated intelligently. Some cases will give brilliant results, others a safe cure, and still others only some improvement. We feel that this method of treatment may be made of great service to the physician and the surgeon.

CONCLUSIONS.

1. Each new method in medicine should have a thorough trial before it is rejected.
2. A non-attenuated specific vaccine, given in proper doses, is essential to success in the treatment of cases with vaccines.
3. To control the amount and frequency of the dose of a vaccine, either the opsonic index or general clinical symptoms may be the guide.
4. Localized infections of moderate duration offer the best field for treatment.
5. The vaccine treatment, when used in conjunction with medicine or surgery, may lessen suffering and deformity and frequently save life.

SOME PERSONAL EXPERIENCES WITH SPECIFIC VACCINES IN THE TREATMENT OF BACTERIAL DISEASE.*

BY MARK W. RICHARDSON, M.D., BOSTON.

IN June of this year, I read before The Massachusetts Medical Society a paper[1] on the "Treatment of Typhoid Fever with Specific Sera, Filtrates and Residues (Vaughan)," and, from observation upon 130 cases, I concluded in part, that

(*a*) The course of typhoid fever, if treatment be instituted early enough, can be favorably influenced by inoculation of specific bacterial products.

(*b*) Inability to make an absolute diagnosis in the early days of the disease has been a severe handicap to specific treatment.

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* Read before the Boston Society for Medical Improvement, Nov. 25, 1907.

[1] See this JOURNAL, Oct. 3, 1907.

(*c*) In hospital practice especially, such specific treatment is at a disadvantage because the patients rarely reach the hospital before the beginning of the third week of the disease.

(*d*) By preventive inoculation with the nontoxic residue of the typhoid bacillus as prepared by Prof. Victor C. Vaughan, the percentage of relapses in typhoid fever has been reduced apparently from 22% to 3%.

I have been making a further study of the relapse in typhoid fever, and find that, from Dec. 1, 1906, to Sept. 15, 1907, there have been in the wards at the Massachusetts General Hospital, 50 cases of typhoid fever treated according to routine methods, and of these 50 cases, 10, or 20%, have suffered typical relapses. Twelve cases have had preventive inoculation with one relapse, or 8%. In this case, however, it is only fair to say that, through an oversight, one properly spaced inoculation was forgotten by the person to whom it was delegated, and the treatment was resumed only when the recrudescence of fever had been in progress two days. The temperature reached normal again five days later.

This was hardly a fair test, but I have included the case to satisfy the hypercritical.

This series, then, combined with last year's cases makes 163 routine cases with 35 or 21.4% of relapse as compared with 40 inoculated cases with 2 or 5% of relapse.

In spite of the well-known unreliability of statistics in typhoid fever, I believe this result is most suggestive and encouraging.

In bacterial disease, other than typhoid, I have had the following limited experience:

Case I. A man with a deep cervical abscess was operated on Jan. 30, 1907. On Feb. 2, it was necessary to open a secondarily infected right knee joint. On Feb. 23, a second operation on the knee was performed. The case continued to do badly nevertheless, and amputation of the thigh in order to save life was strongly indicated. Before doing this, however, the attending surgeon desired to see if anything could be accomplished by bacterial inoculation. Cultures from an open wound made on March 7 showed many colonies of staphylococcus aureus with rare streptococci. Misled by the predominance of staphylococci a vaccine from this organism was made and injected March 9, in dose of 300,000,000. There was no improvement. In fact, on March 14, a new focus around the joint had to be opened, and cultures from this showed pure streptococcus. Vaccine made from this organism, in dose of 25,000,000 to 40,000,000, together with anti-streptococcus serum (Aronson) was injected five times within ten days and was controlled by almost daily observation upon the opsonic index. The knee showed possibly slight improvement, but the patient's general condition got steadily worse, and the thigh was amputated on March 27. The patient promptly recovered. The opsonic index which before amputation had shown wide variation above and below normal, remained for several days, at least, continuously above normal.

This case will serve well as a basis for a few general remarks:

1. Bacterial inoculation cannot accomplish the impossible. It presupposes that the patient has, still in reserve, forces to be called into action. It must be employed as early as possible.

2. Physicians, therefore, intending to make use of this method of treatment must make original cultures from septic operations. Otherwise, valuable time will be lost, as in this case, with the study of organisms invading secondarily open wounds.

3. In this connection, too, it is perhaps well to emphasize the importance of blood cultures in cases of general bacterial invasion. This procedure gives at once, if successful, the kind of organism concerned, and the material for an autogenous vaccine. Blood cultures have proved their worth, especially in typhoid fever in the early days of the disease, when the Widal reaction so often fails. In a certain German clinic, I have heard, it is a routine procedure to make blood cultures from any patient showing a temperature.

Case II. *Puerperal septicemia.* — Curetting on the ninth day brought no relief. On the twenty-first day the opsonic index was 0.6 to streptococcus. On the twenty-third day one bottle of anti-streptococcus serum was given, and on each of the following six days, anti-streptococcus serum combined with streptococcus vaccine in dose of 40,000,000 was injected subcutaneously by the attending physician under my direction. In two days the temperature became normal, and remained so for six days after treatment was stopped. The temperature then rose again, but after three more inoculations dropped permanently to normal. Two observations on the index after the beginning of treatment showed it to be above normal. The cultures from the uterus in this case showed both staphylococcus and streptococcus. The streptococcus vaccine used was from the case of septic neck and knee joint before described.

Case III. *Puerperal septicemia.* — Culture from uterus on third day showed practically pure streptococcus. Opsonic index, 0.6 to streptococcus. As in the previous case streptococcus vaccine, in dose of 40,000,000, together with anti-streptococcus serum, was inoculated by the attending physician, on the fourth and fifth days of fever. On the sixth, seventh and eighth days anti-streptococcus serum alone was used. There was no improvement, and the patient died on the tenth day. In this case the vaccine was given hardly long enough to furnish a fair trial of the remedy, but I doubt very much whether a favorable outcome would have been possible under any circumstances, except possibly by beginning treatment on first or second day. This case as contrasted with the first was distinctly of the acute, fulminating type, and, as in typhoid, little can be expected from inoculation treatment of such cases.

Case IV. *Lupus.* — Woman, age, forty-four. First lesion appeared on end of nose in 1884. This yielded to treatment, but broke out again in 1888. Tuberculin was given in large doses in 1890, with slight improvement. Then cauterization was done for eight to ten years. X-ray treatment for past two years. Disease, when I first saw patient, had invaded both cheeks and left antrum. There was an open gland under the chin. She has had no treatment but tuberculin B. E. once weekly from April to July of this year, and from September to present time. Dose never more than 1–1000 mg. The disease process in antrum is apparently healed as is also the gland under chin. The condition of the cheeks has shown slow but steady improvement.

One experience with this patient shows how careful one must be with treatment with tuberculin. From July to September, the patient was in the country. On her return, I began the use of a new bottle of tuberculin, and as a precaution gave but half the usual dose. There followed, nevertheless, a sharp reaction, swelling of the face and ulceration of the upper lip. Treatment had to be suspended for five weeks, and then resumed with $\frac{1}{5}$ of the regular dose, 1-5000 mg.

One must not attempt to hurry a case of tuberculosis. Minimum doses distributed over long periods of time must be the rule.

Six cases of pustular acne have been treated with staphylococcus vaccines, all with very marked improvement. In 2 cases the vaccines were autogenous, and in 4 they were not. They seemed to do equally well. There seems to be a point, however, beyond which it is difficult to secure any further improvement. It may be that we have missed the true underlying cause of acne, the bacillus of Unna, and that we shall not have perfect success until a vaccine from this organism is used.

A case recently published by Ochsner and Abelman[2] would certainly suggest this possibility. This organism is one very difficult to isolate, and as yet I have had no personal experience with it.

Two cases of boils and one of tuberculosis around the ankle joint are doing well under inoculation of their appropriate vaccines. Whether the benefit is to be permanent remains to be seen.

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CERTAIN ASPECTS OF THE TREATMENT OF INFECTIONS WITH BACTERIAL VACCINES.*

BY ROGER I. LEE, M.D., BOSTON,

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(From the Pathological Laboratory of the Massachusetts General Hospital, Dr. J. H. Wright, director.)

My experience with bacterial vaccines has been at the Massachusetts General Hospital, more or less in association with Dr. M. W. Richardson and Dr. H. F. Hartwell. Outside of Dr. Richardson's work on typhoid fever, which covers a period of many years, our cases on the whole have been a good deal similar. More or less independently we have arrived at somewhat similar conclusions as regards dosage, intervals of inoculations, and the uselessness of the opsonic index as a therapeutic indicator. A review of my cases would, in a general way, be reiteration of what has already been said here this evening.

I would like, however, to emphasize the fact that with the bacterial vaccines we are dealing with a new therapeutic agent quite different from anything yet employed. The various antitoxins and anti-sera are supposed of themselves to neutralize the toxic products of the bacteria. On the other hand, a bacterial vaccine depends for its action upon a response to stimulation caused by the injection of the dead bacteria and their toxins. Each individual has his own response, and he often responds differently at different inoculations. It also follows that very sick individuals may not respond at all, and one may get no particular effect from the administration of a proper vaccine. This point is especially brought home when we find clinically that it may be necessary to inoculate an extremely sick patient every twenty-four hours; while, when he is convalescent, every five days is sufficient.

Another very important point of difference between bacterial vaccines and all other therapeutic measures is the entirely specific action of the bacterial vaccines. It may be urged that antitoxin and the various anti-sera are equally specific. This is not quite true. The various sera are, in reality, horse serum carrying various anti-bodies. In horse serum another element is introduced. For instance, many observers believe that diphtheria antitoxin, so-called, is of value in cerebrospinal meningitis. In reality the value is probably in the horse serum. But the bacterial vaccines are made up only with salt solution, and therefore, theoretically, and practically as we have learned, are of value only in infections with that particular organism. Moreover, while, as you have been told, stock vaccines of tuberculin, staphylococcus aureus, and of the bacillus coli communis are usually as efficacious as vaccines from the particular infecting organism of the particular case, yet we get results in some cases of infections only by using the particular strain. This is particularly true in lesions caused by the streptococcus, somewhat less so in the case of the gonococcus. Our stock vaccine may be the particular strain with which a given person is infected, or it may not. One case of gonorrheal arthritis which I treated did not yield at all to one gonococcus vaccine, so I employed another and the effect was startling. Yet that the first vaccine was potent was demonstrated later.

It is not enough to know that the infecting organism is a staphylococcus; the variety must be known. A surgeon sent me a culture from a septic finger which was doing very poorly. He was anxious for immediate inoculation. I examined the culture after eight hours, and found it was a staphylococcus. I gave a staphylococcus aureus vaccine. The septic process in the finger went on rapidly. Amputation seemed probable. In twenty-four hours the culture turned out to be not an aureus, but a citreus. A vaccine was prepared and used. There was no fever after the first inoculation. The finger did remarkably well. The doctor was emphatic in saying that the vaccine saved that finger. The lesson in the case was that the aureus vaccine was useless, because it was the wrong variety of staphylococcus.

I could cite many other cases, but I will only use three. A man had been in the hospital ward for several weeks with a cervical abscess which refused to heal. I supposed it was staphylococcus aureus and inoculated him twice with no result. I then got a culture and found that the only organism was staphylococcus albus. After two inoculations he was able to leave the ward and go to work. Another case is that of a young man with the history of gonorrhea six months previously, with arthritis of feet and hands, coming on in the last four months. He had no urethral discharge. This was the first time he had ever had the clap, but he had had multiple arthritis before. Expecting no result I treated him with gonococcus vaccine without effect until he got a rheumatic iritis. With the history of a preceding attack of polyarticular rheumatism and an iritis, gonorrheal arthritis, I think, can be excluded. The third case is a woman whom Dr. Hartwell has reported. She came to the hospital with a monarticular arthritis of the knee. She was recently married and had had a leucorrhea since then. The diagnosis of gonorrheal arthritis seemed plain, yet the blood culture and the fluid from the knee which was tapped showed staphylococcus aureus in pure culture.

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[2] Illinois Med. Jour., June, 1907.

* Read in discussion of the papers of Dr. Richardson and Dr. Floyd at a meeting of the Boston Society of Medical Improvement, Nov. 25, 1907.

There is just one other phase of the subject of precise knowledge of the infecting bacteria that I want to take up. Often those interested in the vaccine treatment are asked to see some case which has suddenly "gone bad," as it is called. A culture is taken and shows a mixed infection. We have then to decide which organism is the cause of the trouble, the primary invader. We often find in these cases, *e. g.*, in a septic hand, a few streptococcus chains mixed with staphylococcus aureus and albus; or in a bad appendix, or in puerperal sepsis, a few streptococci overgrown by colon bacilli. Now, in all probability, the streptococcus is the cause of the trouble. It may be impossible to get the streptococcus out in pure culture so as to prepare a vaccine, or again, it may take so long as to be useless. Our stock streptococcus may help or it may not; more often not. If our stock streptococcus is not effective and if we cannot prepare the autogenous vaccine, our hands are tied.

In acute more or less generalized septic conditions, in pyemia, puerperal sepsis, septicemia, etc., the subject of bacterial vaccine treatment is still *sub judice.* Of the cases of generalized sepsis, some will get well anyway, some will die anyway. A recent German article reports a mortality of 80% in cases of staphylococcus pyemias. I can recall now some twelve cases of staphylococcus pyemia, all of which have gotten well. Naturally none of these had pulmonary abscesses. On one case the diagnosis of pyonephrosis was made and a tumor was felt in that situation. This abscess apparently drained out through the ureters as the tumor disappeared, and the urine on several occasions showed a pure culture of staphylococcus aureus. The patient got quite well.

In puerperal sepsis the great difficulty is to obtain the primary infecting organism in sufficient number so as to obtain a pure culture, and thus prepare a vaccine. Clinically some of the cases have been apparently saved. They might have gotten well anyhow, but the obstetricians have not thought so.

A surgeon operated on a bad gangrenous appendix in the pelvis. Two days later the wicks were dry, the process was not draining. General peritonitis was not present, but she refused to react. She was seriously ill. On the probabilities, she was inoculated with streptococcus vaccine. The culture showed B. coli and streptococci. She responded to the inoculation, was inoculated again in twenty-four hours. The wound drained profusely and she completed a good recovery.

Before the use of bacterial vaccines, bacteriology was of little or no use to the surgeon or obstetrician. The treatment was just the same, no matter what the organism. However, now, at last, bacteriology does seem to be of some practical utility to the medical profession. It does make a difference in the treatment in some cases what the infecting organism is. The practical advisability of taking early cultures from cases in which the vaccine treatment may be needed is obvious.

In such acute cases of more or less generalized sepsis, inoculations with the appropriate vaccine may be enough to turn the scale in the right direction. It may stimulate Nature at some crucial point. Often, after the natural defences are once started, no further inoculations are needed. In a fairly large experience I have never seen inoculation cause any alarming symptoms. It is then safe. Moreover, in such sick cases, it interferes in no way with whatever other treatment it may be desired to carry out. It is another string to the bow. While surely the treatment with bacterial vaccines will not cure all cases, yet from our experience it is a method of therapeutics to be considered seriously. For that serious consideration the determination of the precise infecting organism and early culture, before secondary infection sets in, are essential for a fair trial.

VACCINE THERAPY: A REPORT ON SIR ALMROTH E. WRIGHT'S LONDON CLINIC.*

BY HELEN C. PUTNAM, A.B., M.D., PROVIDENCE, R. I.

"THE really serious ills of life are the various localized bacterial infections which sooner or later fasten on every man, never afterward releasing their hold." — WRIGHT.

ONE afternoon last October, in Dr. Wright's students' laboratory, at St. Mary's Hospital, I watched my hostess, Dr. Alice H. Johnson (a London school inspector and physician to the great Lambeth Schools for pauper children), opsonize material from a chronic ear discharge of a child and make slides for the determination of the micro-organism and opsonic index preparatory to treatment. By rapid work, stainings were completed for tubercle bacilli and for staphylococci, ready for the microscope, in two hours, when we went to the clinic below. This was in a small room with two windows, under one of which was a stand containing the simple outfit:

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* Read before the Rhode Island Medical Society, Dec. 5, 1907, and published by courtesy of the Committee on Publications.

an ounce crucible of boiled sweet oil, another like it on a burette stand heating over a flame, some absorbent cotton, a hypodermic syringe and half a dozen 50 cc. bottles covered with rubber caps, labels indicating contents and their strength, — new tuberculin, streptococcic vaccines, staphylococcic, gonococcic and pneumococcic vaccines, some made from the micro-organisms of individual patients. The only other furnishing was a single chair which patients having a lesion in a lower extremity occupied for a few minutes. Others simply stood while answering questions and receiving the inoculation, twenty patients being satisfactorily attended in an hour and a half. There were fourteen physicians present, his students and two or three visitors like myself, representing eight countries, an international assembly suggesting in itself the value of Dr. Wright's work.

The first patient was a young man who first came about six months before with necrosis of a rib, discharging through the chest wall where there had been a large open wound. The tubercle bacillus being the chief micro-organism, he had been inoculated with new tuberculin until cured, and to-day came simply to report.

The second patient was a baby of eight months with cervical adenitis. It had been coming every ten days for about two months. Its opsonic index to tubercle bacilli had been determined in the beginning, and the proper dose of new tuberculin ascertained, on which it was doing well, the enlargements having nearly gone. The opsonic index had not been taken for over a month.

Dr. Wright inoculated with the usual dose, in the thigh, first wiping the place with a bit of cotton dipped in the boiled oil, and sterilizing the needle in the oil. To fill the syringe he plunged the needle through the rubber cap. It was in this manner that the vaccines were put in the bottles. He will not change this program until the baby ceases to make good progress.

The third patient was a man with a tooth that had been suppurating at the root, the process possibly extending into the antrum of Highmore and causing much trouble with that side of the face. Pus obtained at the first visit contained pneumococci, and his opsonic index to pneumococci guided the dose of vaccine. He had received two inoculations of pneumococcic vaccine made from his own micro-organism, with an interval of seven (?) days, and came to-day to report himself well. He began to feel better in an hour after the first inoculation. The pneumococcus is not infrequently found at the roots of troublesome teeth; Dr. Wright remarked that when his time came, instead of having his tooth out, he would have a pneumococcic inoculation!

The fourth case was a young woman with a spot of lupus on the cheek about a centimeter in diameter. It had already much improved in appearance. She reported feeling well after the last injection. She received new tuberculin between the scapulæ after the usual wiping with oil, and was told to come again in ten days.

Dr. Wright usually injects "up stream," to use his own expression. He has reason to think that there is the largest production of antibacterial substances near the site of a subcutaneous inoculation; and that not so much local effect is produced by venous injection where the whole blood stream dilutes the product. It is a fact also that in practically every local infection there is obstruction of the blood current preventing sufficiently free access of its bacteriotropic elements to the pathogenic bacteria. He therefore inoculates at a point where the newly formed opsonins will drain through the diseased tissues on their way to the general circulation. For this reason and partly because the back of the shoulders is easy of access he most frequently injects here when the trouble is in face or neck. But in the case of the baby with cervical adenitis, you will remember, he used the thigh. Was this because of the very susceptible tissues rendering it wise? Or was it simply convenience?

Next came a young woman with lupus of the face. The lesion had been approximately as large as the hand. It was disappearing satisfactorily and she was feeling excellently. "Then sha'n't I give you a little larger dose to-day?" "No, sir!" came promptly with an emphatic shake of the head. "But you've had that dose for some time. Can't we hurry up matters with just a little more?" "No, sir! I am doing perfectly well on this dose, sir." "Why not? Did I ever give you too much?" "Yes, sir. Last August you did — but it was my own fault." "How did that happen?" — doctor and patient both laughing. "Why, I felt so good after the last dose, I told you I thought I needed more." "And you didn't like it?" "Oh, no, sir!"

This amusing dialogue was used for a text to comment on the fallacy of the idea that you can have a beneficial cumulative result in the use of these vaccines, either by giving a dose before the effect of the previous one has passed, or by giving progressively increasing doses, or by giving a larger dose because a smaller one has done well for some time.

After a correct dose there is usually within an hour a wave of improvement, sometimes evident in the lesion, sometimes in the feelings of the patient. This stimulation is brief, and during the following twenty-four hours (approximately) a negative phase always occurs with feelings of malaise. After this the condition again improves until by the third or fourth day the high water mark of improvement is reached which is gradually, sometimes irregularly, receded from during five, six, seven or possibly eight days. At the end of this period, when the immunizing power of the dose is exhausted, *i. e.*, phagocytosis relapses to its former inefficiency, is the time to give a new one.

With the initial little rise the opsonic index indicates that leucocytes are already ingesting more bacteria. In the brief period of depression following the index shows parallel decrease in phagocytosis, while the prolonged high wave of improvement and the fall afterwards is again explained by the altered phagocytosis as revealed by the opsonic index which is simply a statement of the average number of a certain kind of bacteria ingested by the patient's phagocytes compared with the average number which normal phagocytes have ingested. If too large a dose is given the negative phase is deeply depressing and prolonged; the following period of improvement is delayed and lessened or may not occur. Repeated smaller doses may possibly secure this positive phase; but it rarely occurs as a matter of fact, and with some vaccines is impossible. Each inoculation must be considered separately and be repeated when its good effect ceases.

The sixth patient was a woman who first came seven months before with an extremely large mass of cervical glands. The opsonic index and correct dose of new tuberculin were ascertained in the beginning and she was steadily improving. On a recent visit one reddening gland threatened suppuration. Streptococci were found to be the new infection; her opsonic index to streptococci as well as to tubercle bacilli was taken, and to-day she received two inoculations between the scapulæ, one of new tuberculin, and one of streptococcic vaccine. Concerning one or two newly enlarged glands Dr. Wright explained that in the process of breaking up old foci some bacteria escape digestion and lodge in the nearest glands until phagocytosis is complete.

There are several objectors to the word vaccine in this therapeutics since the *vacca* is not a factor in the production. Vaccines are sterile emulsions of dead bacteria in lysol-saline solutions, which when injected in the tissues cause an increase of opsonins that prepare the patient's live bacteria of the same kind for ingestion by phagocytes. Dr. Wright has given one so suitable name (*οψωνεω*, I convert into palatable pabulum) that he may yet improve on "vaccine."

The eighth patient was a middle-aged woman with painful instep. Dr. Wright saw her to-day for the first time. She reported having had negative results from x-ray examination, and from streptococcic vaccine administered by an assistant with the idea that this might be rheumatism. She was ordered another x-ray examination. Dr. Wright holds that rheumatism is due to a streptococcic infection and is using this vaccine in suitable cases.

The ninth patient had large cicatrices on face and neck from glandular abscesses and a surgical operation for removal of enlarged glands. There had been continuation of the adenitis, and she was improving under new tuberculin. The tenth patient had a tuberculous knee which was improving under new tuberculin inoculations in the leg. The eleventh was another woman with a large cicatrix from the removal of tuberculous cervical glands. A large mass appeared subsequently which was now nearly gone. For over a year she had received new tuberculin, with occasional stock staphylococcic vaccine when suppuration was threatened, as it was a mixed infection. Next, a nurse came to report her patient doing well at home in bed,— caries of the cervical vertebræ receiving new tuberculin every ten days.

Next came a woman with from twenty to thirty pustules about half a centimeter in diameter on back of hand and forearm. They had followed a splinter in her finger several weeks before. After a culture and taking of index she had received staphylococcic vaccine made from her own staphylococci. She was not improving as rapidly as could be wished and another index taking and diagnosis were ordered. If a mixed infection there might be tubercle bacillus or streptococcus or another strain of staphylococcus present. A few drops of blood were drawn of which the opsonic index would be taken to those three kinds of bacteria. Next an elastic bandage (Bier's bandage) was wound round the arm below the elbow. The resulting congestion around the pustules not only forced more lymph and blood with antibacterial elements into the pathologic areas but it forced onward into the blood current bacteria (dead or alive) and detritus that had been clogging the tissues, *i. e.*, an auto-inoculation had been produced. The question was with what kind of bacteria. A few drops of this auto-inoculated blood would be taken within an hour, its opsonic indices to the same bacteria would be found, and whichever index showed a rise above the corresponding one before inoculation would establish the diagnosis.

Dr. Wright believes that some considerable percentage of failures in vaccine therapy and utilization of the opsonic index results from not understanding the problems of auto-inoculations which may result from any disturbance of the local infection, exercise or massage, for example, and in other ways; also from failure to provide for the bacteriotropic elements in the blood reaching the bacteria of the lesion; and also from failure to sufficiently consider the several kinds of bacteria, two or more, that may be in the same lesion, even "tuberculous" lesions, *i. e.*, the problems of mixed infections, where more than one kind of vaccine is indicated.

Next came a young mother with pulmonary tuberculosis, and an infant of ten months with cervical adenitis. Both received new tuberculin, the child in the arm; and the latter also a streptococcic vaccine made from its own streptococci, as a gland was threatening suppuration. Hygienic measures at home must supplement the vaccines.

The sixteenth case was of severe pustular facial acne. Since her last visit the opsonic index had been determined and vaccine made from her own streptococci. To-day she received her first inoculation.

Next came a case of gonorrheal rheumatism improving under inoculations of gonococcic vaccine.

Another case of facial acne was improving with streptococcic vaccine. Another of severe lupus was improving under new tuberculin and staphylococcic vaccine — a mixed infection.

The twentieth case was of a woman in whose hand had been a splinter for a week. The arm was dark red and badly swollen to elbow. The suppurating surface on the hand was deep and about four centimeters in diameter. Fomentations were ordered to bring more bacteriotropic elements to the part by stimulating circulation, and to flush out obstructions. A "blunderbus" inoculation of mixed strains of streptococci was given and she was told to return next day, when her opsonic index would be known, and the kind of micro-organism chiefly concerned. Two vaccines are always in stock, tuberculin and staphylococcic. If this case should require some other it would be made from her own micro-organism.

A few points to notice:

1. The ease of disinfection for hypodermic injection.
2. The security of vaccines by use of rubber caps.
3. This is something better for cervical adenitis than the disfiguring scars of surgery with its uncertain results.

4. The opsonic index, having assisted to identify the micro-organism and determine dose, is rarely taken in routine treatment except when clinical symptoms indicate a change.
5. A vaccine may be made for every pathogenic micro-organism that can be grown *in vitro.*

One can hardly avoid forecasting that in 1917 clinics will resemble this one more than to-day in definiteness of diagnosis and of remedy; that central laboratories then will identify micro-organisms for the general practitioner as to-day they identify the Klebs-Loeffler bacillus; and as antitoxin and vaccine points are to-day obtainable by the family physician, so these other vaccines will be furnished from some central laboratory. Meanwhile our colleges will continue to improve instruction in diagnosis and therapeutics.

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Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D.,
AND
JOHN LOVETT MORSE, M.D., BOSTON.

SERUM THERAPY IN EPIDEMIC CEREBROSPINAL MENINGITIS.

RECENT investigations have afforded hope of finding a specific cure for cerebrospinal meningitis, by means of serum therapy. Several investigators have prepared sera possessing immunizing powers against the diplococcus intracellularis, such sera being bactericidal in their nature. Kolle and Wassermann [1] advocated the use in meningitis of a serum prepared from horses, which gave good results in experiments on laboratory animals. Jochman [2] also used an anti-serum from the horse, in human cases. The number of his cases were too few to permit the drawing of any conclusions further than that horse serum can be injected into the inflamed spinal canal without danger.

The present hopeful prospects in the serum therapy of epidemic cerebrospinal meningitis are due to the recent studies of Flexner.[3] As a member of the commission appointed by the Board of Health of New York for the investigation of this disease, he made an exhaustive study of the biology of the diplococcus intracellularis. Among other things, he found that the well-known brief vitality of the organism under artificial cultivation is not due chiefly to either exhaustion of the medium, or to the accumulation of the injurious products of growth, except when the latter are present in large quantity. Cold is injurious as is salt solution, sodium chloride being distinctly poisonous to the organism. Disintegration of the organism is due to an intracellular enzyme liberated on the death of the cell, and which is not specific but which causes disintegration of other varieties of bacteria.

The pathogeneity of the organism is very slight toward the ordinary laboratory animals. From the manner in which it causes death, the effects produced are probably due to poison liberated from bacterial bodies in disintegration, rather than to a secreted extracellular poison. Multiplication is not essential, dead cultures and autolysates being lethal, normal blood serum possesses some bactericidal power.

In another paper,[3] Flexner reports his studies with experimental cerebrospinal meningitis in monkeys. They show that the lower monkeys can be infected without great difficulty with the diplococcus intracellularis, and made to reproduce the pathological conditions present in man with epidemic cerebrospinal meningitis. The organisms, when introduced into the spinal canal, distribute themselves within a few hours, and excite an acute inflammation in the spine and base of the brain. The quantity of diplococcus required in monkeys is prodigious compared with the amount probably required in man, and there is probably but little multiplication.

Flexner [3] further reports concerning serum therapy in experimental meningitis. He found that although normal serum has some protecting power, a much higher protecting power is obtained by the use of immune serum. The best results were obtained in monkeys from an immune serum prepared from monkeys.

Since the publication of these papers, an antiserum, prepared by Flexner at the Rockefeller Institute for Medical Research, has been employed in human cerebrospinal meningitis. The serum now in use is prepared from the horse. It has been tested upon several series of cases in various widely separated localities. The full report of these cases will be published by Flexner in the *Journal of Experimental Medicine* for January, 1908. The results have been so exceedingly favorable, that we think this antiserum should be tried in every case of epidemic cerebrospinal meningitis.

Dr. Charles Hunter Dunn, of 220 Marlborough Street, Boston, is collecting further data upon the results of this treatment, and is desirous of obtaining as many cases as possible. He has on hand constantly a supply of Flexner's antiserum, and is ready at any time to carry out the required technic upon any cases, or suspected cases, which may be reported to him. It is important that he be notified of such cases as early as possible in the course of the disease, as the results have shown that the earlier the anti-serum is used, the better is the prognosis.

The technic is lumbar puncture, followed by an injection directly into the spinal canal of a quantity of serum, varying with the amount of fluid obtained by the puncture. This is repeated according to the necessities of the case.

Several cases on our service at the Children's Hospital, in which this treatment has been employed, have shown remarkably favorable results. The importance of this work in connection with so serious and fatal a disease in childhood as epidemic cerebrospinal meningitis cannot be overestimated.

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[1] Kolle and Wassermann: Deut. med. Wochenschr., xxxii, No. 16, p. 94.
[2] Jochman: Deut. med. Wochenschr., xxxii, No. 20.
[3] Flexner: Jour. Exper. Med., March, 1907.

So far as the few cases which have been treated in our medical wards of the Children's Hospital are concerned, the results have been more encouraging than those in 1905, when a series of cerebrospinal meningitis was treated with the antitoxin of diphtheria, and also a series of cases in 1906, treated with the diplococcus vaccine.

In the medical wards of the Children's Hospital, there are, at present, three cases being treated with the serum doing exceedingly well, and one of these, which was very sick in the beginning and looked as if it might die, after a week seemed bright and well.

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Reports of Societies.

INTERNATIONAL DERMATOLOGICAL CONGRESS.

SIXTH INTERNATIONAL DERMATOLOGICAL CONGRESS, HELD AT THE ACADEMY OF MEDICINE, NEW YORK, SEPT. 9 TO 14, 1907.

(Continued from No. 26, 1907, p. 868.)

FIFTH DAY, FRIDAY, SEPT. 13, MORNING SESSION.

PROFESSOR WOLFF, of Strasburg, Germany, DR. ROBERT W. TAYLOR, of New York, and DR. HERMANN G. KLOTZ, of New York, Vice-Presidents, in the chair.

THEME III. THE PRESENT STATUS OF OUR KNOWLEDGE OF THE PARASITOLOGY OF SYPHILIS.

PROF. ERICH HOFFMANN, of Berlin, Germany, opened this discussion. He stated that the spirocheta pallida had been demonstrated with great regularity in acquired syphilis, where it appeared in almost all of the pathological products of the early stage, and frequently in late affections as well (papules, gummata, aortitis). It was sometimes found in the internal organs (spleen, suprarenal body, liver, lungs, cerebral arteries) of patients who had died during the secondary stage. In the child or the fetus affected with congenital syphilis, the internal organs were often flooded with spirochetæ, as it were, in addition to the skin. The spirocheta pallida was best shown in smear preparations with Giemsa's solution, or in sections treated with silver; however, it was equally feasible to employ Giemsa's solution in tissue sections, and silver impregnation in smear preparations. Besides the rapid staining of Giemsa's method, the direct examination of fresh specimens under the darkened field illumination was most advisable for diagnostic purposes. The spirocheta pallida had a predilection for the connective tissue, the lymph vessels, the walls of blood vessels and the interepithelial interstices, but it was sometimes met with in the interior of certain cells; for instance, the hepatic and suprarenal cells, and leucocytes (phagocytosis). Its manner of distribution in the pathological products was often irregular. It found no favorable conditions for its existence in the circulating blood, probably because it was anaërobic. The fact that it occurred not infrequently in unchanged tissues was accounted for by the reaction on the part of the organism being very slow to follow its entrance. The spirocheta pallida was characterized by the delicacy and weak refractive power of the thread; great length in proportion to depth; abruptness and regularity of the convulsions; common occurrence of long terminal threads. Thus, as a rule, it could be readily distinguished from other forms. Its multiplication, according to certain authors whose views Dr. Hoffmann accepted, took place by longitudinal division, as in the trypanosomes. Others assumed transverse division, as in bacteria. A regular cycle of evolution and resting forms had not as yet been demonstrated. All culture experiments had failed, and only their increase in tissue segments seemed to have been successful. The spirocheta pallida was undoubtedly the producer of syphilis, and was possessed of the same importance for the diagnosis of this disease as was the tubercle bacillus for the recognition of tuberculosis.

DR. A. BUSCHKE, of Berlin, also presented a paper on this subject, which was read by title.

DR. OSCAR T. SCHULTZ, of Cleveland, continued the discussion on this subject. He stated that at the present time only cytoryctes lues and spirocheta pallida needed to be considered in a discussion of the parasitology of syphilis. The weight of evidence was against cytoryctes lues, firstly, as to its being a protozoön, and secondly, as to its having anything to do with syphilis. The chief factors in favor of an etiological relationship between spirocheta pallida and syphilis might be briefly summarized as follows: 1. Spirocheta pallida had characteristics sufficiently marked to permit the experienced observer to distinguish between it and other spiral organisms. 2. The organism was present in all the various manifestations of the disease. 3. It was found only in syphilis; not in any other condition. 4. It bore a definite relationship to those histopathological changes which one considered characteristic of syphilis. 5. After the use of mercury, the amelioration of the cutaneous lesions and the disappearance of the spirochetæ went fairly well hand in hand. 6. In the lesions of experimental syphilis in lower animals, spirocheta pallida was present and had the same characteristics as in the human disease. The protozoan nature of the parasite appeared more than probable. While the majority of cases of syphilis were easily recognized by the experienced dermatologist, the finding of spirocheta pallida in a doubtful case was of the greatest value, and must be considered conclusive proof of the syphilitic nature of the case. Because it had thus far been impossible to obtain and grow the organism in pure culture, Koch's laws were not susceptible of proof. However, the constant presence of the parasite in the lesions of syphilis, its presence only in syphilis and not in other diseases, its definite relationship to the pathological changes, its morphological characteristics and its presence in the lesions of experimental syphilis in the lower animals furnished sufficient evidence to establish the etiological relationship of the spirocheta pallida to syphilis.

SYSTEMATIZED LOCALIZATIONS OF THE TREPONEMA PALLIDUM,

by DR. H. HALLOPEAU and DR. GASTOU, of Paris, France. The authors stated that instead of being irregularly scattered without any apparent plan, syphilomata were often found to affect certain organs or certain regions exclusively. These systematized localizations were referable solely to those of the treponema. They might be divided into nine groups: 1. Organic systematizations. 2. Symmetrical systematizations. 3. Systematizations localized in areas of nerve distribution. 4. Systematizations by auto-inoculation, either intra or extra. 5. Systematizations dependent upon prior localizations of some other infectious disease. 6. Systematizations in congenital syphilis. 7. Systematizations through a culture medium of microbic origin; (*a*) through microbes of indifferent character; (*b*) through association of the treponema with other specific microbes. 8. Systematizations through recurrent toxic irritation. 9. Systematizations through lack of elimination and treatment.

OBSERVATIONS IN REGARD TO THE SPIROCHETA PALLIDA,

by **DR. ALBERT DRYER**, of Cologne, Germany. (Read by title.)

DR. CH. WARDELL STILES, of Washington, D. C., said there were many animals that reproduced by transverse division, and in spite of the fact that so much stress was laid upon this test in deciding the question as to whether the treponema pallidum was a protozoön or not, the test was not final. If it reproduced by longitudinal division, then the probabilities were in favor of the organism's being a protozoön, but if the division were transverse, it might be either a bacterium or a protozoön. The speaker thought the name treponema pallidum was preferable to spirocheta pallida.

DR. BOLESLAW LAPOWSKI, of New York, said that before we could accept the theory that the spirocheta pallida was the cause of syphilis, at least two requirements were to be fulfilled: first, to demonstrate the presence of structures which were considered as spirocheta pallida in the tissues of a syphilitic fetus before it reached the third month; second, to demonstrate the presence of the spirocheta pallida in the internal organs of apes inoculated with syphilis, which organs must be in a fresh condition (absence of mixed infection). The speaker said that while he did not wish to make the assertion that the spirocheta pallida was *not* the causative factor of syphilis, he did not believe that all the conclusions to that effect drawn by the readers of the papers could be verified; in other words, they had not proven their point, and further verification was necessary.

The discussion was continued by **PROF. ALEX. RENAULT**, of Paris, **DR. T. TANAKA**, of Tokio, and was closed by **PROFESSOR HOFFMANN**.

THE DANGERS OF SYPHILITIC INFECTION IN MASSAGE,

by **DR. ROBERT W. TAYLOR**, of New York. The author reported in detail a case of syphilitic infection, apparently caused by the manipulations of the masseur. The patient had not had coitus for months, his habits were correct, and the only person who had had access to his legs and arms was the masseur. The case was that of a healthy man having simple efflorescences over the legs and arms, who was infected by a luetic masseur, whose hands had become soiled with the secretions of mucous patches.

A CONTRIBUTION TO HEREDO-SYPHILOLOGY.

DR. ROBERT W. TAYLOR, of New York, said our early concepts concerning hereditary syphilis were largely erroneous and inadequate, and that the following summary of conclusions was warranted by up-to-date observations, studies and results: 1. The absence of very early manifestations in heredo-syphilis was no criterion that the infant was not infected. Spontaneous involution of the diathesis was most rare, and could never be asserted. It was not a haphazard accident. 2. In many cases the early exanthematic manifestations might be wanting, but, later on, specific or dystrophic lesions might show themselves. 3. Treatment of the infected infant should always be promptly begun and persisted in as sedulously as in the adult acquired disease. 4. Age and treatment tended to cure the child. 5. The view that inherited syphilis was at first superficial and later became deep and visceral was false, since the whole organism was involved from very early life. 6. Syphilis hereditaria tarda was not exceptional. It might occur at about the eighth and twelfth years, and even earlier, and frequently was encountered at all periods up to the thirtieth year of life, and perhaps later.

AFTERNOON SESSION.

DR. VEIEL, of Cannstatt, Württemberg, and **DR. ABNER POST**, of Boston, Mass., Vice-Presidents, in the chair.

QUATERNARY OR ATTENUATED HEREDITARY SYPHILIS OF RETICULAR TISSUES (APPENDICITIS, ADENOID VEGETATIONS AND SCROFULA),

by **PROF. E. GAUCHER**, of Paris, France. According to the author, appendicitis might be the result of a syphilitic heredity in the second generation. His designation of quaternary syphilis in acquired as well as hereditary cases corresponded to the parasyphilis of Fournier. This syphilitic or congenitally specific origin of appendicitis, which had been maintained by him since 1904, had given rise to a good deal of contradiction, and was far from being generally conceded. The paucity, or rather the absence, of accurate statistics was referred by him to the fact that about 50% of all trained observers, namely physicians, were themselves affected with syphilis. In the history of his appendicitis cases, the author almost invariably found syphilis, either acquired or congenital. Accurately speaking, among 32 cases of appendicitis there were 8 old syphilitics and 21 children of syphilitic parents. A very striking feature in the history of appendicitis was its frequent occurrence as a family disease. Instead of holding the grippe responsible, as was commonly done, this family appendicitis should be laid to the score of syphilis, rather than any other cause of an infectious character. Syphilis, congenital or acquired, did not give rise to appendicitis directly; it was merely a predisposing factor, favoring the hypertrophy and chronic inflammation of the recticular tissue of the appendix, which thus became a suitable soil for the action of irritative, infectious or suppurative agents of all kinds. In other words, while appendicitis might possibly occur in the absence of syphilis, the lesion of the recticular tissue, which in the majority of cases constituted the preliminary or pre-suppurative stage of appendicitis, was almost invariably a manifestation of quaternary or attenuated syphilis. Specific heredity, either direct or in the second generation, was also the cause of hypertrophy of the reticular tissue of the antrum, terminating in the formation of adenoids. Congenital syphilis was found by the author in the majority of the children coming under observation for adenoid vegetations. In those cases where syphilis was not found in the parents, there was reason to suspect it in the grandparents, as in appendicitis. There was an interesting observation on record by Van Huysen, showing the existence of appendicitis, adenoids and convergent strabismus in the same heredito-syphilitic children of the second generation. If it were more often sought for and more readily recognized, this specific heredity in the second generation would certainly furnish the etiological explanation of many a case of adenoids or appendicitis which was not at present referred to the true cause for lack of sufficient information. The recognition of the heredito-specific origin of adenoids was so much the more important, as the anatomical basis of scrofula must be referred to the existence of the vegetations and the resulting suppuration of the antrum. Scrofula was a chronic intoxication of microbic origin, with its starting point in the antrum. The microbic toxins formed by the local suppuration were absorbed by the mucosa of the rhinopharynx, taken up by the lymphatics, and distributed by the circulation throughout the organism. Scrofula thus being derived from the chronic inflammation of the rhinopharynx, and the causative adenoids being of more or less remote syphilitic origin, it followed that scrofula was a sequel to quaternary hereditary syphilis. In other words, the primary and essential condition of scrofula consisted in hereditary syphilization. Disease of the cervical lymph glands, so commonly observed in these cases, did not invariably develop upon the soil of tuberculosis, but was sometimes dependent upon congenital syphilis.

Dr. Joseph Grindon, of St Louis, said the progress of science seemed to be sometimes in a circle. Our fathers believed in the syphilitic origin of scrofula. We smiled at their seeming ignorance, but if Professor Gaucher was right, we were almost back where we started from. In order to establish a causative relation between syphilis on the one hand and appendicitis and adenoid vegetations on the other, it would be necessary not only to show that a large number of cases of the latter conditions exhibited syphilitic antecedents, but that they did so in greater proportion than would be accounted for by the incidence of syphilis in the entire community.

Dr. Frederic R. Sturgis, of New York, said he was a little skeptical in regard to the transmission of these parasyphilitic lesions, and he did not believe that appendicitis or adenoid vegetations could be traced to a previous syphilis, either in the grandparents or the great-grandparents. If that doctrine were true, few, if any of us, would not show some evidence of syphilis, for there were perhaps none who could not claim the honor of having had a syphilitic ancestor.

Dr. De Keyser, of Brussels, also discussed Professor Gaucher's paper.

SYPHILIS IN THE RABBIT, PRODUCED BY PURE CULTURES OF THE SYPHILIS BACILLUS,

by **Dr. Max Von Niessen**, of Wiesbaden, Germany. (Read by title.)

THE PATHOLOGY OF TROPICAL ULCER (DELHI SORE) AND MYCETOMA (MADURA FOOT),

by **James Homer Wright**, of Boston, Mass. (Read by title.)

ENDARTERITIS OF THE MINUTE BLOOD VESSELS OF THE SKIN. A NEW SYMPTOM OF SYPHILIS AND ITS RELATION TO CUTIS MARMORATA, TO LARGE SYPHILODERMA MACULOSUM AND TO THE SPIROCHETA,

by **Prof. S. Ehrmann**, of Vienna, Austria. (Read by title.)

THE OSTEOPATHIES OF HEREDITARY-QUATERNARY SYPHILIS,

by **Prof. E. Gaucher** and **Dr. Levy-Bino**, of Paris, France.

RADIOGRAMS OF SYPHILIS OF THE LONG BONES.

Dr. Martin W. Ware, of New York, said that syphilitic affections of the bones had been the last of the bone diseases to be subjected to x-ray examinations. Whereas, it could not be claimed that a pathognomonic picture might be obtained in every instance, yet a succession of these radiograms showed a uniformity in the type of the findings which corresponded in a striking manner with the picture of the gross pathological appearances of syphilis of the bones. It was therefore justifiable to speak of "characteristic findings" in syphilis of the bones which, taken in conjunction with the data of the anamnesis, materially added to the certainty of the diagnosis. Furthermore, a prognosis might be based on the findings and the efficacy of treatment estimated by the regressive changes of the bones visible in the radiograms. Most characteristic was the periosteal involvement in syphilis of the bones, and the differentiation of syphilitic dactylitis from tuberculous dactylitis was very marked. Osteomyelitis of a chronic nature dependent on pus organisms might at times give x-ray pictures which were difficult to differentiate from those of syphilitic origin; the latter, however, were singled out by facts in the history of the case. On the whole, the productive character of the syphilitic inflammation of the bone manifested itself in the dense shadows of the radiogram. Gummatous deposits which caused absorption were discernible by the lighter shadows, but most commonly surrounded by the denser shadows of areas of bone consolidation. The atrophy of bone peculiar to tuberculosis was wanting in the radiograms of syphilitic bone disease.

HUTCHINSONIAN TEETH. THEIR VARIATION AND THEIR VALUE.

Dr. Abner Post, of Boston, Mass., said that in order to appreciate the full value of Hutchinsonian teeth, one must know their life history and their relation to other symptoms. They were formed before birth. They were often associated with keratitis and deafness (Hutchinsonian triad). The typical Hutchinsonian teeth were peg-shaped, notched, beveled from front to back, and often assumed an unnatural position toward each other. Many teeth were found which presented some but not all of these characteristics. These imperfect Hutchinsonian teeth were of value, when alone, in awakening suspicions; when connected with the other symptoms, in confirming a diagnosis of syphilis.

PERIPHERAL SYPHILITIC ARTERITIS.

Dr. Hermann G. Klotz, of New York, said that since the publication of Huebner in 1874, it had been known and generally accepted that syphilis might directly cause pathological processes in the arteries of the brain. It would seem obvious that arteries in other parts of the body might become similarly affected. A number of observations showing arteritis of peripheral arteries due to syphilis had been published, but generally not much attention had been paid to them. Quite a number of such cases had been classed as Raynaud's disease, and syphilis was usually mentioned as one of the causes of that disease. What were really the essential features of Raynaud's disease? Could they be directly caused by syphilis? The writer then discussed the symptoms of peripheral syphilitic arteritis and referred to his former publications on the subject. He emphasized the practical importance of distinguishing the cases of syphilitic arteritis from those of Raynaud's disease, and of calling them by their proper name.

Dr. Howard Fox, of New York, said the subject of gangrene, due to peripheral syphilitic endarteritis, had recently been discussed by Maurice Druelle, a pupil of Professor Gaucher, who had been able to collect only fourteen cases in the entire literature. Many cases had probably been unrecognized or had been wrongly called Raynaud's disease. It was important that cases of peripheral syphilitic endarteritis should be recognized as such, so that proper treatment could be instituted.

Dr. A. Ravogli, of Cincinnati, emphasized the fact that there should be a clear distinction between Raynaud's disease and peripheral syphilitic endarteritis. In Raynaud's disease, we had to deal with an affection of the vaso-motor nerves, and potassium iodide and mercury were of no avail, whereas in gangrene due to syphilitic endarteritis, brilliant results from antisyphilitic treatment were obtained.

A SIMPLE AND RAPID MICRO-CHEMICAL METHOD FOR THE DETECTION OF MERCURY IN THE URINE,

by **Dr. C. Lombardo**, of Modena, Italy.

TREATMENT OF SYPHILIS,

by **DR. GEORGE K. SWINBURNE**, of New York. This was a plea for the avoidance of giving mercury in any form by the mouth, at least as the main reliance in the treatment of syphilis.

CLINICAL REPORTS ON (*a*) SYPHILITIC REINFECTION. (*b*) SYPHILIS INSONTIUM,

by **DR. GEORGE K. SWINBURNE**, of New York. This paper gave the reports of three cases of chancre of the tonsil.

THE USE OF MINERAL WATERS IN THE TREATMENT OF SYPHILIS,

by **DR. JEAN DARDEL**, of Aix-les-Bains, France. The author stated that while the specific treatment of syphilis was, of course, mercury and the iodides, very often physical and hygienic agents, such as the old treatment with mineral waters, etc., were needed in addition. These auxiliary agents had a complex end in view. They tended to strengthen the organism and aid it in its fight against the disease. They also increased the absorption of the mercury and its assimilation, so that an intensive of rapid treatment could be attained. There were three kinds of mineral waters that were useful in the treatment of syphilis: the sulphur, the common salt or muriated and the arsenical waters. The therapeutic indications for each of these waters depended upon the condition of the patient and the state of the disease at the time.

THE TREATMENT OF SYPHILIS BY THE PRODUCTS OF THE BRAZILIAN FLORA,

by **PROF. EGAS MONIZ BARRETO DE ARAGAO**, of Bahia, Brazil. (Read by title.)

VERRUCÆ PLANTARES. THEIR PREVALENCE IN BOYS AND YOUNG MEN, AND THEIR PATHOLOGY,

by **DR. JOHN T. BOWEN**, of Boston, Mass. In this paper, the author stated that, during the last ten years, so many cases of this affection had been seen in the neighborhood of Boston that the frequency of their occurrence should be especially emphasized. These lesions were particularly prevalent in preparatory schools and in colleges; in fact, four fifths of all the cases observed were in that class of people. The frequency of their occurrence in schools and colleges would give rise to the suspicion that they might be infectious in nature and auto-inoculable. In a number of instances, the lesions had reappeared in the cicatrix after what seemed to be thorough excision. The histological structure of these verrucæ was very peculiar. As had been accurately described by Dubreuilh, a peculiar vacuolation of the rete cells took place. In addition to the changes heretofore described, the writer had noted the presence of round bodies and rings in the nuclei, which stained well with eosin. These bodies, in some respects, suggested parasites, but it was more probable that they were some form of degeneration of the nucleus.

SIXTH DAY, SATURDAY, SEPT. 14.

DR. HENRY W. STELWAGON, of Philadelphia, in the chair.

ZOSTER ARSENICALIS.

DR. JOSEPH ZEISLER, of Chicago, submitted brief notes of his own observations of 11 cases of arsenical zoster recorded in a period of twelve years. The main point in all of these cases was that arsenic was the chief internal medication, and in all of them there developed, after a variable period and usually when a maximum dosage had been reached, a clinically unmistakable zoster. In these 11 cases, the underlying original trouble was psoriasis in 5, lichen planus in 3, pseudoleukemia, alopecia areata and erythema, each 1 case. The time interval required for the development of zoster varied from four and a half weeks as the shortest period, to three months as the longest. It always occurred while the patient was still taking his arsenic, and usually when a high dosage had been reached. It seemed to the writer that the direct connection between the medication and the subsequent eruption of zoster in all these cases was easily established. To consider the appearance of zoster in all of them as a casual occurrence would mean to willfully ignore the chronological development of clinical phenomena.

DR. M. B. HARTZELL, of Philadelphia, said that considering the large number of cases in which arsenic was administered, only a small proportion developed zoster. The development of this form of eruption was apparently dependent not so much on dosage as it was on the duration of the administration of the drug.

DR. JOSEPH GRINDON, of St. Louis, said that clinically, zoster arsenicalis was much the same as true zoster. Etiologically, we could recognize several forms of zoster, but the true zoster, as taught by Erb, was a zymotic and probably a contagious disease. Again, there was a class of zosteriform eruptions due to a variety of causes, and we also had the toxic cases, such as those due to arsenic.

The discussion was continued by **DR. GEYER**, of Zwicau, Germany; **DR. J. NEVINS HYDE**, of Chicago; **PROF. ERICH HOFFMANN**, of Berlin; **DR. C. F. JAPPE**, of Davenport, Iowa, and was closed by **DR. ZEISLER**.

FAILURE IN PROTEID METABOLISM AND ITS RELATION TO THE PRODUCTION OF CERTAIN TYPES OF DERMATITIS,

by **DR. JAMES C. JOHNSTON** and **DR. HANS J. SCHWARTZ**, of New York. The cases in which urinary examinations were made included urticaria, erythema multiforma, eczema, psoriasis, dermatitis herpetiformis, prurigo, rosacea and pruritus. The amount and percentage of the nitrogen bodies were determined, together with any abnormality that might appear, such as the presence of acetone and increase of indican. A definite relationship was often observed between disturbance of the normal ratios and outbreaks in the skin. In subacute and chronic cases there seemed to be a pathological level in the percentages, indistinguishable from the normal slight variations. In cases of indigestion, gastric or intestinal, great changes in the nitrogen partition were rarely found. On the other hand, patients might have acute dermatitis of one sort or another with high rest percentage and low urea and no perceptible indigestion. The conclusion seemed justified that the fault lay chiefly in the intermediary metabolism, a view possibly supported by the effect of thyroid treatment. There was no discernible effect of the toxemia on the kidney structure. Since the changes in the partition resulted chiefly from failure of urea synthesis, and as the members of the series were nontoxic in any ordinary dosage, probably the variations were to be viewed as results of the toxemia, like the lymphocytosis of squamous disease, and the eosinophilia of bullous. The auto-intoxication itself seemed a result, not a cause, of disturbed metabolism. Indicanuria indicated an accidental accession to the toxemia which had no relationship to disturbance in the nitrogen partition.

DR. MARTIN F. ENGMAN, of St. Louis, said that with others he had thought it highly probable that the intestinal putrefaction was not the cause of the symptoms that Dr. Johnson had pointed out, and that back of it there was probably a failure in resistance which allowed the micro-organisms in the intestinal canal to produce putrefactive changes. In dermatitis herpetiformis, he had always found an increase in indican, and taking that as a symptom and guide, he had obtained most excellent results by placing these patients on an absolutely vegetarian diet and giving intestinal stimulants, usually mercury in some form, to keep the bowels open.

Dr. Thomas C. Gilcrist, of Baltimore, said the paper of Drs. Johnston and Schwartz opened up a line of work which had been too much neglected by dermatologists. The sweat apparatus, taken collectively, was a gland which compared with the kidneys in its functions. The elimination of deleterious substances through the sweat glands might be the cause of skin eruptions, and these substances were probably also eliminated by the kidneys.

The discussion was continued by Prof. E. Gaucher, of Paris, and was closed by Dr. Johnston.

SOME EXPERIMENTAL OBSERVATIONS ON URTICARIA FACTITIA,

by Dr. T. Caspar Gilcrist, of Baltimore, Md. This consisted of a lantern slide demonstration of the changes observed in the skin in urticaria factitia.

Dr. Gilcrist's remarks were discussed by Dr. Herman Lawrence, of Melbourne, Australia, and Dr. Geyer, of Zwicau, Germany.

A CASE OF SARCOID.

Dr. S. Pollitzer, of New York, reported the case of a married woman, thirty-five years old, with tuberculosis pulmonum and a large cavity in the right lung, but well nourished and healthy looking. Her cutaneous affection began about five years ago with the sudden appearance of bright and dull red, round or oval, slightly elevated areas from 5 to 20 mm. in diameter, flat, with perfectly normal surface and sharply defined border, without subjective sensation. When the patient was first seen, two and a half years ago, the lesions then present had not changed noticeably since their first appearance. They were located in the forehead, cheeks, neck, the shoulders, arms and forearms, and one near the umbilicus; in all about fifteen lesions, which had appeared in succession at varying intervals. Two years later, the patient was seen again. All the old lesions persisted almost unchanged; a few seemed less infiltrated and less red; no atrophy, no scarring. But in the meanwhile, new lesions had appeared; a group of five on the tip and sides of the nose, one on each forearm and one on the right leg above the ankle. The latter, which had appeared four months before, was excised. One half the lesion, used for histological study, showed sharply defined areas of infiltration, made up of epithelioid and a few giant cells, strongly resembling tubercle; no tubercle bacilli. The other half of the lesion in fine suspension was injected intraperitoneally into three guinea pigs, which, killed after six weeks, showed no sign of tuberculosis.

At the completion of the scientific portion of the program, the Secretary-General, Dr. John A. Fordyce, of New York, made a supplementary report, which was accepted. He stated that letters had been received from Professor Unna, of Hamburg, and others, expressing regret at their inability to be present, and wishing the congress every success.

Upon motion of Dr. M. B. Hartzell, of Philadelphia, a unanimous vote of thanks was extended to the New York Academy of Medicine for their generosity in extending the use of their building to the congress.

Dr. Stafford Taylor, of Liverpool, England, moved that a vote of thanks be extended to the organization committee and all the officers and members who had done so much to make this congress a success. This motion was seconded by Professor Bertarelli and Prof. E. Gaucher, of Paris, France, and was unanimously carried.

The president, Dr. James C. White, of Boston, in his valedictory remarks, stated that the members of the congress might well claim that the interests of dermatology had been advanced by this meeting, and their mutual respect and attachment had been enlarged and strengthened. Might all find in its spirit and accomplishment fresh inspiration for future labors and progress. He thanked the members for the kind consideration they had shown the president and for the happily expressed appreciation of their efforts. He said a spark from our embers has been transmitted to Rome, where vestal fires are well preserved, which shall burst forth in full effulgence in 1911. He then declared the Sixth International Dermatological Congress dissolved.

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Book Reviews.

Anesthetics, Their Uses and Administration. By Dudley Wilmot Buxton, M.D., B.S., M.R. C.P.; sometime President of the Society of Anesthetists; member of University College; Administrator of Anesthetics and Lecturer in University College Hospital, etc. Fourth edition. Philadelphia: P. Blakiston's Son & Co. 1907.

This is a sound and authoritative little book of 400 pages, by a past-master of the subject. It is pleasantly written and full of information on all aspects of anesthesia and all forms of anesthetics. We commend it especially to general practitioners and to medical students.

Handbook of Cutaneous Therapeutics, Including Sections on the X-ray, High Frequency Current, and the Minor Surgery of the Skin, for the Use of General Practitioners. By W. A. Hardaway, M.D., LL.D., and Joseph Grindon, Ph.B., M.D. Lea Brothers & Co. 1907.

"Hardaway's Manual of Skin Diseases" forms the basis of this book, which has been written not for the specialist, but for the general practitioner. The descriptions of the various diseases and their general and medicinal treatment have been written by Dr. Hardaway, while Part II, which treats of radio-therapy and electro-therapy, etc., has been written by Dr. Grindon. Although the writers say in their preface, that rare and unimportant diseases have been intentionally omitted, a glance through the book shows the presence of a considerable number of affections that would fall under this heading, such as keratosis follicularis, lymphangioma circumscriptum, ulerythema sycosiforme, etc. The book is very clearly written and carefully compiled. Numerous prescriptions appear on nearly every page, and at the end of the description of many of the affections, additional prescriptions are appended. The value of these latter is less obvious, inasmuch as their indications and directions for their use are not especially emphasized.

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STATE CARE FOR THE BOSTON INSANE.

IT is a great satisfaction to all who have at heart the best interests of our dependent insane, that a determined movement has at last been inaugurated to include all of the insane of Boston among the wards of the state, thereby securing to them the advantages of nearness to their relatives which the rest of the insane of the Commonwealth now enjoy, and enabling the state to formulate a comprehensive and harmonious system of care for the entire insane population, under public supervision.

In the last stages of the passage of the State Care Act of 1900, the city of Boston was unfortunately excepted from its provisions through the efforts of certain of its representatives in the legislature. They labored under two misapprehensions: first, that such a law would operate to take these patients away from Boston, and, second, that the state would not agree to purchase the Boston Insane Hospital. In these opinions they were wholly mistaken. The purchase of that institution was a prominent feature in the development of the plans for the care of the insane in Boston and vicinity as evidenced by the recommendations of the Board of Insanity at the time, and had Boston been included, she would undoubtedly have now been caring for several times as many patients as at present because the Boston hospital would have been one of the several centers of development as is the case of every other such institution in the state. By remaining out, Boston has done little for herself, and now provides within her territory for only one out of every three of the patients that she is entitled to care for. As it is now, two thirds of the patients having settlements in Boston are in state hospitals from twenty to forty-five miles away. To swell this number are the many patients, now inmates of state hospitals at a distance, who have no settlement in Boston, but who are committed from this city because they reside here. This class forms the bulk of the Boston insane, and the fact that they have no legal settlement in Boston should not debar their relatives from having easy access to them. Looking at the situation from another aspect, it appears that 1,200,000 of the 3,000,000 inhabitants of the state live in the so-called metropolitan district — that is, the area within ten miles of the State House, and that only 700 insane patients from this large section are cared for in or near Boston, although from 37% to 46% of all commitments throughout the Commonwealth to the state insane hospitals are of patients living within the metropolitan district. Inmates of the various state hospitals are being constantly transferred at the request of their relatives to the institutions near their homes, but this privilege is denied to the large mass of residents of Boston who have insane relatives requiring public care. These disadvantages would all be obviated by the creation and gradual development of a large public institution and colony for the insane in the metropolitan district, a project which cannot be effected so long as the custody and control of the city's insane is subject to municipal administration.

Another great advantage to come of the care of the local insane under state management would be the establishment of an emergency station and observation hospital, a matter which concerns not only the city but the entire metropolitan district as well. By the report of the State Board of Insanity of 1904, it appears that from one third to one half of the patients in Boston committed to insane hospitals are obliged to go temporarily to the House of Detention, the city prison or Deer Island, prior to their transfer to the state hospitals. Aside from the impropriety of associating the insane with criminals, whose rights also may be infringed by the turbulence of violent cases of insanity, provision for medical attention and nursing is wholly inadequate in such places of detention. There are, moreover, frequent cases of transient or obscure mental disturbance which may quickly clear up or be arrested in development and thus escape treatment in an insane hospital. An observation hospital for the temporary care of such cases, properly equipped and provided with a competent medical and nursing staff, would be invaluable. Similar establishments have long been in successful operation in New York City, Albany and elsewhere in this country, and in many places abroad. The importance of such a provision was first urged in our editorial columns in 1889, and has since been the subject of frequent contributions in the Journal. The time seems now ripe for its fruition.

We have not dealt with the economical advantages to accrue to the city from the adoption of state care for its insane, not the least of which is the yearly gain to its treasury,—computed at $75,000,—as this aspect of the situation has been fully treated in the recent report of the finance commission published in the daily press.

We cannot too strongly urge upon the profession throughout the state their hearty and practical co-operation in the concerted effort that is now being made to secure early and wise legislation on this important measure.

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STATE TUBERCULOSIS WORK.

In accordance with Chapter 474 of the Acts of 1907, entitled "An Act to provide for establishing three sanatoriums for tubercular patients," his Excellency, Governor Guild, appointed a commission of nine, of which Dr. Arthur T. Cabot is chairman, to carry out the work named in the act.

This commission, with an office in the Ford Building, is actively at work. It has already selected a site and is busy with plans for the construction of the first hospital, in the northeastern part of Massachusetts. This hospital will be in close railroad connection with Haverhill, Lawrence, Lowell, Lynn, Newburyport, Salem and other cities and towns in Essex and Middlesex counties. The remaining two hospitals are to be in the southeastern part of the state and in the Connecticut Valley, respectively.

Section 9 of the act under which the commission is working contains a significant clause: "They may also disseminate information as to the best methods of combating the disease." This part of the commission's duties is of the greatest importance. To do this work adequately and effectively the commission must secure the co-operation of all societies and individuals in the state that are doing any tuberculosis work.

First among these forces is the medical profession itself. In 1906, when President of the Massachusetts Medical Society, Dr. Cabot obtained the appointment of committees for the Control and Prevention of Tuberculosis in all the districts of the state. These committees are organized into one whole known as the Associated Committees of the Massachusetts Medical Society for the Control and Prevention of Tuberculosis, of which Dr. T. F. Harrington is secretary. Their first report, published in 1905, was, with a few notable exceptions, a summary of what should be done rather than a report of things accomplished. The second annual report of these committees shows a very decided increase of interest and activity throughout the state. Exhibits have been held in fourteen cities during the past year. Anti-tuberculosis societies have been formed in eight cities. Classes and clinics for tuberculous patients have been started in five or more new places. Nurses for visiting tuberculous patients are provided in a number of places and a great number of lectures (between one and two hundred) have been given for the education of the people.

The greatly increased interest in the treatment of the tuberculosis question, which led to legislative action making registration compulsory and ordering the building of three state hospitals, was, in considerable part, due to members of the associated committees.

This commission wishes to co-operate with these committees and to assist them in all possible ways. Now is the time, even before these three new hospitals for advanced and moderately advanced cases are built, for cities and towns to get to work to find out exactly what is the state of affairs in their neighborhood, what cases of consumption there are, whether those cases are suitable candidates for these new hospitals or should be sent to Rutland or a similar institution, and in short to prepare the way for these new sanatoria, so that when they are ready for use the patients may be ready for them. Anti-tuberculosis societies, dispensaries and nurses must do a great deal of this work. This commission will gladly help in all possible ways.

Non-medical forces should be urged to co-operate. Churches and women's clubs must be aroused; the latter indeed seem already awake to the situation. The prophylactic work at Mr. Joslin's factory in Oxford, Mass., and the work of Dr. Frank Fulton in Providence, among the factory employees, should be better known and should be widely copied in manufacturing centers. The public should be kept informed by means of the daily and weekly press as to what is needed and what is being done. This commission is already publishing, from time to time in nearly two hundred papers in Massachusetts, short articles of interest to the public. Local organizations should lend their aid in this effort to enlighten and direct the people.

The commission invites the active co-operation of the medical profession and other forces working against tuberculosis in Massachusetts.

LORD KELVIN.

Lord Kelvin (William Thompson), who died recently at eighty-three, had been during twenty years an acute sufferer from facial neuralgia; yet this did not seem to curtail the immense energy, the insistent occupation, and the scientific achievement which constantly marked his half-century's professorship of Natural Philosophy in the University of Glasgow. At the end of that life era "Lord Kelvin's Jubilee" took place; and this great celebration was attended by delegates and visitors from almost everywhere in the world. It was on this occasion that he observed, with Newton-like self-depreciation: "One word characterizes the most strenuous of the efforts for the advancement of science that I have made perseveringly in the last fifty-five years; that word is failure." Yet many would have thought they had fairly well done their duty by humankind had they accomplished a tithe as much. Indeed, it has been said that from 1846, when he took his professorial chair, the history of his life-work was in no small degree the history of physical science.

In addition to the routine work of instruction he took a very special interest in electricity. He was the first to measure accurately this force with regard to submarine cables, and to educe the law which governs the speed of an electric signal; he presented a theory of the mechanical forces involved in laying a cable; he invented many instruments for measuring the strength of electric currents, and delicate apparatus for receiving messages, such as the "siphon recorder," and a telegraph key. His was the scientific mind which more than any other made the cable a commercial success. There are, indeed, few departments in the science of electricity that have not been under the influence of his intellect. And it is a curious thing that he should have passed away at this time, when the wireless transatlantic system seems to be making submarine cables less indispensable. He greatly improved the mariner's compass, and thus presented an incalculable boon to the mariner and to the world's commerce. He speculated much concerning the age of the earth, and the nature of atoms; he designed one of the earliest practical alternating current dynamos; he sought the precise amount of mechanical power which was the equivalent of a given unit of heat. Such are among the achievements of this man, who spoke of his life-work as a "failure."

In his memorable jubilee address he said further: "I know no more of electric or magnetic force, or of the relation between ether, electricity and ponderable matter, or of chemical affinity than I knew and tried to teach to my students fifty years ago, in my first sessions as professor." In speaking thus Lord Kelvin but acknowledged his mind to have been finite; had he known what these things are, he would have known the nature of matter, which no man has yet discerned. His achievements were sufficiently momentous when he was able to reveal, in so great measure as he did, not *what* these forces were, but *how* they were manifested.

His ability to inspire other scientific men, and his encouragement of them in their labors, was very great; yet his influence lay oftentimes in a wholesome and cautious conservatism — an influence essential to true progress in science. When Ramsay and Soddy believed they had transmitted helium and radium, he was earnestly skeptical, but in a way to increase rather than to dampen enthusiasm. When the electrical theory of the atom (that it is made up of myriads of negatively charged ions) was almost indicated, he considered, not that it was true, but that it was credible. His biography will be worthy the deep study of the neophyte in science; for his temperament was ideally scientific. He had imagination, without which hypothesis or the making of theories is impossible; his faculty of invention was great; but withal he had an intensely practical, common-sense mind. He was a skilful experimenter, a profound mathematical reasoner; and sound judgments were the outcome of his deliberations.

INVESTIGATION OF ANTERIOR POLIOMYELITIS BY THE MASSACHUSETTS STATE BOARD OF HEALTH.

We have on several occasions during the last few months, called attention to the collective investigation of anterior poliomyelitis being carried out in New York, where an exceptionally large number of cases of this disease has occurred during the fall months. We are particularly glad to call attention to the recent action of the Massachusetts State Board of Health in likewise taking up this important investigation. A circular has recently been widely sent to physicians calling attention to the prevalence of poliomyelitis in New York and also in New England, with the request that practitioners send to the Board of Health information regarding acute febrile disturbances followed by paralysis, which may have come under their observation. The Board of Health is particularly anxious to secure immediate notification, by telephone or otherwise, of every new acute case, in order that certain examinations may be made at this early stage of the disease. Investigation up to this time has conclusively shown that there is small likelihood of getting at the etiology of this affection by a study of advanced cases. It is, therefore, the more desirable that cases should be studied at the very earliest possible moment by bacteriological or any other means that may present themselves. It is hoped, by such early study, to arrive at conclusions of importance. We, therefore, are glad to second this admirable move on the part of the State Board of Health and to urge physicians to notify, at once, the Board of Health of cases of this disease occurring in their practice.

MEDICAL NOTES.

National Association for the Study and Prevention of Tuberculosis. — The Fourth Annual Meeting of the National Association for the Study and Prevention of Tuberculosis will be held in Chicago, June 5 and 6, 1908.

The organization of the sections has been arranged as follows:

Sociological Section: Mr. Ernest P. Bicknell, Chicago, Chairman; Mr. Alexander M. Wilson, Chicago, Secretary. Clinical and Climatological Section: Dr. Henry Sewall, Denver, Chairman; Dr. H. W. Hoagland, Colorado Springs, Secretary. Pathological and Bacteriological Section: Dr. L. Hektoen, Chicago, Chairman. Surgical Section: Dr. A. E. Halstead, Chicago, Secretary. Section of Tuberculosis in Children: Dr. William F. Cheney, San Francisco, Chairman.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 25, 1907, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 58, scarlatina 47, typhoid fever 3, measles 26, tuberculosis 60, smallpox 0.

The death-rate of the reported deaths for the week ending Dec. 25, 1907, was 24.64.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Dec. 28, 1907, was 271, against 219 the corresponding week of last year, showing an increase of 52 deaths and making the death-rate for the week 23.19. Of this number 130 were males and 141 were females; 267 were white and 4 colored; 160 were born in the United States, 109 in foreign countries and 2 unknown; 55 were of American parentage, 184 of foreign parentage and 32 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 62 cases and 1 death; scarlatina, 48 cases and 1 death; typhoid fever, 5 cases and 1 death; measles, 24 cases and 0 deaths; tuberculosis, 63 cases and 21 deaths; smallpox, 0 case and 0 deaths. The deaths from pneumonia were 58, whooping cough 0, heart disease 43, bronchitis 12 and marasmus 3. There were 13 deaths from violent causes. The number of children who died under one year was 29; the number under five years 46. The number of persons who died over sixty years of age was 77. The deaths in public institutions were 85.

There were 2 cases and 2 deaths reported from cerebrospinal meningitis during the week. There were also 18 deaths from la grippe reported during the week of 2 are non-complicated.

A Bequest to the Poor and Diseased. — Through the will of the late Mrs. A. E. Rines, of Boscawen, N. H., an amount estimated at $25,000 has been left as a trust fund for the benefit of "the poor and diseased."

Funds for Tuberculosis Camp. — It is announced that through the generosity of an unknown benefactor the day camp for tuberculosis at Mattapan has received sufficient funds to remain open until Feb. 1. Recently an appeal was sent out for contributions sufficient to sustain the camp until Jan. 1.

Tuberculosis Exhibit in Brookline, Mass. — A free tuberculosis exhibit under the auspices of the Brookline Anti-Tuberculosis Society will be held in the Union Building, Brookline, Mass., from Dec. 28 to Jan. 5. The exhibit will be open daily, including Sundays, from 2 p.m. to 10 p.m., and addresses, with the exception of one day, will be given every evening, by Dr. Edward O. Otis, President of the Boston Association for the Relief and Control of Tuberculosis, and others by various physicians and laymen particularly interested in the movement.

NEW YORK.

Gift to German Hospital of Brooklyn. — On Christmas Eve the German Hospital of Brooklyn received a check for $7,500 from the Aid Society of the hospital, this sum having been raised in a series of benefit performances.

Vaccination of Newsboys. — Some two hundred and twenty-five boys at the Newsboys' Home on New Chambers Street had an unexpected Christmas treat when, at two o'clock on the morning of Dec. 24, a physician of the Health Department roused them from their slumbers, and, with the assistance of a policeman to prevent any from escaping, proceeded to vaccinate the entire number. This early morning visit, he explained, was timed so as to catch as many newsboys on the premises as possible.

Farm Colony for Homeless and Unemployed. — At a conference of representatives of various charitable societies, which was held on Dec. 27, and at which Commissioner Hebberd, of the Department of Public Charities, presided, it was decided, in view of the unusually large number of homeless and unemployed men now in New York, to prepare a bill for the legislature, now about to meet, providing for the establishment of a farm colony near the city, such as has proved successful in Switzerland and elsewhere.

Saturday and Sunday Hospital Association. — In the circular sent out by the Saturday and Sunday Hospital Association, preliminary to the annual collection on Dec. 28 and 29, it was stated that during the past year the institutions belonging to the association cared for 61,211 bed cases, of which 33,550 were free patients, in addition to 366,431 patients in the dispensary departments of the hospitals. To the hospital collection last year the Episcopal churches contributed $22,470, or more than five times the amount received from any other denomination. The various trades collected $38,400, and the Woman's Auxiliary, $13,396.

Laparotomy at Sea. — While the Cunard steamship *Pannonia*, which arrived from the Mediterranean on Dec. 29, was in mid-ocean the vessel was stopped for an hour in order that a surgical operation might be performed with less risk. On Dec. 24, Dr. Orr, the ship's surgeon, found that in the case of one of the coal trimmers an immediate appendectomy was called for, and, accordingly, the captain ordered the engines stopped. Dr. Orr was assisted in the operation by Dr. Torok, a Hungarian surgeon who was a passenger, and although attended with much difficulty on account of the rolling of the vessel, as the sea was running very high at the time, it was performed with complete success.

Flexner's Cerebrospinal Meningitis Serum. — It is stated that the serum against cerebrospinal meningitis (prepared by inoculating horses with the cerebrospinal fluid taken from patients afflicted with the disease), upon which Dr. Simon Flexner, of the Rockefeller Institute, has been at work for the past two years, has now proved successful in over sixty cases, and that in no instance in which it was employed did it prove ineffectual. There would seem to be no doubt of the pre-eminent value of this new remedy, for while the cases in which it was tried may not as a rule have been as virulent as those occurring at the height of the epidemic which began in New York in 1905, the disease has remained sufficiently virulent to destroy an average of eight lives each week in the city during the past three months.

Meeting of Hospital Committee, State Board of Charities. — A meeting of the hospital committee of the State Board of Charities was held in New York on Dec. 16, when Dr. Theodore C. Janeway, President Darlington of the Health Department and other physicians expressed their views in regard to the improvement of the service of the hospitals of the city. Dr. Janeway made rather a severe arraignment of these institutions in general, making an exception, however, in regard to the management of the new Mount Sinai Hospital. He also stated that the records kept at Bellevue Hospital were the only ones in the city which were really creditable. He advocated a strictly medical administration of the hospitals, with a graded staff, receiving pay for their services, in addition to permanent physicians and surgeons rendering voluntary service. He also recommended a pathological department manned by an efficient staff of paid workers.

Discontinuance of Ambulance Service in Central Park. — The Commissioner of Public Parks in Manhattan has decided to discontinue the ambulance service in Central Park, the reason given for this being that there are now so many hospitals with ambulance services on all sides of the Park, and within easy reach of it, that the $5,000 required annually for the maintenance of the service has become an unnecessary expenditure. The ambulance service in the Park was established seventeen years ago, and during the whole period of its existence, Dr. Charles H. Goldsmith, who was a recent graduate at the time of his appointment, has served very acceptably as ambulance surgeon.

Proposed Consolidation of Societies. — At the annual meeting of the Public Health Defense League, which was held at the New York Academy of Medicine, on Nov. 18, a proposed plan of consolidation with the Committee of One Hundred on National Health organized under the auspices of the American Association for the Advancement of Science (which plan had been approved by the Board of Directors of the League and the Executive Committee of the Committee of One Hundred), was submitted to the members and favorably acted upon. On Dec. 14, an agreement was signed in New York formally completing the consolidation, and by the terms of this, all former members of the Public Health Defense League who are in good standing become members of a body to be known as the American Health League of the Committee of One Hundred on National Health. It is stated that neither of the two organizations, which were formed about the same time, knew of the existence of the other, although later five members of the Committee of One Hundred were elected to the Board of Directors of the League, and, in view of the fact that both organizations were working for the same common ends, while their methods of procedure were almost identical, it was deemed advisable that the consolidation mentioned should be effected. On Jan. 2, a meeting is to be held in Chicago, under the auspices of the new American Health League and of Section 1 of the American Association for the Advancement of Science, to consider questions of federal regulation of public health and to hear a report upon the work and plans of the Committee of One Hundred.

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Current Literature.

Medical Record.

Nov. 30, 1907.

1. Little, E. M. *Infantile Spastic Paralysis and Its Treatment.*
2. *Abbe, R. *Test of the String-Cutting Method for Impermeable Esophageal Strictures.*
3. Harnsberger, S. *Open-Air Treatment of Pneumonia; My Twenty-nine Years' Experience.*
4. Bassler, A. *Gastric Exfoliation as a Feature in the Production of Acute Gastric Ulcer.*
5. *Ballenger, E. *The Diagnosis of Kidney Diseases with Special Reference to the Significance of Slight Albuminuria.*
6. Kaiser, J. J. *A Case of Unilateral Third Nerve Paralysis.*

2. Abbe reports two cases of impermeable traumatic esophageal stricture. In both cases a gastrostomy was done. The stricture was permeable for a filiform bougie from below, as is nearly always the case. A string was then passed up, and by string-cutting the stricture was opened. One case is well after fifteen years, the other after three years. One of the cases did not return for the routine passage of bougies and so relapsed. But a small bougie carrying a string could be passed through the stricture, so that string-cutting was possible from above. Abbe emphasizes the fact that string-cutting is only effectual when the stricture is tightly filled with the dilator. Bougies must be increased in size during the string-cutting. The gastrostomy is easily closed. This operation is only intended for impermeable strictures. For permeable strictures either gradual dilatation or string-cutting with dilators from above is indicated.

5. Ballenger insists on disregarding the old idea that albuminuria with or without casts means Bright's disease. At the same time it is important not to be too positive that so-called orthostatic or physiological albuminuria is always harmless. In such cases, the diagnosis depends on the general picture and many urinary examinations.

[R. I. L.]

New York Medical Journal.

Nov. 30, 1907.

1. Fletcher, H. *Possible Progressive Growth in Muscular Efficiency after Fifty Years of Life without Systematic Physical Exercise.*
2. Anderson, W. G. *Observations on the Results of Tests for Physical Endurance at the Yale Gymnasium.*
3. Pennington, M. E., and Walter, G. *A Bacteriological Study of Commercial Ice Cream.*
4. *Butler, W. J. *Serum Diagnosis of Syphilis.*
5. Tousey, S. *The Ultra-Violet Ray and High Frequency Currents in Phlebitis.*
6. Johnston, R. H. *Obstruction in the Nose or in the Throat as a Cause of Diseases.*
7. Benedict, A. L. *Hyperchlorhydria.*

4. Essentially the same article appeared in the *Journal of the American Medical Association*, Sept. 14, 1907, and was reviewed under that date.

Dec. 7, 1907.

1. McWilliams, C. A. *Diseases of the Liver Amenable to Surgical Treatment.*
2. Dieffendach, W. H. *Plastic X-ray Pictures or Roentgengrams.*
3. Kaplan, D. M. *A Chemical and Microscopical Routine in the Investigation of Gastro-Intestinal Disorders.*
4. Sinkler, W. *A Case of Epilepsy of the Family Type.*
5. *Musser, J. H. *Infections within the Thorax — Empyema.*
6. Hawkins, J. A. *Some Things not Generally Known about Syphilis.*
7. Ely, G. W. *Treatment of Fracture of the Patella.*
8. Peters, W. H. *The Corporation and the Medical Witness.*
9. Sweeney, G. B. *Animal Therapy in Tuberculosis.*

5. For the diagnosis of early empyema and small localized abscesses within the thorax, Musser prefers exploratory operation, by which he means resection of the rib, to exploration with a needle or trocar. He believes the use of the needle is more dangerous than operation. It is almost impossible, he thinks, to localize small collections of pus with sufficient accuracy by the needle.

[R. I. L.]

The Journal of the American Medical Association.

Nov. 30, 1907.

1. *Potter, N. B. *Opsonins in Normal and Pathologic Sera.*
2. Camp, C. D. *Acute Unilateral Ascending Paralysis.*
3. Parke, T. D. *Symptom-Complex of a Series of Intestinal Cases, with Pathologic Findings.*
4. *Taylor, R. W. *The Cytology of Gonorrheal Discharges.*
5. Marcy, H. O. *Plastic Surgery of the Pelvic Structures.*
6. Chase, W. B. *Buried Sutures and Ligatures. Their Material and Proper Use.*
7. House, W. *Stokes-Adams Disease (Heart Block).*

1. From an extended study, Potter concludes that Wright's method of estimating the opsonic index in bacterial infections is hardly accurate enough to compensate

for the amount of time involved in its application. The inaccuracy of the opsonic index depends on (*a*) the difference in normal sera, (*b*) differences depending on the source of the leucocytes, and (*c*) differences depending on counting different areas of a slide. He finds a general parallelism between the opsonic indices and the clinical course of most cases, and advises the determination of the opsonic index only when the results of inoculation cannot be controlled by the ordinary clinical methods of observation, when there are several organisms present, and when the patient does not improve under the usual method of inoculation. The inoculation of dead cultures was helpful or curative in many local infections. The value in general infections is still *sub judice*.

4. From a study of the cellular elements of the gonorrheal discharges in 28 cases of ordinary gonorrhea, 5 cases of vulvo-vaginitis in children, and 2 cases of gonorrheal ophthalmia, Taylor finds that nothing is added to our understanding of the nature, prognosis or treatment of urethritis. [R. I. L.]

DEC. 7, 1907.

1. LLOYD, J. H. *Spinal Localization as shown by a Case of Acute Meningomyelitis, with Secondary Softening and Cavity Formation.*
2. KLINGMAN, T. *Facial Hemiatrophy. Statistical Review of Etiologic Factors and Pathogenesis. Report of a Case. Morphologic Stigmata.*
3. *WOOD, E. J. *A Mixed Infection with Tertian and Quartan Malaria Occurring in a Patient with Symmetrical Gangrene.*
4. DENISON, C. *The Sleeping Canopy and the Need of Such Means of Ventilation.*
5. METCALF, W. F. *An Improved Abdominal Subtotal Hysterectomy, Especially Applicable in Chronic Pelvic Inflammation.*
6. IMPENS, E. *Isopral and Chloral Hydrate.*
7. HUNT, R. *Comments on the above Communication on Isopral.*
8. *YOUNT, C. E., AND SUDLER, M. T. *Human Myiasis from the Screw-worm Fly.*
9. MCCLANAHAN, H. M. *Differential Diagnosis between Measles and Rubella.*
10. GOLDBERGER, J., AND MCCOY, G. W. *Dengue as Observed in Brownsville, Texas, in August, 1907.*

3. Wood reports several cases of symmetrical gangrene developing after malaria. The skin lesions are somewhat different from the classical description of Raynaud. One case with symmetrical gangrene presented the rare combination of simultaneous infection with tertian and quartan malaria.

8. Human myiasis from the screw-worm fly is not uncommon in the southern and west central parts of the United States. The writers report 23 cases occurring in one summer in Arizona. Eighteen were of nasal myiasis; in five the site was elsewhere. There were 4 fatal cases, all of them being of the nasal form. The patients were all attacked out of doors. The eggs are nearly always laid in ulcerated tissue, *e. g.*, ulcers of chronic rhinitis, dirty sores, etc. The symptoms come on within twenty-four hours. There is rapidly spreading inflammation, necrosis and gangrene, usually attended by foul discharge and pain. The diagnosis is usually made on the symptoms. In suspected cases the application of chloroform will bring the maggots to light. The treatment is always the same — chloroform in varying strengths, from a 25% solution in olive oil to the pure drug, followed by removal of the larvæ by forceps. Often several hundred larvæ are obtained; without this treatment the outcome is often fatal. The disease can be avoided by proper care of the nose, ears and throat and all wounds or contusions and by cleanliness. Also one should be protected by netting if sleeping out of doors in the daytime, in regions where this disease exists. [R. I. L.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

DECEMBER, 1907.

1. SENN, N. *Medieval Military Surgery.*
2. *HEINECK, A. P. *The Surgical Treatment of Exophthalmic Goiter.*
3. *HERTZLER, A. E. *Hyperemia in the Treatment of Tuberculosis of the Peritoneum.*
4. *TORRANCE, G. *Stovaine Spinal Anesthesia, with Over 5,500 cases from the Literature.*
5. RIGGS, T. F. *Cheiloplasty for Ectropion of the Lower Lip.*
6. COLVIN, A. R. *A Brief Survey of the General Knowledge of Bone Regeneration and Certain Features of Osteomyelitis.*
7. *LYNCH, F. W. *Hour of Birth. A Discussion as to the Hour at Which Birth Most Often Occurs.*
8. *BECK, C. *The Roentgen Method in the Surgery of the Chest.*
9. *DAVIS, E. P. *Report of a Case of Ovarian Cyst with Twisted Pedicle Complicating Pregnancy and Lobor.*
10. BUCHANAN, J. J. *Excision of the Rectum for Cicatricial Stricture, by Combined Method, with Preservation of the Sphincter.*

2. After discussion of various theories of the etiology of exophthalmic goiter, and statement of the reasons which led him to regard it as an intrinsic disease of the thyroid, Heineck summarizes the operative results of all the cases reported in the literature, and concludes that surgical treatment is justified when three months of efficient medical treatment fail to produce marked improvement, or when the symptoms grow worse under medication in a shorter time. He regards partial thyroidectomy as the operation of choice. the mortality is lower and the prognosis for cure better in this than in any other procedure, though improvement is not always immediate. Important points of technic are, first, preservation of a small amount of gland tissue in the region of the inferior thyroid arteries to prevent section of the recurrent laryngeal nerves or injury to the parathyroid bodies (whose removal may be followed by fatal post-operative tetany); second, adequate drainage of the wound to diminish the liability of acute thyroid intoxication from the secretion liberated during manipulation. Apparently, the anesthetic used makes little difference in the operative mortality.

3. By animal experimentation, Hertzler claims to have demonstrated that laparotomy so reduces the intra-abdominal pressure as to cause dilatation of the peritoneal vessels with consequent local hyperemia, a process which can be repeated by leaving in the wound, on closure, a flanged silver tube, through which air may subsequently be admitted to the abdominal cavity at pleasure. Some similar device, he suggests, might be applied to the treatment of human peritoneal tuberculosis, whose improvement after operation he believes due to the attendant hyperemia. He does not deny the obvious risks and difficulties involved in such a procedure.

4. Stovaine, a synthetic compound cognate with cocain and eucain, has been much used abroad for spinal anesthesia, both alone and in combination with scopolamin and morphin. Analysis of 5,532 cases in which it was employed does not seem to prove its superiority or the preferability of spinal to general anesthesia, unless under special conditions.

7. Comparison of a large number of statistics tends to show that human birth does not occur more frequently at any one hour or period of the day, in spite of common and familiar statements to the contrary.

8. The possibilities of pulmonic surgery are daily increasing, and depend in great part on expert accuracy of diagnosis by means of fluoroscope and x-ray. Beck emphasizes the necessity of employing both these methods, so as to obtain a mobile as well as a static picture of the intrathoracic conditions. He discusses the surgical treatment of foreign bodies, pulmonary abscess, and gangrene of the lungs, for all of which he advises operation as soon as the diagnosis is made. When a foreign body cannot be removed through the trachea, he recommends thoracotomy, and exposure of the body with the Paquelin cautery. He similarly uses the cautery to open an abscess of the lung, since he believes it prevents the subsequent infection which an exploratory needle is liable to cause. The visceral pleura he then stitches firmly to the chest wall and packs the cavity with iodoform gauze. Gangrene of the lung is similarly treated. Concerning operative treatment of localized tuberculosis, he is less optimistic, though a few good results are reported.

9. Davis points out the desirability of delivery by Cesarian section when parturition is complicated by the presence of a pelvic tumor, whose rupture or strangulation during vaginal delivery might be fraught with fatal consequences. [R. M. G.]

The Lancet.

Nov. 30, 1907.

1. Parsons, J. H. *Lecture on the Diagnostic Value of the Visual Acuity.*
2. Thompson, J. A. *Notes on Leprosy.*
3. *Williamson, O. K. *The Value of Blood Pressure Determination in the Diagnosis of Aneurysm of the Thoracic Aorta.*
4. Klein, E. *Contribution to Bacteriological Analysis of Materials Polluted with the Bacillus Typhosus.*
5. Carpenter, G. *A Fatal Case of Chorea Associated with Double Optic Neuritis and Hyperpyrexia in a Child Aged Three and a Half Years.*
6. Colvin, T. *Is Bubonic Plague Still Lurking in the City of Glasgow?*
7. Dutton, J. E., and Todd, J. L. *A Note on the Morphology of Spirocheta Duttoni.*
8. Richards, A. F. B. *On a very Successful Method of Treating Acute and Chronic Suppurative Otitis Media and other Forms of Otorrhea, with a Series of Cases.*
9. *Scott, S. G. *Change of Type in Leukemia and Its Significance.*
10. White, S. *Two Cases of Diabetic Gangrene of the Foot; Amputation through the Thigh; Recovery.*

3. Williamson has made a comparative study of the blood pressure in the radial arteries in aortic aneurysm, and in diffuse dilatation of the aorta, taking the blood pressure with Stanton's and with Oliver's instruments. Taken with the hand, it is the exception rather than the rule to find any difference in the radial pulses in cases of aneurysm. He concludes that in most cases of aneurysm, blood pressure is normal or slightly above normal. In cases of mere dilatation of the aorta, however, it is as a rule much higher than normal. A distinct difference of at least 5 mm. in the pressure in the two radial pulses is the rule in cases of aneurysm and also in cases of dilatation of the aorta, and a marked difference of at least 10 mm. is equally common to both. A difference of upwards of 20 mm. speaks strongly in favor of aneurysm as against mere dilatation of the aorta. In normal states a distinct difference between the pressures on the two sides is a great exception. Digital examination of the pulses in cases of aortic aneurysm is a far less sensitive method than instrumental, and frequently gives results directly at variance with those obtained by the latter means, and hence is of much less value in diagnosis.

9. Scott describes a case of leukemia in a boy of fourteen. On entrance there was a leucocytosis of 78,000 with some 70% of myelocytes. As the case progressed toward a fatal ending, the type of leucocytes changed so that at the last examination, there were 42,000 leucocytes, 84% of which were large lymphocytes. He goes into theoretical considerations in regard to this change of type in leucocytosis, and reviews the literature on this subject. He concludes that the large lymphocyte is present in the blood in all leukemias, and that in myeloid leukemia, large mononuclears and lymphocytes are frequently increased, while myelocytes are usually present in lymphadenoid leukemia. All gradations have been found between the extreme types of ordinary myeloid leukemia and ordinary small-celled lymphadenoid leukemia. Both myeloid and chronic lymphadenoid leukemia may change to the type of acute large-celled lymphocytic leukemia. Simultaneous myeloid and lymphadenoid leukemia is not known. [J. B. H.]

Dec. 7, 1907.

1. Sandwith, F. M. *Hunterian Lecture on the Treatment of Dysentery.*
2. Guthrie, L. G. *Abstracts of the Fitz-Patrick Lectures on Contributions from History and Literature to the Study of Precocity in Children.*
3. Brock, W. F. *On Some Cases of Myoma of the Uterus presenting Unusual Features and calling for Urgent Surgical Interference.*
4. Spriggs, E. I. *A Case Showing Division of the Clavicles in Two Halves with Other Bony Deformities. Cleido-cranial Dysostosis.*
5. Gerhard, A. H. *A Plea for the Uniformity of Conditions in Vaccination.*
6. Oliver, T. *Pulmonary Regurgitation Due to Vegetative Endocarditis Consequent upon Rupture of Aneurysm of Heart.*
7. Wright, G. A. *Note on Treatment of Trigeminal Neuralgia by Injection of Osmic Acid into the Gasserian Ganglion.*
8. Buchan, G. F. *An Outbreak of Food Poisoning Due to Eating Brawn.*
9. Williams, L. *Acute Pulmonary Oedema.*
10. Parry, E. W. *Carcinoma of the Ovary Occurring in a Child Aged Seven Years.*
11. Knyvett, A. *Note on an Unusual Case of Appendicitis.*
12. Lock, G. H. *Note on a Case of Rheumatic Hyperpyrexia in a Child Aged Six Years.*

British Medical Journal.

Nov. 30, 1907.

1. Carwardine, T. *Clinical Lecture on Acute Generalizing Peritonitis and Its Treatment.*
2. Oliver, J. *The Determinants of Abortion and How to Combat Them.*
3. Nyulasy, F. A. *A Case of Tubal Abortion.*
4. Malcolm, J. D. *Hysterectomy and Appendectomy Performed on a Patient aged Seventy-four; Recovery.*
5. *Carmichael, E. S., and Marshall, F. H. A. *The Correlation of the Ovarian and Uterine Functions.*
6. *Billington, W. *Movable Kidney from a Surgical Standpoint.*
7. Atkins, W. R. G. *Note on Cryoscopy of Urine.*
8. Hebblethwaite, H. *Suppurative Appendicitis in a Patient with Transposed Viscera.*
9. Osborne, W. A. *Haldane-Smith Method of Estimating the Oxygen Tension of Arterial Blood.*
10. McGowan, J. P. *Clinical Method of Estimating the Coagulation Time of the Blood.*
11. Whitfield, D. W. *Case of Rigor Mortis in a Stillborn Child.*
12. Alcindor, J. *Intense Hepatic Congestion in an Infant.*
13. Stark, J. *Treatment in Occipito-posterior Cases.*
14. Armugan, T. V. *A Case of Gallstone in the Common Duct.*
15. Cropper, J. *Suggestion for a Bone Bobbin or Button for Enterorrhaphy.*
16. Beatty, R. P. *Diphtheria of the Glans Penis Following Circumcision.*
17. Mills, G. P. *Complicated Case of Uterus Bicornis.*

5. Carmichael and Marshall conclude from their experimental work, that the removal of the ovaries in young animals prevents the development of the uterus and Fallopian tubes. The subsequent growth and general nutrition of the animals seems to be unaffected. In adult animals, removal of the ovaries leads to fibrous degeneration of the uterus and Fallopian tubes; subsequent health remains good. These observations support evidence obtained clinically in the human subject after operation. The removal of the uterus in a young animal has no influence in preventing the further development of the ovaries. The removal of the uterus in an adult animal does not give rise to any degenerative change in the ovaries, if the vascular connections of the latter remain intact. These latter observations do not support the contentions of those surgeons who advocate subtotal hysterectomy, believing that the functional activity of the ovary is in some way dependent upon the presence of the uterus.

6. Billington gives the results of operative treatment for movable kidney in nearly seventy cases. He does not believe that treatment by belt is satisfactory. He gives the details of the technic of his operation, showing by diagrams just how the kidney is fastened in place. Recovery from the operation has occurred in every case except one, and in the great majority of his cases improvement of the symptoms has been very marked. He states that where persistent functional disturbances of this kind are found in comparatively young people in association with movable kidney, that the kidney should be fixed in place by operation. [J. B. H.]

Dec. 7, 1907.

1. Snell, S. *Lecture on Wounds and Injuries of the Eyeball, Eyelids and Orbit.*
2. Marsh, H. *Address on the Scientific Use of Evidence in Surgical Practice.*
3. Ashby, H. *Address on Some Cases of Unexplained Fever in Infants and Children.*
4. *Bond, C. J. *On the Urinary Mucous Tract, and not the Blood Stream, as the Route of Invasion by Pathogenic Organisms under Certain Conditions.*
5. Beatson, G. *An Unusual Mator-Car Accident.*
6. *MacLennan, W. *Observations on the Ophthalmo-Reaction to Tuberculin.*
7. *Webster, J. S., and Kilpatrick, J. A. *Notes on 121 Cases Tested with Calmette's Tuberculin.*
8. Macewen, J. A. C. *A Case of Achondroplasia.*
9. Jepson, E. *A Child with Multiple Deformities.*
10. Downer, H. *The Tuberculin Ophthalmic Reaction.*
11. Maxwell, E. J. *A Case of Myositis Ossificans.*
12. Pratt, E. *Use of the Seton.*
13. Langdon, J. A. *Poisoning by Bromoform.*
14. Chichester, E. *Strangulation of a Hernia by a Suppurating Appendix.*

4. Bond believes that infections of the kidney, especially pyelitis, take place more often by means of an ascending infection along the mucous membrane of the urethra from the bladder than by the blood stream. He quotes several cases to support this view and cites as analogous instances, infections of the gall bladder where organisms are carried along the mucous membrane of the bile duct from the intestine. The 80 cases recently published by Lenhartz confirm his observations.

6. MacLennan gives the results of his experience with the ophthalmo-reaction to tuberculin. Calmette claims for this reaction: (1) that it is absolutely safe; (2) its ease of application; (3) its absence of constitutional disturbance; (4) that it is as accurate and delicate as the hypodermic injection, if not more so. Analysis of the cases showed that for the most part, the claims advanced by Calmette for his test are fully justified; that the test apparently reveals the presence of tuberculous lesions that are quite benign and unsuspected from a clinical point of view, as well as those that are more obvious; that in cases in which a subcutaneous injection of old tuberculin has given a positive or negative reaction, the same result has followed the application of the ophthalmic test. There seems to be evidence that a solution of old tuberculin will answer as well as Calmette's preparation. He cites some cases illustrative of this. His preparation was a 1:100 solution in distilled water of Koch's old tuberculin. This was tried on many of the same cases that had been previously tested by the Calmette preparation. It was done long after every trace of the reaction produced by the Calmette solution had disappeared, and on the eye hitherto untreated. In most of these cases, the results were identical. With a solution of new tuberculin of a similar strength, the results, however, were either negative or very doubtful. MacLennan reviews the literature on this subject up to date, and his article is a very clear presentation of this procedure.

7. Webster and Kilpatrick present notes on 121 cases tested with Calmette's tuberculin. They have tried the reaction in 123 instances, 6 of which were in presumably healthy individuals used as controls, the remaining 117 being in individuals actually suffering from, or else suspected to have, pulmonary tuberculosis. In many cases, they noticed that the first indication of any reaction was afforded by the plica semilunaris, which is situated just to the outer side of the caruncle, and the swelling and slight reddening which this undergoes occupies a fairly prominent place throughout the whole of the reaction. By the fourth hour from the time of inoculation, 15 cases commenced to show reaction, and from this hour onward, the remaining cases giving the reaction commenced to show some slight reddening, the longest latent interval between the placing of the drop in the eye and the time when the reaction was first noticed being twenty hours. In some slight cases, the reaction lasted only two days, but in the more severe, as long as a week, and often longer. The majority of patients did not complain of any pain, but noticed some slight discomfort, a feeling as if there was a little grit in the eye. In only the most severe reactions was there any purulent discharge; this was noticed in 5 cases. Despite the statement that there is no general reaction, 7 of the cases showed a very definite rise of temperature after inoculation. All definite cases with bacilli in the sputum gave the reaction. In cases of quiescent pulmonary tuberculosis some reacted and some did not; there was no obvious cause for this variation. In doubtful cases of tuberculosis some reacted and some did not; some were indefinite. In presumably healthy individuals, 2 reacted and 2 did not. There are no means of determining any relation between the amount of tuberculosis present and the degree of reaction. A similar difficulty exists in regard to the degree of activity shown by the tuberculous disease and the intensity of the reaction. They believe that this reaction gives some promise of utility, but its reliability can only be ascertained by a much more extended series of observations on both healthy and tuberculous individuals. The chief value to them lies in the fact that they obtained the reaction in several cases in which the presence of tuberculosis was suspected, but where there were no definite signs.

[J. B. H.]

The Quarterly Journal of Medicine. Vol. I, No. 1.

October, 1907.

1. *Bramwell, B., and Muir, R. *A Remarkable and Hitherto Undescribed Muscular Lesion Occurring in Sprue.*
2. *Cowan, J. *On Anemia with Enlargement of the Spleen, Particularly the " Family " Form.*
3. *Mann, J. D. *On the Excretion of Leucin and Tyrosin in Two Cases of Cardiac Liver.*
4. *Gibson, G. A. *Additional Observotions on Microbic Cyanosis.*
5. *Hutchison, R. *On Suprarenal Sarcoma in Children with Metastases in the Skull.*
6. *Mackenzie, J. *Abnormal Inception of the Cardiac Rhythm.*
7. Monro, T. K. *On Hematoporphyrinuria not Due to Sulphonal.*
8. *Osler, W. *On Multiple Hereditary Telangiectases with Recurring Hemorrhoges.*
9. Oliver, G. *A Note on a Reody Method of Measuring the Venous Pressure without a Manometer.*
10. Oliver, G. *A Compressed-air Hemomanometer.*
11. Spriggs, E. I. *On the Excretion of Creatinin and Uric Acid in Some Diseases Involving the Muscles.*
12. *Drysdale, J. H. *Leukanemia: Its Relation to Leukemia ond Pernicious Anemia.*
13. Gibson, G. A. *A Clinical Sphygmomanometer Yielding Absolute Records of the Arterial Pressure.*

1. Bramwell and Muir report two cases of sprue in which, during life, there were extreme emaciation and muscular atrophy without paralysis, and histologically degeneration of the muscle fibers with marked proliferation of the nuclei of the sarcolemma. This proliferation, which the authors look upon as remarkable, is found to a greater or less degree in most cases of muscle degeneration from any cause.

2. This is an account of two cases of splenic anemia in which the beginning in childhood is the chief point of interest.

3. Mann reports the finding of leucin and tyrosin in the urine in two cases of heart disease with failure of compensation, great cyanosis, and passive congestion of the liver. He considers this is probably not due to autolysis, but to faulty metabolism on the part of the liver.

4. Gibson reports a case of that rare and interesting symptom-complex, enterogenous cyanosis. This is a state of marked cyanosis due to the presence in the blood of methemoglobin, or in some cases of sulphemoglobin; this change in the blood is caused by the action of nitrites in the first instance, and of H_2S in the second. The primary etiological factor in all cases has been disease of the intestines. In Gibson's case the blood contained methemoglobin and also considerable amounts of nitrites. Blood culture showed the presence of a bacillus belonging to the colon group. Gibson assumes that the nitrites were formed in the blood by the action of this bacillus, but he does not sufficiently exclude the possibility of intestinal formation of nitrites with absorption. The patient improved greatly after a course of " intestinal antisepsis."

5. This article is an interesting description by Hutchison of a new clinical syndrome occurring chiefly in children. During life, the first symptom to attract attention is usually a purple discoloration of one or both eyelids, soon followed by swelling and often by exophthalmos. The cervical glands become enlarged, and often soft tumors appear on various parts of the skull, especially the temporal bones. There is headache and loss of vision, but seldom vomiting. An abdominal tumor is noted during life in about half the cases At autopsy there is found a primary sarcoma of the suprarenal gland, with metastases in and on the skull, but not in the brain. These tumors have all been sarcomata, and never show the structure of hypernephroma. Ten cases in all have been reported, including those of the author.

6. This very interesting article by Mackenzie is an investigation into the cause of continuous irregularity of the heart's action. These cases occur chiefly in advanced mitral stenosis and in patients with arteriosclerosis. Mackenzie offers evidence based on a very extensive experience, that in this type of irregularity the auricles and ventricles contract at the same time. The clinical evidence of a contraction of the auricles rests upon five phenomena, *viz.*, (1) a wave in the jugular pulse tracing; (2) a presystolic wave in the apex tracing; (3) a wave in the liver tracing; (4) a presystolic mitral murmur in the case of mitral stenosis; (5) a presystolic tricuspid murmur in the case of tricuspid stenosis. Careful observation of many cases has shown that in all instances of continuous irregularity, the auricular waves in the cardiogram and jugular pulse tracing disappear, and that in case mitral or tricuspid murmurs were present these murmurs also disappear, and the auricular form of liver pulse found in tricuspid stenosis changes to the ventricular form. The change in the character of the heart's action takes place with failing compensation, and means always a limitation of the "field of cardiac response," but the irregularity may be maintained under favorable circumstances for many years. The fact has been known for some time that in advanced mitral stenosis the presystolic murmur may disappear, but it was attributed to weakness of the auricular contraction and not to a change of rhythm. To account for this change of rhythm, Mackenzie offers the following hypothesis: Gaskel has shown that if any part of the heart be placed in a state of abnormal irritability, the contraction may proceed from this point, and in this way in frogs the ventricles may be made to contract simultaneously with the auricles, or before them. A condition of increased irritability of the A-V node of Aschoff and Tawara (starting point of the bundle of His) may therefore account for the simultaneous contraction of auricles and ventricles. This is the explanation offered for continuous irregularity in arteriosclerosis; in the case of mitral stenosis, Mackenzie assumes a break in the conduction of the impulse between the sinus node of Keith and Flack and the A-V node, caused by great distention of the auricles. Direct stimulation of the A-V node has not yet been experimentally performed, so that this view remains merely a suggestive hypothesis, but that the auricles and ventricles contract simultaneously in this type of irregularity seems to be proved. Fluoroscopic confirmation would be desirable.

8. Osler describes two new families of this interesting type of disease, in addition to the six already on record. The condition is characterized by the existence of telangiectases on the skin and mucous membranes with recurring hemorrhages. The latter usually take place from the mucous membranes of the mouth and nose, and may lead to severe or even fatal anemia. In one case nevi were found also in the stomach, but did not appear to have led to hemorrhages. The patients usually suffer from epistaxis in childhood, and later on from bleeding from the gums, and sometimes from the spots on the skin. In Coe's case, treatment consisting of the administration of calcium lactate to increase the coagulability of the blood, and cauterization of the nevi in the nose with the electric needle produced remarkable improvement.

12. Drysdale reports a case of atypical leukemia, and reviews the literature quite thoroughly. The term "leukanemia" was devised by Leube to cover those cases in which there are present signs pointing to both pernicious anemia and leukemia, but, as the author points out, the term only leads to confusion of an already vague subject, and had better be given up. Such cases can always be grouped under one or another of the forms of leukemia.

[W. T.]

Berliner Klinische Wochenschrift. No. 44.
Nov. 4, 1907.

1. Ehrlich, P., and Apolant, H. *Mixed Tumors in the Mouse.*
2. Dege. *Hernia Cruralis Pectinea Sive Cloquetii.* (Continued article.)
3. Joachimsthal, G. *An Uncommon Form of Bone Softening.*
4. Rabinowitsch, M. *The Epidemic of Relapsing Fever in Kiew.* (Continued article.)
5. *Janowski, W. *The Differentiation between Exudates and Transudates by Rivalta's Method.*
6. *Bosse, B. *Arthritis and Its Relation to Venereal Disease.* (Concluded.)
7. *Ewald, C. A. *An Early Symptom of Ileus.*
8. Salge, B. *"Milk Cakes" and Their Use in the Feeding of Infants.*

5. Rivalta's method of differentiation between exudates and transudates consists in allowing a few drops of the fluid under consideration to fall into a weak solution of acetic acid (2 drops of glacial acetic acid in 100 cc. of water). In exudates a white trail of precipitate is left behind the drop of fluid; in transudates no such precipitate appears. Janowski has tried this reaction in fifty exudates and fifty transudates, and has found it constant. The method recommends itself strongly on account of its accuracy and simplicity.

6. Bosse describes at length the different joint lesions which are referable to venereal disease. In gonorrheal rheumatism, he has had best results with the hyperemic treatment, especially in the acute stages. In the diagnosis of joint affections in syphilis, both acquired and hereditary, the x-ray is of great service.

7. Ewald claims that very early in ileus, the stomach becomes filled with fecal smelling contents. A considerable period may intervene before this stuff is vomited. When ileus is suspected, the author recommends the early use of the stomach tube, and considers that if fecal smelling contents are recovered, the fact is of considerable diagnostic importance.

[R. D.]

Revue de Chirurgie.
December, 1907.

1. *Cornil, V., and Coudray, P. *Muscular Osteomata. Hyperostosis Following Removal of the Periosteum. An Experimental and Histologic Study.*
2. *Patel, M. *Sigmoiditides and Perisigmoiditides, Simple Inflammatory Affections of the Sigmoid Flexure.* (Concluded.)
3. Massabuau, G. *The Histologic Structure and Embruonic Origin of Mixed Tumors of the Solirary Glands.* (Concluded.)
4. *French Congress of Medicine. *Ninth Session, Held at Paris, Oct. 14-17, 1907.*

1. To decide the question whether the new bone of traumatic myosteomata is derived from connective tissue or from muscle fibers, the authors produced experimental osteomata in puppies by transplanting bits of periosteum into the thigh muscles. These they compared at different periods with traumatic osteomata removed from human beings, and found that in both the bone was histologically developed from connective tissue, not from muscle. This tendency to bone formation they believe to be determined by the injury.

2. Continuing his study of sigmoid infections, Patel further differentiates the types of chronic sigmoiditis and perisigmoiditis, and describes their possible sequelæ, stricture and general peritonitis. For these sequelæ, or when suppuration is present, the treatment is operative. For acute, non-suppurative diverticulitis, rest, starvation, ice to the abdomen, enemata and, later, catharsis are indicated. Treatment of the chronic sigmoiditides and perisigmoiditides is by diet, hygiene, mild catharsis, massage

and astringent irrigations with alum, tannin, iodoform, or bismuth.

4. Doyen claims to have isolated an organism, *Micrococcus neoformans*, inoculations of which, in attenuated culture, immunize white mice against cancer. Ehrlich's experiments in the transplantation and transformation of mouse tumors convince Doyen that all neoplasms have an etiologic unity. Hence, he believes it may be possible by a single bacterial vaccine to immunize against tumors of the most widely different histologic structure, and even cure them in the early stages. His theories are interesting in connection with other work now being done in the bacteriotherapy of malignant disease.

[R. M. G.]

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Miscellany.

BOVINE TUBERCULOSIS IN NEW YORK STATE.

In a paper read at Ithaca, before the Tompkins County Medical Society, on Dec. 18, Dr. Verenus A. Moore, of the New York State Veterinary College of Cornell University, a bacteriologist of recognized standing throughout the country, expressed the opinion that between 20% and 36% of all the cattle in the state of New York were affected with tuberculosis. In 1904, he said the official reports of the state showed that of 2,417 animals tested, 16% were infected, and from 1904 to 1906, inclusive, of 3,088 tested, 22% were infected. Of 1,086 cows tested by Dean Law, of the Cornell Veterinary College, 16% had the disease, and private reports collected by Dr. Moore, through Cornell graduates, practising in New York State, showed, that of 8,640 animals tested, 36% were infected. These cattle were in 364 herds, scattered in many counties, and 72.3% of the herds contained tuberculous animals. The average size of the herds was 20, while the average size of the herds in which no tuberculosis was found was 10. He reached the conclusion that of the 1,800,000 milch cows in the state, 440,000 were infected. The reason for this condition, he declared, was because that, up to the present year, this state had maintained no inspection of animals brought into it, while other states had such inspection. New York had thus become the dumping-ground of tuberculous cattle. Dr. Moore estimated that it would require an appropriation of $8,000,000 to secure the testing and slaughtering of the infected animals. If 1,800 men were employed, the work of stamping out the disease might be accomplished in a single year. At present there are $10,000 a year appropriated for the joint extirpation of anthrax, glanders and tuberculosis.

In commenting on the facts reported by Dr. Moore, Dr. Walter Bensel, Sanitary Superintendent, New York City Health Department, makes the statement that, while it is well known that a large percentage of the milch cow herds of the New York milk supply are infected with tuberculosis in a more or less mild form, it is untrue that there is any great amount of danger in using the milk from these herds after it has passed the local inspectors. In the mere fact that tuberculosis exists, there is nothing to indicate that in any large number of instances the udder is implicated in the disease, and consequently it is not a logical deduction to infer that the supply of milk is affected. There has been a great deal said about pasteurization as a means to rid milk of tubercular germs, but in the opinion of the Health Department this claim is not justified by the facts. It is not only impracticable to pasteurize all the milk after it reaches the city, but to attempt to carry out such a measure would be inadvisable, since pasteurized milk is liable to infection before it reaches the consumer. Dr. Bensel deprecated the spread of alarm in the mind of the public as regards tuberculosis from milk, and feared it might do much harm by preventing the use of milk, especially in the case of infants, by whom it was most needed. There was, in his judgment, no danger in using the milk that came to the city, the supply of which he believed was now as good as any to be found in the country.

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THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

The Committee of Arrangements reports that active preparations for the International Congress on Tuberculosis, to be held in Washington next September, are under way in other countries. The national committees for France, Germany, Sweden, Austria, Holland, Greece, Bulgaria, Cuba, Venezuela, Brazil and Costa Rica have organized and have forwarded their membership lists to the secretary-general. The French committee has a membership of over three hundred and includes men of prominence in public life as well as in the medical profession. The officers of this committee are: President, Dr. Louis Landouzy, of the medical faculty of the University of Paris; vice-presidents, Dr. Faisans, of the University of Paris, Professor Vallée, the eminent veterinarian, of Alfort, Dr. F. Bezancon, of the University of Paris, and Dr. Le Gendre; secretaries, Dr. Triboulet, secretary-general of the last International Congress which was held in Paris three years ago, Dr. Nobecourt, Dr. Leon Bernard, Dr. Dehan and Dr. Georges Bourgeois; treasurer, M. Masson.

The secretary of the German committee, Dr. Johannes Nietner, was Secretary-General of the recent International Congress on Hygiene and Demography. Other members of the committee are: Dr. Gotthold Pannwitz, Secretary-General of the International Tuberculosis Association; Dr. B. Frankel, Dr. Ernst von Leyden, Professor Emeritus of the University of Berlin, and Dr. Johannes Orth, Professor of Pathology in the University of Berlin.

Dr. N. P. Tenderloo, of Leyden, another well-known pathologist, is a member of the committee for Holland. Dr. P. K. Pell, of the University of Amsterdam, is chairman of that committee, and Dr. W. J. von Gorcum, of The Hague, is the secretary.

Dr. A. Herrera Vegas, the chairman of the Venezuelan committee, is president of the Venezuelan Antituberculosis League, and a member of the National Academy of Medicine at Caracas.

Dr. P. Acosta Ortiz, the vice-president, is a director of the hospital at Vargas, and Dr. L. Razetti, another member of the committee, is vice-rector of the University of Venezuela and permanent secretary of the National Academy of Medicine. All of the members of Brazilian committee are actively identified with the antituberculosis movement in that country. The committee includes Dr. J. J. Azevedo Lima, of Rio Janeiro, president of the Brazilian Antituberculosis League; Dr. Oswaldo Cruz, Director-General of the Department of Public Health; Dr. J. J. Seabra and Dr. Cypriano de Freitas, of Rio de Janeiro.

The president of the Cuban committee is Dr. Guiteras, formerly Professor of Pathology in the University of Pennsylvania, and now at the University of Havana. Dr. J. L. Jacobsen, the vice-president, is president of the Cuban Antituberculosis League. The secretary is Dr. M. G. Lebredo, of Havana. Two well-known members of this committee are Dr. Aristides Agramonte, the last surviving member of the famous yellow fever commission of the United States Army, and Dr. Carlos J. Finlay, who was recently awarded the Mary McKinsley medal by the Liverpool Association for the Study of Tropical Diseases.

Dr. B. Patrikios, the chairman for the committee for Greece, is Secretary of the Department of Health of Greece, and Secretary-General of the Greek Red Cross Society. Dr. Aristotle Kouzis, the secretary, is a professor of the University of Athens. Dr. Constant Savas, a member of the committee, is Professor of Hygiene in the University of Athens, and is physician to the king of Greece; Dr. P. Manoussos is the principal medical director of the military hospital at Athens; Dr. Kalliontzis is professor of Surgery and Dr. Pierre J. Rondopoulo is Professor of Pathology at the University of Athens.

The Hon. Otto von Printzkold, the chairman of the Swedish committee, is the first chamberlain of the Swedish court. The secretary, Dr. Bertil Buhre, is the president of the great Swedish Antituberculosis League, the largest volunteer association of the kind in existence.

The Costa Rican committee has named Dr. Louis P. Jiminez chairman, and Dr. Teodoro Picado, of San José, secretary. Other members are, Dr. Teodoro Prestinary, Dr. Benjamin Hernandez and Dr. Marcos Zunega, all of San José.

Three chairmen have been named by the Austrian committee. They are, Prof. Leopold v. Schrotter, of the Medical Faculty of the University of Vienna; Dr. Weichselbaum and Dr. Richard Paltauf, of the Department of Pathology of the University of Vienna. The secretaries are Dr. H. v. Schrotter, Dr. L. Teleky and Dr. J. D. Bartel.

Dr. M. Rousseff, director of the Department of Health of Sophia, is president of the Bulgarian committee; Dr. Ivan Oggnianoff, secretary of the Superior Board of Health at Sophia, is secretary, and the members include Dr. Georghi Zolotovitch, Dr. Ivan Theororoff, director of the Sanatorium for Tuberculosis at Trojan, and Dr. S. A. Valcovitch.

RESOLUTIONS ON THE DEATH OF RICHARD H. DERBY, M.D.

At the last meeting of the New York Ophthalmological Society, the following resolutions were adopted:

The members of the New York Ophthalmological Society record wth deep regret the death of their associate, Dr. Richard H. Derby.

Dr. Derby was born in Boston in 1844. He was a graduate of the college and medical school of Harvard University, and was house surgeon in the Massachusetts General Hospital.

While abroad, he was a pupil of Von Graefe, and acted as his assistant. He settled in New York in 1870. He was for many years an active member of the administrative and surgical staff of the New York Eye and Ear Infirmary and was the executive surgeon of that institution at the time of his death.

Dr. Derby was a member of this society since 1870. He was a member of the New York Academy of Medicine, of the American Ophthalmological Society, was officially attached to many public institutions and was prominent and influential in all political reforms and movements for public betterment that have engaged the attention of public-spirited citizens. He was remarkable for his loyalty to his personal friends, and for the earnestness with which he devoted himself to the welfare of the societies and institutions with which he was connected.

Your committee recommend that this very inadequate expression of esteem and regret be incorporated into the minutes of the society and sent to the surviving members of Dr. Derby's family.

W. E. Lambert, *Chairman.*
Wm. S. Dennett.
John E. Weeks.
John R. Shannon, *Secretary.*

Correspondence.

"WALKING FOR HEALTH."

Boston, Dec. 30, 1907.

Mr. Editor: I would like to supplement Dr. J. B. Blake's advice in regard to walking for health, by adding the suggestion as to how to walk for health. Without entering into the physics of locomotion it is to be noted that the gait to be assumed depends upon the character of the surfaces over which one travels. The city bred walk upon artificial roads which are practically level. The country bred, on the other hand, walk upon the ground in its normal or uneven condition. If then, the city bred try to walk with a " stiff knee-joint " upon uneven soil, they soon grow weary. And, oppositely, if the country bred comes to the city and " slouches along," we wonder at their " country gait." Likewise the sailor with his " sea-legs " on ashore. It has become historical that the French army has adopted the " bent knee " fashion of marching, simply because after a five-mile walk, the soldiers come on to the firing line ready for action without resting, when formerly they were so exhausted that they needed rest before they were steady enough to use their guns.

If not correct in my suggestion, I am ready to be convinced to the contrary.

E. D. Spear, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 21, 1907.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	12	3
Chicago	—	—	Waltham	6	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	11	2
Baltimore	231	58	Brookline	5	—
Cleveland	—	—	North Adams	6	3
Buffalo	—	—	Chicopee	8	7
Pittsburg	—	—	Northampton	8	—
Cincinnati	—	—	Medford	6	1
Milwaukee	—	—	Beverly	7	1
Washington	—	—	Leominster	4	2
Providence	91	25	Hyde Park	5	—
Boston	283	71	Melrose	—	—
Worcester	57	13	Newburyport	—	—
Fall River	46	29	Woburn	5	0
Cambridge	30	8	Marlboro	3	1
Lowell	39	8	Westfield	4	1
Lynn	37	9	Peabody	—	—
New Bedford	34	13	Revere	6	2
Springfield	35	7	Attleboro	3	0
Lawrence	30	15	Clinton	2	0
Somerville	29	4	Adams	4	4
Holyoke	17	8	Gardner	—	—
Brockton	7	1	Milford	6	2
Malden	9	1	Watertown	2	0
Chelsea	15	2	Plymouth	—	—
Salem	20	9	Weymouth	6	1
Newton	10	—	Framingham	5	1
Haverhill	13	3	Southbridge	2	—
Fitchburg	4	1	Wakefield	—	—
Everett	9	—	Webster	—	—
Taunton	17	3			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING DEC. 28, 1907.

J. C. THOMPSON, surgeon. Detailed from the "Chattanooga" and ordered to Washington, D. C., and report to the Secretary of the Navy.

R. E. HOYT, passed assistant surgeon. Detached from the Naval Hospital, Canacao, P. I., and ordered to the "Chattanooga."

C. H. DELANCY, passed assistant surgeon. Orders of Dec. 18 revoked; ordered to continue duty at the Naval Recruiting Station, Chattanooga, Tenn.

W. J. ZALESKY, passed assistant surgeon. Detached from the Naval Recruiting Station, Chattanooga, Tenn., and ordered to the Naval Recruiting Station, New Orleans, La.

F. H. BROOKS, assistant surgeon. Detached from the "Adams," when placed out of commission, and ordered to the "Montgomery."

SOCIETY NOTICES.

A PROPOSED NEW ENGLAND PEDIATRIC SOCIETY. — The Visiting Staff of the Boston Floating Hospital request all those interested in the formation of a New England Pediatric Society to meet at the Boston Medical Library, 8, The Fenway, Saturday, Jan. 4, 1908, at 8.15 P.M. It is hoped that this movement will excite general interest and that the attendance at the meeting will not be limited to those working along this special line.

JOHN LOVETT MORSE, *Chairman.*
WILLIAM E. FAY.
ARTHUR WILLARD FAIRBANKS.
CHARLES W. TOWNSEND.
HENRY I. BOWDITCH, *Secretary.*

CLINICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY IN CONJUNCTION WITH THE BOSTON MEDICAL LIBRARY. — Meeting, Wednesday, Jan. 22, 1908, at 8.15, P.M. John Ware Hall. "On the Direct Transfusion of Blood." By George W. Crile, M.D., of Cleveland, Ohio.

EDWIN A. LOCKE, M.D., *Secretary.*
RICHARD C. CABOT, M.D., *Chairman.*

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY LIBRARY MEETING. — Wednesday, Jan. 8, 1908, at 8.15 P.M. John Ware Hall. "The Possibilities of the Serum Treatment of Hyperthyroidism." Dr. S. P. Beebe, New York. "Thyroidism and Its Treatment." Dr. John Rogers, New York. Discussion by Drs. F. C. Shattuck and J. M. Jackson. Light refreshments after the meeting.

J. C. HUBBARD,
R. B. OSGOOD, } *Committee.*
W. H. SMITH,

HERTER LECTURES. — Ernest H. Starling, Professor of Physiology in the University of London, will give the Herter Lectures of the year on the subject, "The Fluids of the Body," beginning Jan. 6, at 4 P.M., and continuing at the same hour throughout the week at the Carnegie Laboratory of the University and Bellevue Hospital Medical College, 338 East 26th Street, New York. All interested are cordially invited to be present.

RECENT DEATHS.

FERDINAND GORDON MORRILL, M.D., M.M.S.S., of Boston, died in Assouan, Egypt, Dec. 25, 1907.

DR. LOUIS R. PIERCE, of Newburgh on the Hudson, died from pneumonia on Dec. 29. He was a native of Binghamton, N. Y., and forty-one years of age. He was graduated from the Long Island College Hospital in 1889, and had practiced for a number of years at Newburgh, where he was attending obstetrician to St. Luke's Hospital.

BOOKS AND PAMPHLETS RECEIVED.

Oxford Medical Publications. Heart Disease and Thoracic Aneurysm. By F. J. Poynton, M.D., F.R.C.P. London. Illustrated. London: Henry Frowde, Oxford University Press; Hodder & Stoughton. 1907.

Oxford Medical Publications. Diseases of the Larynx. By Harold Barwell, M.B. Lond., F.R.C.S. Eng. Illustrated. London: Henry Frowde; Hodder & Stoughton. 1907.

Oxford Medical Publications. Diseases of the Nose. By Ernest B. Waggett, M.A., M.B., B.C. (Cantab.) Illustrated. London: Henry Frowde; Hodder & Stoughton. 1907.

Oxford Medical Publications. Abel's Laboratory Handbook of Bacteriology. Translated from the Tenth German edition by M. H. Gordon, M.A., M.D. Oxon. B.Sc. With Additions by Dr. A. C. Houston, Dr. T. J. Horder and the Translator. London: Henry Frowde; Hodder & Stoughton. 1907.

Oxford Medical Publications. Functional Nervous Disorders in Childhood. By Leonard G. Guthrie, M.A., M.D., F.R.C.P. London: Henry Frowde; Hodder & Stoughton. 1907.

Christian Science. The Faith and Its Founder. By Lyman P. Powell. New York and London: G. P. Putnam's Sons. 1907.

Thinking, Feeling, Doing. An Introduction to Mental Science. By E. W. Scripture, Ph.D., M.D. Second edition, revised. Illustrated. New York and London: G. P. Putnam's Sons. 1907.

Oxford Medical Publications. A Manual of Venereal Diseases. By Officers of the Royal Army Medical Corps. London: Henry Frowde; Hodder & Stoughton. 1907.

New York State Library. Yearbook of Legislation, 1906. Albany, 1907.

The Detection and Significance of Occult Blood in the Feces and Stomach Contents, with Special Reference to the Adlers' Benzidin Test. By J. A. Storck, M.Ph., M.D. Reprint.

The Fourth Report of the Caroline Brewer Croft Fund Cancer Commission of the Harvard Medical School. Boston. 1907.

Atlas and Text-Book of Human Anatomy. By Dr. Johannes Sobotta. Edited, with additions, by J. Playfair McMurrich, A.M., Ph.D. Vol. III. Illustrated. Philadelphia and London: W. B. Saunders Co. 1907.

A Text-Book of Minor Surgery. By Edward Milton Foote, A.M., M.D. Illustrated. New York and London: D. Appleton & Co. 1908.

A Text-Book of Diseases of the Nose and Throat. By D. Braden Kyle, A.M., M.D. Fourth edition, thoroughly revised and enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1907.

A Clinical Atlas. Variations of the Bones of the Hands and Feet. By Thomas Dwight, M.D., LL.D. Illustrated. Philadelphia and London: J. B. Lippincott Co. 1907.

Les Ferments Métalliques et Leur Emploi en Thérapeutique. By Albert Robin. Paris: J. Rueff, Editeur. 1907.

Jahresbericht über die Fortschritte in der Lehre von den Pathogenen Mikroorganismen umfassend Bakterien, Pilze und Protozoën. Von Dr. med. P. von Baumgarten und Dr. med. F. Tangl. Leipzig: S. Hirzel. 1907.

Original Articles.

PRACTICAL APPLICATIONS OF OPSONIC THERAPY.

BY THEODORE C. BEEBE, JR., M.D.,
Instructor in Surgery, Tufts College, Medical School; Assistant Surgeon to the Boston Dispensary,
AND
LEON S. MEDALIA, M.D.,
Instructor in Pathology and Bacteriology, Tufts College Medical School, Boston.

It is the aim of the writers to show the general practitioner that opsonic therapy, as guided by the opsonic index, has a distinct and important place in modern clinical medicine. While this paper deals mostly with surgical conditions, we have endeavored to point out a few conclusions which are applicable to infectious processes in general. We shall show how cases are followed up from the beginning, with especial regard to the opsonic index, and such aids to diagnosis and treatment as cultural findings and animal inoculations. It is our firm conviction that opsonic therapy is scientific and effective *only* when guided by a careful use of the opsonic index, and energetically followed clinically. The cases described are partly typical and partly atypical, not only as regards diagnosis but from the standpoint of treatment.

THE OPSONIC INDEX IN DIAGNOSIS.

The value of the opsonic index as a means of diagnosis in surgical conditions is very considerable, particularly where the question arises as to whether or not a lesion is tuberculous. The importance of making an early diagnosis in incipient tuberculosis of whatever form cannot be overestimated. By a simplified method of technic, which will be found described elsewhere,[1] we have been able to secure a large series of constantly good results in the way of diagnosis.

In cases where the tuberculous process is more or less active, yet difficult to diagnosticate clinically, the fluctuations in the tuberculo-opsonic index are quite marked. For this reason it is necessary to obtain at least three indices at one-day intervals. In active or systemic processes, the fluctuations may vary between very wide limits, as, for instance, in one typical case, the index being one day .85, and two days later, 1.57. On the day of the high index, the patient was depressed, coughing and raising much sputum containing many tubercle bacilli, showing marked auto-intoxication. While the index was below normal, the process was more or less quiescent, and the patient's condition was much improved. In a number of such cases of systemic tuberculous infection we have observed, in contradistinction to the patient's state of well-being during the positive phase of artificial inoculations, that the reverse condition is true during the period of high indices following auto-inoculations. This is explained by the fact that during the period of auto-inoculation, too large doses of the products of the tuberculous infection are being absorbed into the system, while in artificial inoculation the dose is just sufficient to produce a satisfactory response. As between localized tuberculosis and malignant or syphilitic lesion, an index constantly normal to T. B. will almost absolutely rule out a tuberculous lesion. Diagnosis may be made more absolute by testing the opsonic index before and after exercise, in cases, for example, of suspected tuberculosis of hip or knee.[1] The finding of a low opsonic index after exercise, as compared with that before, is characteristic of a localized tuberculous affection, as has been pointed out by Wright.[2] A lowered opsonic index following an operation on a localized process is also especially characteristic of tuberculosis, as we have found in a series of operative cases to be reported later. Of especial interest is the fact that the tuberculo-opsonic index is higher after operation than before, if the lesion is non-tuberculous (Medalia). A number of cases are being followed in which, there being suspected tuberculous diatheses, but no clinical evidences, a series of tuberculo-opsonic indices are being taken. When there has been an occasional low T. B. index, prophylactic doses of tuberculin T. R. have been given, with the result that the patient's general condition had been much improved, and the indices raised to or above normal. In various joint and bone lesion, other than tuberculous, it should be possible by means of the opsonic index to make a diagnosis of a gonococcic or typhoidal origin as against a staphylococcic or streptococcic origin.

In a number of cases, the fallacy of depending upon cultural findings as a sole guide to the treatment has been shown. As, for instance, where weaker organisms, but of more luxuriant growth, overcome more virulent bacteria of less abundant growth. This has been observed by us where staphylococci and colon bacilli have hidden by their more rapid growth streptococci and pneumococci. In such cases, unless the cultural findings are corroborated by opsonic findings, poor results may be obtained by the use of corresponding vaccines.

In opsonic therapy, it is absolutely essential that each case be studied by itself, with due reference, not only to the clinical and bacteriological findings, but more especially to a careful following of the opsonic index. In sub-acute and chronic cases, where possible, three specimens of blood, taken at one-day intervals, have been secured before any treatment is begun. The opsonic index of each of the pathogenic bacteria, which might be the source of infection, is determined in each specimen of blood obtained. Important information is often thus gained by comparison of the three specimens, where one might be indefinite or misleading, as in certain cases of systemic infection. Here, as many observers have pointed out, there may be remarkable fluctuations in the opsonic indices from day to day. Wherever possible, cultures have been obtained, not only as an aid to diagnosis, but for the preparation of autogenous vaccines. In all cases of cystitis, and some doubtful cases of purulent discharge, in addition to the opsonic and cultural methods of arriving at a diagnosis, guinea pigs have been inoculated with the urinary sediment or pus, as the case may be. As will be shown in cases of mixed infection, the low indices to the various pathogenic organisms are usually corroborated by the presence of the same bacteria in the discharges or sediment. We wish to call especial attention to the necessity, in an obscure case, of following out the above-mentioned routine of securing the indices of the more important pathogenic bacteria. If the index is consistently low to one or more bacteria, we have an indication as to the condition to follow. Many obscure diseases have been proved opsonically to be mixed infections, and have yielded to treatment by using the appropriate vaccines.

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[1] Med. Comm. of Mass. Med. Soc., 1907, vol. xx, no. 3, p. 671; Bacterial Opsonins and Vaccines. Leary and Medalia.

[2] Wright, A. E.: Lancet, 1905, vol. ii, p. 1598.

THE USE OF VACCINES.

The importance of the opsonic index is shown, not only in making diagnoses, but as a guide to the time and the amount of the corresponding vaccine to be used. Where injections have been given in cases of more complicated infections than acne, furunculosis, and similar superficial forms without the aid of the opsonic index, it will be demonstrated that harmful results may be expected from time to time. By giving injections in too large doses or at the wrong period of a positive phase or during a prolonged *opsonic* negative phase, a marked *clinical* negative phase may be induced. This may be shown by an increase of subjective symptoms, recurrence of a purulent discharge, or other unpleasant effects. On many occasions, having found an abnormally high index, we have been prevented from giving a standard injection of vaccine after the usual empirical interval. There are various advocates of the practice of injecting without the aid of the opsonic index, after such an interval, but we cannot help feeling that such practice will produce poor results. On waiting till the proper time, we have secured satisfactory responses to the injections, as shown opsonically, by a mild negative phase, and by a clinical improvement. We are accustomed to speak of a *clinical* negative phase as distinguished from an *opsonic* negative phase. By this we mean the subjective and objective symptoms which appear after too large a dose has been given. There should always be an opsonic negative phase after an injection, but rarely a clinical one.

We agree with Wright that, in general, small doses of vaccine, as long as they produce an opsonic negative phase, are of more benefit than increasingly large doses. When an injection no longer gives a negative phase, or the patient is clinically at a standstill, an occasional large dose may be permissible for its stimulating effect. It has been our observation that, clinically, tuberculin R., in doses of $\frac{1}{2000}$ to $\frac{1}{1000}$ mgm., produces the least unpleasant results subjectively, while colon vaccines give the most unpleasant. The vaccines of the other pathogenic bacteria range between. We have seen so-called minimum doses of colon vaccine produce effects varying from simple depression and disinclination to move about, to headache, nausea, cyanosis and weak heart action.

In many cases of mixed infection, it is seen that inoculations of one or more vaccines will bring up the opsonic indices, not only of the same bacteria, but occasionally of others as, for instance, the colon bacillus and staphylococcus pyogenes aureus. The scientific aspect of the specificity of opsonins does not come within the scope of this paper, however, and will not be discussed.

In cases of mixed infection, the opsonic indices may be found low to two, three or even more pathogenic bacteria. In such cases our routine is as follows: We first secure evidence from cultures taken from pus, secretions, or urinary sediment, if possible. Then, with the opsonic indices as a guide, we inject corresponding vaccines of the bacteria showing the lowest indices, beginning with a minimum dose. We usually make our injections in the upper arm, using each vaccine separately. Our experience with Wright's suggestion of injecting up the lymph-stream has been so small that we have nothing to report. After the requisite interval, as shown by the indices, we repeat the injection, either of the same vaccine, or if another bacterium of the mixed infection shows a lower opsonic index, we give an injection of the corresponding vaccine. Using standard doses, we do not increase the dose as long as the injections are followed by an opsonic negative phase. It may be some time before clinical improvement is seen, although, opsonically, there is usually an early change for the better. By following this method, the indices of all the offending bacteria will in time be brought to or above normal, with a corresponding improvement in the patient's condition. When all the indices are at about the same level, the question arises as to which of the vaccines to use. It is then largely a matter of judgment and experience in the effects of the vaccines. After a little experience, one will be able to determine fairly accurately, clinically, what effects the different vaccines produce, and can act accordingly. Where there is a tuberculous element in a mixed infection, other things being equal, tuberculin R. should be one of the vaccines employed.

In an occasional case, a patient will be found in a generally run-down condition, but with no demonstrable lesion of any sort. The index to T. B., for instance, may be consistently low in several specimens of blood. After a few injections of the corresponding, vaccine, not only is the index raised to or above normal, but a state of well-being is induced with marked improvement in the general condition. Another type of case is an obscure joint lesion where no cultures can be obtained. Here the indices may be low to one or more bacteria. After the use of appropriate corresponding vaccines there is usually a relief of symptoms.

The question will often arise, having determined that a given case is active tuberculosis rather than quiescent, as shown by fluctuations in the indices, as to *when* to give tuberculin (T.R.). The presence of a high index means the apex of the opsonic curve, due to auto-inoculation. Hence, the proper time to give injections is when the mechanism of immunization is at rest, as shown by a lowered opsonic index.

It must be borne in mind that, in the complicated forms of subacute or chronic infection, results must not be expected immediately. It may be several months before marked improvement is seen or a cure effected. This is shown particularly in mixed infections of the bladder, bone lesions and some tuberculous affections of the glands, bones, joints, etc. Even in simple acne, as has been shown by Wright, it may be many weeks before there is much improvement.

Another point to bear in mind is that in many lesions better results will be obtained from opsonic therapy when it is combined with surgical treatment as indicated by the symptoms. Collections of pus, if large, should be given free drainage; on the other hand, too radical procedures will often be found to retard progress, both opsonically and clinically.

STOCK VERSUS AUTOGENOUS VACCINES.

The question whether a stock or an autogenous vaccine should be used varies with the individual case. Wherever possible, it is our custom to use an autogenous vaccine. In cases of long duration, however, it has been observed by us that at times an autogenous vaccine no longer produces good results, for the reason that the patient has become tolerant to it. This tolerance may be due to the fact that the dose is too small, or that there are too frequent injections in one spot, or that the vaccine has too little virulence. When cultures show a growth of staphylococcus pyogenes albus, or a weak staphylococcus pyogenes aureus, a stock vaccine made from five or six virulent strains of staphylococcus pyogenes aureus often gives better results. In more acute and virulent infections, other than staphylococcic, autogenous vaccines have proved very satisfactory.

Owing to the fact that, till the present time, we have been unable to secure satisfactorily growing strains of gonococci, we have nothing to report in this large field. In the surgical complications of typhoid fever, also, we have had as yet no opportunities for study.[3]

We wish to express our thanks to Dr. Timothy Leary, Professor of Pathology and Bacteriology in the Tufts College Medical School, for much helpful advice and criticism, and to the surgical staff of the Boston Dispensary, for the cases placed at our disposal for study.

The cases are divided into two groups, — the simple infections and the mixed infections. The cases have been followed clinically by Dr. Beebe, while the estimations of the opsonic indices and the preparation of the vaccines have been done by Dr. Medalia.

STAPHYLOCOCCUS INFECTIONS.

Case I. Ida G., twenty years. *April 20, 1907.* Three years ago had an inguinal abscess which was opened by incision. For past year has had a series of boils and furuncles on face and neck, several of which were opened under ether. Has felt sick and weak. Has lost about 10 lb. weight. Skin of face is blotchy, rough and nodular to the touch, and there are many furuncles, with redness and induration of the surrounding skin. T. B. index, .94; staphylococcus index, .77; streptococcus index, 1.16. On April 25, staphylococcus index, .77. As there were no pustules an autogenous vaccine was not secured. Given 250 million staphylococcus stock culture of 5 virulent strains. *May 2.* Staphylococcus index, 1.17. Given weekly injections of vaccine, 250–1,000 million varying according to index and clinical results. *May 25.* Has fresh furuncle on upper lip, swollen and painful. *June 1.* Furuncle all healed without suppuration.

From then there was a gradual and constant improvement both in general condition and locally. Through the summer she gained steadily in weight. Skin became of good color, roughness and nodules disappeared, and the skin was soft and smooth. The staphylococcus index remained at or above normal. *Sept. 4.* Weighs 9 lb. more than best previous weight, and is healthy and strong. Skin is clear and of good color. Has had no pimples since early in the summer.

Case II. H. P. B., twenty-eight years. *May 31, 1907.* Well and strong till October 1906, when he suddenly began to develop boils and furuncles on the face and neck. Since then has had over 200. Many opened and curetted. Has tried all the usual measures of relief, with no success. Urine negative. Has lost 30 lb. weight, and feels greatly debilitated. At present has about 20 furuncles on the face and neck. Skin is red and indurated, with many scars of former lesions. Staphylococcus index, .95. Streptococcus index, 1.13. *June 5.* Staphylococcus index, .84.

As there was no pustule from which a culture could be obtained, treatment was begun with a stock staphylococcus vaccine, 250 million. For the first month the only improvement was in the color of the skin. There was less redness and induration. Early in July, a large boil appeared on the back of the neck, which was incised under ethyl chloride. A pure culture of staphylococcus pyogenes aureus was obtained, from which an autogenous vaccine was made, and which has been used since in the treatment. This boil rapidly healed. Since that time there have been no others. During July, the indices being above normal, the vaccine was used in rapidly increasing doses, followed by a breaking out of many furuncles. The patient felt depressed and had a prolonged negative phase. Since then the vaccine has been used only in small doses, with a rapid improvement. For the past month there have been no furuncles at all, and the skin is clear and soft. The general condition has also shown a marked change for the better. The indices have only lately been up to normal. Is still having prophylactic injections weekly.

During the month of July in this and a number of other cases, the experiment was tried of using rapidly increasing large doses where it seemed warranted by a good opsonic index. While there were no clinical negative phases shown, in every case where there was a discharge, the flow was increased, and in cases of acne and furunculosis, the superficial lesions were made worse. Since then large doses have only been used occasionally to stimulate more or less dormant cases.

Case III. L., twenty-four years. Medical student. A case of acne. The point of interest in this case is an angioneurotic condition, manifested after the first few injections of staphylococcus pyogenes aureus vaccine. There was an intense painless edema of the whole forearm from elbow to wrist, coming on almost immediately after the injections. As he had previously told us that he was subject to attacks of angioneurotic edema elsewhere, the condition was not mistaken for an inflammatory one. The edema has at times lasted four days after the injection.

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[3] Encouraging results have been obtained by one of us in the treatment of broncho-pneumonia, lobar-pneumonia and "grippe," cases to be reported later (Medalia).

Case IV. D. B. *March 18, 1907.* Patient has had a series of over 30 boils and furuncles on face and neck since December, 1906. Several opened under ether. Feels weak and debilitated. At present has many furuncles on face and neck. Staphylococcus index, .82. On *March 20* and *25*, was given injections of stock staphylococcus vaccine (½ cc. = 250 million), with much relief to general symptoms, but none locally. *April 10.* Staphylococci index, .50. For past three or four days has felt weak and sick, and has had some small furuncles on neck. One furuncle was opened April 1, and a pure culture of staphylococci pyogenes aureus obtained, from which an autogenous vaccine was made. Given an injection of 500 million autog. Had a markedly severe clinical negative phase for two days. *April 15.* Staphylococcus index, 1.30. Feels much better and stronger. Has lost the feeling of lassitude and languor, which had been present for some time. On next day given 500 million staphylococci. Index on *April 17,* 1.16. No clinical negative phase. *May 3.* Has had no furuncles for three weeks. Has regained strength and appetite, and is working hard.

During month of June developed one large boil on back of neck, which rapidly yielded to two injections of 500 million each without coming to suppuration. *June 21.* Staphylococcus index, 1.21. *June 25.* Feels well again. Given 500 million staphylococcus as prophylactic, as he was about to leave for Europe.

The low index, .50, on April 10, and the increased dose produced a marked clinical negative phase. Owing to the fact that the patient has a busy out-of-town practice the blood was not obtained the day before the injection was given, so that the opsonic index was not used as a guide to the size of the dose. Consequently, too large a dose was given empirically, because the first two injections had not given clinically beneficial results. The clinical negative phase *could* and *should* have been avoided by obtaining the index on the day previous to the injection.

STREPTOCOCCUS INFECTION.

Case V. Mary C., twenty-two years. Seen first *Feb. 19, 1907.* Had had a swelling in left posterior-cervical triangle of five weeks' duration. Considerable fever, weakness and malaise. Lately swelling had been red, tender and soft. Opened next day under nitrous oxide. Cultures from pus showed pure streptococci, from which a vaccine was made. Owing to patient's reluctance, first dose of vaccine was not given till March 7 (½ cc. = 50 million). Streptococcus index, .82. At this time patient was very weak, exhausted, pale and thin. Considerable discharge from wound. Index for negative phase March 8, .78. On *March 13,* the discharge had ceased and the wound was nearly closed. Patient felt greatly improved in strength and appetite. Color was good. Streptococcus index, 1.24. Was given injection of vaccine, 50 million. Index on following day, .91. When seen a week later wound was healed, with no induration about it. Patient said she felt better and stronger than she had for past six months. Four weeks later had gained 5 lb. and was feeling perfectly well.

COLON INFECTION.

Case VI. Mrs. C., forty years. Seen in consultation with Dr. D. E. Baker, of Newtonville, *April 7, 1907.* Diagnosis, acute appendicitis. Immediate operation performed by Dr. Baker, thirty-six hours after first symptom. Perforated gangrenous appendix found, with no walling off. Abdomen full of turbid serum, intestines injected and ecchymotic, with here and there flakes of fibrin. Appendix removed, abdomen flushed out with salt solution, and drained with gauze wicks. Patient put to bed in Fowler's position. Blood taken for opsonic index. Appendix brought to laboratory in sterile gauze, placed in culture media, from which a pure culture of colon bacillus was obtained, and a vaccine made in less than twenty-four hours. Colon index, .79. Following day, *April 8,* colon index, .53, and patient was given an injection of ½ cc. vaccine (½ cc. = 50 million). Temperature 100°, pulse 88°. *April 10.* Colon index, .73. *April 15.* Colon index, .94. On this day the abdomen was soft, the wicks had all been removed, and the general condition was greatly improved. Temperature varied from 98.6° to 99.6°, rarely to 100°. *April 16.* Patient was given another injection of 50 million colon. Patient's color and expression good, appetite gaining, abdomen soft, and general condition excellent. *April 17.* Colon index (negative phase), .73. *April 21.* Wound healed. Patient left hospital and went home.

There was no appreciable *clinical* negative phase after either of the injections of vaccine. On the contrary, the patient said they seemed to stimulate her, and make her feel better. This case is interesting for several reasons: first, the rapidity with which an autogenous vaccine was prepared; secondly, the tolerance of the patient for a comparatively large dose in her serious condition. The marked improvement of the condition following the injections seemed to be too great to be accounted for by mere coincidence. Apparently, there is no reason why such treatment should not be followed in similar cases, particularly where the condition is desperate.

Case VII. Chronic cystitis and pyelitis. N. C. S., forty-three years. *April 24, 1907.* Has had cystitis for twenty-one years, following an attack of gonorrhea. Treated by a number of physicians at various times without much relief. From time to time passes a little clotted blood in urine. Occasional attacks of pain in left back, region of kidney, without reference to presence of blood in urine. No pain on passing urine. No calculi or brick-dust sediment ever seen. Passes urine one to two times during night, about every three hours during day. Urine cloudy and foul in odor. Much sediment. Drinks large quantities of water, not because of thirst, but to "flush out kidneys." Feels weak in morning and feverish towards night. Attack of "liver trouble" one year ago. Has been pale and anemic for some time. Has lost weight and strength, and is greatly discouraged. Depressed all the time. No stricture of urethra. Prostate normal. No hydronephrosis evident. Colon index, .84; T. B. index, .88; streptococcus index, .87; staphylococcus index, 1.17.

Urine examination. — Sediment contains much pus and mucus. Cells from bladder wall and pelvis of kidney. Pure culture of colon isolated, and an autogenous vaccine made. No T. B. found. No sugar in urine. Guinea pigs inoculated with sediment have been negative to T. B. *April 26.* Colon index, .92; T. B. index, .88. *April 29.* Colon index, .62; temperature, 99.5°. Patient looks and feels sick. Given 50 million colon vaccine. *April 30.* Severe clinical negative phase lasted several hours. Nauseated and weak. Arm and shoulder very painful. Opsonic index, 1.40. During month of May was given weekly injections of colon vaccine in doses of 30 to 60 million. With the smaller doses there was no clinical negative phase. By June 1, the urine had lost its foul odor, and the sediment contained much less pus. At this time a slight growth of staphylococcus pyogenes aureus was found in cultures from sediment. Staphylococcus index, .84. The attacks of pain in the back were less frequent than formerly, and of shorter duration. During June the doses of colon vaccine were increased gradually to 150 million without being followed by any clinical negative phases. The patient's general condition was gradually improving. He was no longer depressed nor despondent. Appetite good and strength fairly good. Did considerable work in his garden, bending over without pain or discomfort. Had not been able to do this for past ten years. The doses of colon vaccine during July were increased to 220 million, without unpleasant effects. The indices to both colon and staphylococcus remained constantly well above normal. *Aug. 8.* T. B. index, 1.06; staphylococcus index, 1.06; and colon index, 1.15. Weight, 160 lb. Feels well and strong. Urine contains many bacteria, but only occasional pus corpuscles.

Since then has had nearly weekly injections of colon vaccine, 150 to 200 million as indicated. At present the urine has no foul odor. Sediment mostly mucus with practically no pus. Cultures show almost no growth of colon and staphylococcus. Indices above normal. Feels better than he has for many years. Occasional twinges of pain in back, but of little severity and short duration. No fever. Is working hard every day. Has gained 11 lb. Is cheerful and happy. In this, as in the other bladder cases, there has been no local treatment.[4]

(To be continued.)

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MEXICAN MINING PRACTICE FROM A TUBERCULAR POINT OF VIEW.

BY I. S. KAHN, M.D.,
Surgeon, American Smelters Securities Co., Velardena, Durango, Mexico.

Probably no portion of the United States shows a larger number of cases of tuberculosis per capita of population than does eastern Massachusetts. Unfortunately the medical profession is not immune to its ravages. This article is written not so much with a view to scientific interest as to call the attention of New England medical men unfortunate enough to contract the disease to a section of the continent comparatively unknown to them and practically never thought of when the question of climatic cure in their own cases is considered, a section, which in regard to altitude and climatic conditions, is almost perfect, and in addition offers opportunities for self support, and at times a little more, during the period of time set aside for the cure.

Starting from El Paso, Texas, and running 1,200 miles in a southeasterly direction, the Mexican Central Railroad practically bisects Mexico, running through a great central elevated valley which, beginning with 3,700 feet of altitude at El Paso, continues at about that elevation to Torreon, 500 miles south, then, gradually ascending, reaching its greatest elevation (about 8,000 feet) at Zacatecas, 250 miles further south; then gradually descending slowly to the City of Mexico which possesses an altitude of about 7,000. In this great stretch of country most of the rainfall which is but slight, occurs in the spring and summer months, with almost complete absence during the rest of the year, exactly as the rainy and dry seasons of our Pacific coast country. There is more rain south of Zacatecas than north, and the watersheds drain mainly in a southerly direction, so that from a short distance below that city to the City of Mexico, the country is in a high state of cultivation.

North of Zacatecas, during July and August, every two or three days there is a heavy shower, lasting, however, only one or two hours. Mists, fogs and drizzles are unknown; it does not rain often but when it does there is no question of identity concerned in the matter. River and creek beds, previously dry, within an hour or two become raging torrents. Then the sun reappears, evaporation is rapid, and within another couple of hours the hills are as dry as if it had not rained for months, and within twenty-four hours the creek beds are dry also. During the rest of the year, the rainfall is limited to scattered showers that can be counted on the fingers of two hands. There are very few streams of sufficient volume and permanence to permit of irrigation; farming areas are rare, cacti, sage, lecheguilla, sotol, guayule and mesquite constituting the usual vegetation on a rocky, sandy soil, giving exactly the appearance of the desert lands in New Mexico and Arizona.

On either side of this elevated plateau, both east and west, are ranges of mountains, rising from heights of from 6,000 to 9,000 or more feet, all the way from El Paso south, and at distances from the railroad varying up to 100 miles. These mountains, suffering from the general lack of rainfall north of Zacatecas, are rough, rocky and usually as bare of vegetation as the valley; a few wild flowers of great beauty are seen, and some of our common golden-rod, but trees are a curiosity. Some of the scenery is magnificent, however. Surface springs are almost unheard of and drinking water for the mines and valley towns comes either from wells or from deep springs in the depths of the mine shafts.

These mountains, though bare of vegetation, are rich in minerals,— silver, lead, copper and occasionally gold,— and enterprising Americans have established numerous camps for mining or smelting, camps varying in population up to several thousand.

Labor is very cheap out here, the average Mexican peon drawing the daily salary of 1½ *pesos* or 75 cents in United States currency, the companies usually furnishing them "houses" — one-room affairs, occasionally made of *adobe* (bricks made of mud and straw as in our western country), but more frequently juacals of cactus stalks and dried grass. Not infrequently these "houses" are merely small caves in the hillsides, with a front wall of cactus stalks. In addition to homes, medical care is also furnished them, so that practically every camp of six hundred or more has its own hospital or dispensary with a resident doctor paid by the company.

The "hospital," usually of *adobe*, contains two or three rooms with whitewashed floors and walls, usually piped for running water and furnished with a gasoline stove for sterilizing purposes. Examining and operating room tables and furniture may be modern, but are usually of white painted wood and homemade, and though the fixtures at times are crude, the companies are exceedingly liberal in supplying dressing materials and drugs, so that it is possible to do excellent work. Soap and water are as efficacious here as in Boston, and sepsis is no more common than after Boston accident-room treatment. We sew up our compound fractures and practically always union by first intention in these and our other accident cases.

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[4] Other cases of cystitis are described among the mixed infections.

The drug stores are well stocked, the doctor being usually given a free hand in the purchase of drugs and supplies, the companies allowing him the more expensive synthetical proprietary preparations, even plenty of diphtheria antitoxin at $6.50 gold per 4,000 units. An intelligent Mexican is always given as assistant to do the cleaning, the simple bandaging, to help dispense medicines and to give anesthetics. Tablet medication is used as a rule, as far as possible, but there is always a goodly stock of United States Pharmacopeia elixirs, tinctures and fluid extracts to be used when desired. The doctor is supposed, as a rule, to furnish his own instruments (these are admitted to Mexico duty-free); and usually no provision is made for beds inside the hospital or for trained assistance.

The work is very easy. My office hours are from 8 to 10 A.M. and from 4 to 6 P.M. Accidents are attended to, of course, at any time, but are rarely severe enough to demand attention outside of regular hours. There is excellent practice in minor surgery, most of the injuries being crushes or cuts from falling rock in the mines, and there are usually two or three wounds a day to sew up. Usually the doctor looks after the families of the men also. House visits average here less than three a day, so that he has plenty of leisure time. For outdoor occupation in his leisure hours, he has hunting, prospecting and horseback or mule riding into the hills. One of the surgeon's perquisites is the use of the company's mules whenever he desires. As the roads are merely narrow trails in the mountains, teams and even horses at times are impractical; a mule is far from a bad saddle animal, having an easy gait and unlimited endurance; as most of them are used for hauling ore cars and are not particularly well broken, the beginning of a ride is usually accompanied by considerable excitement for the rider and amusement for the spectators. The hunting, as a rule, is excellent, particularly near artificial or natural tanks. Quail and duck abound and deer are not uncommon.

The reason the doctor has so much time on his hands is the remarkable absence of serious illnesses in these mountains. Tropical fevers seen on the coast are unknown, malaria also, there being no mosquitoes. As the drinking water usually comes from a spring in the mine deep underground, there is little or no typhoid. All of the infectious diseases are rare, usually imported. Measles will at times get a good start but deaths almost never occur. Smallpox breaks out now and then, but the companies back the doctor up on the vaccination question, so that it is of less frequent occurrence. Pneumonia is fairly frequent and very fatal in these high altitudes. Typhus is seen in the cities of Mexico fairly commonly, but almost never in the mining camps. Tuberculosis at times occurs; have seen 2 cases of peritoneal involvement. The pulmonary cases are always kept at work outside, cases developing here run a long course with but little expectoration, taking on usually the "fibroid" form with marked dislocation of the heart. Slight hemorrhages are common.

For childbirth, the midwife presides, never the doctor, unless there is some delay or accident. Perineal tears, and even slight cervical tears, are extremely uncommon as these are all hard-working, muscular women. Malpositions are very unusual. The ordinary call for the doctor is to relieve uterine inertia, which is usually due to delay in rupture of the membranes; his next most frequent call is to Créde out a delayed placenta. The posture of the parturient woman during the second stage of labor and for delivery is most unusual. The woman kneels on the ground and with hands over her head pulls on a rope attached to the roof, the midwife assisting by downward pressure on the fundus when necessary. It looks like a very sensible method as it adds eight or nine pounds of gravity to the muscular forces; it certainly is an effective method hereabouts. Though the delivery takes place on the bare ground, sepsis is unusual.

As the women all nurse their children until two and three years of age, pediatrics practice is limited to giving $\frac{1}{10}$ gr. calomel tablets on occasions where various "extras" in excessive amounts have been added to the customary "milk diet." Even mild rickets is unusual. Abortions are common, usually syphilitic in etiology. Race suicide is unheard of, — the women are extremely prolific, being mothers at fifteen, whether married or not, usually not. As intercourse is rather promiscuous from our point of view, naturally, as might be expected, venereal diseases are extremely common, but not virulent. Somebody has said that Mexico is the most highly "syphilized" country in the world. I know of no other countries but the good old United States and Mexico, but I can vouch for Mexico in that regard; the late lesions are frequently seen as these people are too ignorant to keep up treatment after the disappearance of a secondary rash or a group of mucous patches. Half of the men of the community have gonorrhea as a chronic condition. In fact a young Mexican is not a man until he has had his "golden drops," as they call it. They consider it more or less of a natural condition and pay no attention to it. Still, stricture and kindred results and pelvic complications in the women but seldom occur. An American venereally inclined, however, in this section of the world, before long looks like a genito-urinary dispensary. Ophthalmia neonatorum is common and many nasty corneal scars result.

While the infantile death-rate from inherited syphilis is high, still the women suffer but little from it or from gonorrhea. In a recent house-to-house canvass of thirty-five women questioned, every one had borne children. It is interesting to note that every single one of these women nursed her children at least a year, and of thirty children examined in these houses between the ages of one and three, twenty had been nursed at least two years. The rickets found was limited to one slight case of bow-legs and three barely perceptible rosaries. Dentition, however, in all but three of the children was backward. This makes an interesting comparison with the average civilized community.

One particular set of specialists ought to visit this section of the world,— I mean the " nerve-men." My little camp of 700 or 800 is a perfect clinic of hysteria; I see it in all its phases. It is the bane of a doctor's life, hereabouts; there is scarcely a day that I do not get a call to see a woman having an " attaqué," as they call it, an hysterical fit or convulsion. I see it even in children of nine or ten, probably imitative, as an attack usually attracts most of the neighborhood. Even acute mania lasting two or three days is not uncommon. Much of this mania is not real hysteria, but is caused by smoking a weed, growing abundantly in the hills, called " *marihuana*," a vice rather common in Mexico. Its use is, of course, vigorously denied. Usually the women are the ones affected, as they all smoke more than the men. I can't blame them as Mexican tobacco is cheap, and far and away superior to the American article. This " *marihuana* " mania is extremely violent for two or three days, requiring enforced restraint; it is accompanied by hallucinations of sight and hearing, cyanosis, rapid, weak pulse with occasional vomiting, followed by exhaustion and mental confusion lasting two or three days longer. I have not seen a death and understand that it is seldom fatal. I give all my hysteria cases the same treatment, — apomorphine subcutaneously, followed later by salts and later by bromides if necessary. If it is " *marihuana*," it certainly helps; if it is hysteria, the apomorphine usually gives them something to think about for a while. I recently found a new arrival in camp, a man of forty-five, carried here, sick several months with spastic hemiplegia, completely bed-ridden, resisting all handling and even interfering with speech. Suspecting the usual, I told him I could cure him, rubbed his legs and arms with a common gargle, and next day he was working in the mines, making my reputation solid forever in this community. Such " cures " are common.

This, what might be called " hysterical tendency," strikes the American physician at once. He is surprised and later disgusted at the number of cases of trivialities that come to him, at times ridiculous; such as a woman worried because she thought she was sweating more on one side of her body than the other; another because she felt like eating dirt,—actual occurrences in my experience; cold hands and feet are other serious diseases seeking remedies; simple headaches and diarrheas and vague pains all over the body, magnified out of all proportion to their actual intensity. Verily, a doctor in Mexican mining practice needs a goodly supply of placebos. If a Mexican coughs once in the morning he is at the hospital door as soon as it opens with a woeful story; if he coughs again that afternoon he is sure he is going to die and is back at the hospital with a pitiful tale of heartrending pains, etc., and that prescription has got to be changed. This is really but slightly exaggerated. This is also seen in surgical work. Mexicans are extremely intolerant to pain. Almost all wound repairs and manipulations have to be done under chloroform, as the pain here again is grossly exaggerated, and a cut finger requires in every instance an extremely careful arm examination to rule out a fracture higher up. Recently I had a man hit on the head by flying rock from a dynamite blast — result a quarter-inch superficial scalp wound; result for me, more noise than a violent American appendicitis, and even after the most careful examination with all kinds of soothing persuasiveness, I was not sure that I did not have a slight skull fracture. Next morning the same wound entirely healed by first intention, but too tender to be touched. It took two normal salt solution tablets to quiet the pain so that he could go to work. In the cleanest wound, with perfect granulations, there is always " inflammation " and inability to sleep the past night, which persists until the last dressing. A Mexican always wants his wound dressed daily and will invent any kind of a story to have it done. A more experienced surgeon put me on to the fact that it is a common superstition amongst them that air is harmful to a wound. Everybody in this camp knows that now and I have a good answer to the daily dressing requests. This same disposition is seen also in their requests to call at a house; usually it is all haste and anxiety and I find a headache or stomach ache the usual illness. When I hear the word " *muriendo* " (dying) I get cautious, as I know there is nothing much wrong. In reply to a call of this kind, or rather three successive calls after earlier refusals to respond, I found an old woman wondering why she was sweating so much; that is a common cause of anxiety amongst the old women. (This was in a camp just outside of El Paso; it was 104° in the shade.) She thought it was something of intense severity. This excitability and exaggeration at times is very perplexing. A man hates to take a long walk to some outlying cave for nothing, and then he hates to neglect a real sick case. To illustrate: A man came up to the hospital one afternoon with the statement that his wife was dying, bleeding from an abortion. He stuck to his story that she was " dying." I found he was almost right; she was pale, exsanguinated, pulse 140, and blood in a broad stream pouring out of the vagina. Only an immediate curettage saved her life; yet not more than two weeks later I hustled at utmost speed in answer to a similar call. I found two or three dried drops of blood due to scratching a vulvar eczema of pregnancy. A man's capacity for using bad language increases in direct proportion to the duration of his stay in such company.

There is practically no major surgery unless it be traumatic, as a Mexican will never consent to an operation of election, such as a radical cure of hernia, an abdominal section or tumor removal; even removal of hemorrhoids and circumcisions are refused.

Intestinal parasites are uncommon; have seen only one case each of tenia and Ascaris lumbricoides.

Skin diseases are usually impetigos of pediculosis etiology or syphilis. Varicose ulcers are rather unusual.

Adenoids of marked degree and other nasopharyngeal troubles, also ordinary colds and coughs, are not common, probably due to the altitude and extreme atmospheric purity and lack of humidity.

Excessive and prolonged menstruation, so frequent in American women in these rather high altitudes, is not seen amongst the natives.

A man specializing in surgery would be hard put to it to earn a living with these people, as neoplasms are extremely rare, and appendicitis is absolutely unknown.

Aside from the wounds, most of the cases are headaches, constipation, acute and subacute indigestion, in severe cases with considerable rheumatic pains, and hysterical complaints of weakness and general distress practically unlimited in extent and degree. I dispense far more calomel and salts than all other medication combined; next come placebos. A curious fact is that for a purge these people require two and three times the dose for an American. Five grains of calomel followed by salts ℥ss does not as a rule give results. For headaches, yielding to popular clamor, I am also compelled to pass out pieces of mustard plaster, three quarters of an inch square called "*chiquiadores*," to be attached to the temples, a treatment supposed to be markedly efficacious.

Directions are usually carried out with extreme scrupulousness, as these people are rather proud of their state of indisposition, and the sicker they are and the more and the nastier the medicine they are getting, the happier they are. As this company pays each injured workman 50 centavos daily while unable to work (25 cents United States currency), which will buy enough beans to keep the family going, it is at times difficult to get the simple hand injuries back to work. My custom is, in even superficial finger cuts, to put on light anterior and posterior splints and to refuse this aid. This enfored rest to the injured part really hastens healing markedly.

Now the above remarks are not exaggerations or a travesty on Mexican character. It must be remembered that the intelligent Mexican of education differs very little from his American neighbor. The above remarks are comments on the type found in a mining camp, not the cities, the ignorant *peon* or laborer of mixed Spanish and Indian heredity with a prevalence of Indian in the mixture, few of whom can read or write. Their clothes are homemade, as a rule, and the old Biblical sandal has not yet been supplanted by modern footwear; perhaps there are fifty pairs of shoes in the average mining camp of one thousand.

The standard of health in these high altitude camps is exceedingly good. One is surprised at the absence of real sickness in spite of the lack of all hygiene; water, except for drinking purposes, is despised; domestic refuse is simply thrown on the ground in front of the houses. As no special provisions for the purpose are as a rule made and as the ordinary peon is decidedly lazy and unrefined, calls of nature are attended to as close to the house as possible. The natives usually sleep on mats of sotol on the ground, with numerous live stock, as dogs, chickens and pigs for company, but their flimsy houses, like those of bamboo in Japan, are chiefly ventilation, and I suppose that has something to do with the question, and here again in this particular camp, the mines are well ventilated and dry, and the men do not work standing in water of various depths as is seen elsewhere; and, above all, in this and most of the other mountain and desert camps there is no surface water, either running or stagnant, to breed mosquitoes; also the intense atmospheric humidity, the constant sunshine and absence of rain, all combine to quickly dry all refuse and sewage, which soon become pulverized and deodorized and unfit for bacterial growth. I inspect the animals when slaughtered, and stop the selling of decayed or green vegetables and fruit, and so keep down the diarrheas; anything like amebic dysentery is unknown here, though diarrheal attacks are still more common than they ought to be.

So much for the medical practice end of the question. A good general knowledge of medicine and surgery is required, and a little tact and common sense, as the doctor does everything from dispensing placebos and good advice to washing impacted cerumen out of ears and pulling teeth.

A knowledge of Spanish is not required by the companies as it can be acquired easily with an interpreter and a dictionary. The interpreter can usually be dispensed with in two or three weeks, and as the vocabulary of these people is limited to three or four hundred words, an American has a good working knowledge of the language in a couple of months.

The salaries ordinarily run from $100 to $200 gold a month. In addition my company lets me charge for venereal diseases, for wounds derived from sources outside the mines, as in domestic difficulties and "*cantina*" (saloon) brawls, and for relatives other than the wife and children of the workman. I take cash when I can get it. Still it is impossible in modern times to draw water or blood out of rock, also money out of a man on 75 cents or $1.00 a day. Some companies will deduct a dollar or two out of the salary every week on this bill. In that case, after the first deduction, Mr. Mexican frequently silently folds his tent in the night, and with his simple and not extensive belongings on the back of a burro, and his family on foot wends his way to a neighboring camp, if he does not possess sufficient train fare. False names and other ruses are resorted to frequently, to avoid this payment. I saw a laborer hit over the head with a beer bottle one afternoon. As I was putting six stitches in his cheek, next morning, he told a pitiful tale of how he had been unfortunate enough to be too near a dynamite blast at the time of its explosion. The desire to beat a doctor seems to be a universal psychological *status* not limited to particular lands or people.

I get fifty cents gold for an office visit, $1 for a house visit, double for venereal visits, $2 for a house visit or each visit to a confinement case, $5 to $15 for stab or gunshot wounds or 50 cents a stitch for superficial wounds. That is what I charge. The proportion that I get is very similar in extent to that of the average doctor north of the Rio Grande. It amounts to enough in a week to about meet living expenses, leaving all the salary "velvet," so to speak. Occasionally a good fee is picked up by a visit to a neighboring ranch or small town.

A furnished house is usually given to the doctor, rent free, if married, otherwise the best room in the settlement, that is, a house or room furnished from the point of view of a mining camp, which means, clothes closets, desks, tables, washstands and chairs, and even at times beds, usually all built by the mine carpenter. Still, varnish is not essential to happiness, and canvas seats and backs in chairs, while they do not appeal to esthetic sensibilities, are yet far from uncomfortable. These rooms or houses are frequently lit by electricity, generated in the power house for working the mine hoists, etc. Another not uncommon luxury is a shower bath with hot water derived from the air-compressing machines for ventilating the mines.

As the ordinary Texas, Arizona or Mexican cow can live and get fat off the desert vegetation and scenery which is plentiful hereabouts, and sheep and goats also eke out an existence, fresh meat is always plentiful and cheap. Eggs are cheap and common articles of diet. But when you get chicken, you may be sure it is some erstwhile defeated champion, an actual victim of its adversary in the gladiatorial ring in last Sunday's cock-fight, or one whose neck has been quickly and angrily wrung by its owner for showing the white feather and running away in a fight, thus just as effectually transferring most of the aforesaid owner's past week's salary or savings to the pockets of his more successful competitor. (In these fights, the cocks wear saber-shaped razor-edged knives for gaffs, at least three inches long, and the contests are quick and bloody.) No other fowl is seen in these camps.

Vegetables and fruits are plentiful, usually brought by train or on the backs of burros from some irrigated valley. Cow's milk is obtainable but not common as the Mexicans prefer goat's milk, though I cannot see why, as it is rather "powerful" to the uneducated taste.

Usually the single Americans club together, employ a Chinese cook and eat in the American style. Personally, I live with an intelligent Mexican family, $20 a month, and the food is really excellent, about on a par with what that sum would bring in a New Hampshire country village, with far greater variety as there are numerous very palatable vegetables and condiments grown out here, unknown north of the Rio Grande. It is a standard joke among the Americans that to eat with a Mexican family, a man, to be comfortable, ought to take a fire extinguisher along with him, owing to the amount of Chile pepper in general use. Still, as a matter of fact, though many of their dishes possess considerable piquancy from this cause, others, such as soups, rice and meats, are very much as an American gets at home, and though most of their things are cooked with a slight flavor of cheese or onions or both, they are not so bad as it might seem. Butter is seldom used. Their bread is the native *tortilla*, a round, flat affair, the size of an ordinary New England griddlecake, baked, unleavened, from a flour derived from pounding moistened corn in stone mortars, and is excellent. There is practically always enough distilled water from the power plant or assay office for the use of the Americans. Ice is unknown, in some camps, but as water kept in the shade in an "*oyah*" (a porous earthen jug) is always delightfully cool it is not missed.

Personal service is also cheap. I get my washing done and my room cleaned daily for the munificent sum of $5 a month Mexican ($2.50 United States currency) plus soap. A "maid of all work" for a family draws from $9 to $15 (Mex.) salary a month.

In this southern latitude, as might be expected in the central valley, the heat in summer is intense, but in these mountain camps this heat is absent and the climate is simply superb. In summer, in the daytime, except at noon, a coat is just necessary. At 6,000 feet altitude, in my camp 500 miles south of El Paso, in sleeping outdoors, I use three blankets every night and usually have to put on a bath robe by morning (written in early September). Such marked drops in temperature are the rule in all high altitudes where the rainfall and atmospheric humidity for months are practically *nihil.* To my mind this is a distinct advantage. The tonic effect of cold in the treatment of pulmonary tuberculosis has long been recognized. There is nothing more exhilarating than to be wakened by the rising sun in these mountains; one can feel the convulsive death struggles of disgusted, disappointed bacilli. Being so far south, the winters are mild, usually really cold only at night, but a stove fire at times is required, as there are one or two freezes, but the lack of humidity again acts to advantage in lessening the perception to this cold. Most of the natives south of Chihuahua have never seen snow or ice.

I have tried ranching in west Texas, automobiling in New Mexico and Arizona (where, by the way, the natural hard clay roads are splendid) and can speak a little from experience. Climatically all are good. But in comparison with the living on an average ranch with its constant "sow-belly" (bacon), frijol beans, canned peaches, with sickly coffee and condensed milk for beverage, living in a Mexican mining camp, in spite of its lonesomeness, is almost heaven. By the way, let me give New England doctors a bit of advice on that point which I consider of practical importance. I have been on probably one hundred ranches in west Texas, New Mexico and Arizona, and know from experience. Never send a case of tuberculosis to one of these ranches, unless the owner has his family living there with him. Except during round-up season, such a man, "baching it" alone lives with one or two Mexican laborers only, and it is rather expensive to kill beef for that number, and moreover it requires too much labor for the average ranchman, usually the laziest character on earth, to milk cows for himself. He simply will not do it, and the above-mentioned diet is what your case will get. These things rather pall on a "lunger." I have had condensed milk and Kansas oleomargarine (called butter) day in and day out on such a ranch with 3,000 cattle within a radius of four miles, and this ranch owner was wealthy, an old New Englander, and living on the ranch at that time. But when the wife and children are there, chickens are raised, there is usually a small irrigated garden, and several cows are kept up near the ranch house and fed, and there is absolutely nothing finer than the rich cream and butter, fresh eggs and milk, and home cooking, gotten on such a ranch. This, with long horseback rides over the broad open prairies which in that section of the world are three and four thousand feet in elevation, certainly leads to innumerable cures.

The only advantage a mining camp has over such a ranch, is the fact that it permits of the earning of a living during the cure, a fact which may be absolutely essential in some instances, and of distinct advantage in others more fortunate financially, as occupation and something to do undoubtedly diminishes not only introspection and despondency over material loss and disappointed ambition, but also worry as to present and future conditions of health. This is a point of real therapeutic value, as this enforced idleness with its ensuing mental state has been one of the greatest drawbacks to sanitarium treatment, judging from my conversations with numerous victims with whom I have come into contact during my own travels in search of health. Another advantage of this position is the fact that the physician can regulate the amount and character of his physical exercise, as his condition requires, taking almost a complete rest cure if indications demand this, as four or five hours' work sitting down in a hospital is not hard work, and the assistant can do all the manual labor.

Of course it is lonesome, but so is a ranch; still the attractions of a city are not indicated in the cure of a consumptive — those things he has to forego. Also every camp has a few Americans for company, more than are to be seen on a ranch except during round-up season. The *peons* look on the doctor as a person of considerable importance, will do him all sorts of little favors. At their *fiestas* he is always given a seat on the rostrum with the other notables, and they consider it an honor when he will attend one of their dances or social functions, always giving him the seat of honor. All he has to do, to maintain their respect, is to treat them decently, humor their little peculiarities, act with a little tact, not get drunk except on *fiesta* days, which come often enough for the purpose, when if he doesn't he is apt to be in a lonesome condition, and above all, let their women alone, — that is without first consulting the men.

In the larger cities for an occasional visit, there are always large American colonies, usually with a good club where he is welcome. Almost all have Masonic Lodges for those interested. The business districts and dealings and social amusements differ in no way from what is seen in American cities of similar size. English is very generally spoken, daily newspapers printed in English being published in the larger cities.

Consumptives other than physicians also can usually find openings for healthful if not heavily remunerative positions, with prospecting and geological outfits.

These medical positions can usually be obtained by correspondence with the better known San Antonio and El Paso physicians. Changes are frequent, as naturally men with any ambition as soon as cured, or sufficient capital is obtained, drift into smelter or city practice which pays better. I know very little of conditions of city practice in Mexico. Most American physicians there are primarily attracted by connections with a smelter or railroad.

I trust this article will be the means of offering practical assistance to some unfortunate, afflicted practitioner. It is only one road for a cure, others exist, possibly better, but it is an avenue trod by many previously, with excellent results, and but little known in New England. No examination or registration fee is required for this mining practice, and many excellent physicians take these positions. I found in a camp of less than one hundred in Arizona, an ex-chief surgeon of one of the largest railroads in the United States.

Certainly the living is better in the big Arizona mining camps like Bisbee and Tombstone. Colorado I am unfamiliar with. But the climate here is far superior to that of Arizona, especially in summer; the days here seldom reach as high as 80° at noon, and the nights are always cold. Just before coming here I spent several weeks in Arizona, and on several occasions saw the thermometer in Bisbee last summer 103°–4° or 5°, in the shade, and it is extremely dusty there. On one occasion, at the Naco Water Works, about ten miles south of Bisbee in the desert, but only 500 feet lower, I saw it 130° in the sun. Moreover, greater competition for positions there makes the chances for material existence far better here. On the whole, a physician with phthisis would have a hard time to find a better place for his purpose than a Mexican mountain mining camp.

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CHRONIC DYSPEPSIA.*

BY JOHN B. DEAVER, M.D., PHILADELPHIA.

The members of the Meigs Medical Society may think strange of the title of my paper, and my only apology is the opportunity I have had of studying the pathology of the living. That the pathology of the living has made startling revelations in the diagnosis and treatment of many intra-abdominal ailments which have, as their ordinary symptoms, those formerly designated chronic dyspepsia, chronic indigestion, etc., we now know, and are forced to admit. It will be my purpose this evening to show how we physicians have in the past been deceived, whilst at the same time we have been deceiving our patients.

The term "chronic dyspepsia," as used in present day medicine, denotes a symptom-complex which is usually expressive of distinct organic disease within the abdomen. It is a term that was coined sometime in the eighteenth or nineteenth century, before abdominal surgery was developed, and had its equivalent in the Latin phrase "*non cognosco*" which, as you are aware, means "I do not know," "I am not acquainted with," "I do not recognize." In those days, if a patient complained of changed appetite, gastric distention with flatulence, heartburn and acid eructations, constipation and pain after eating, with or without vomiting, and if these symptoms were not acute, his case was diagnosed "chronic dyspepsia," with the provisional diagnosis, provided the pain was very marked, of "neuralgia of the stomach." The patient was advised not to eat fried food or plum pudding; and was prescribed a quassia cup, and other stomachics, as golden seal, gentian, or boneset; or digestants, as saccharated pepsin, pancreatin or papain. After extended treatment perhaps improvement ensued, and the "chronic dyspepsia" or "neuralgia of the stomach" was recorded as cured. But, as I shall show you, the patient was not cured; his ailment, in all probability, was merely restored to a condition of latency. If, later on in the disease, he vomited a quart of bright blood, the diagnosis of gastric ulcer was established; if he became jaundiced, gallstones were suspected; and if he became pale and weak, and lost flesh, and a lump was found in the abdomen, malignancy was diagnosed. If the case came to autopsy, careful pathological measurements and weights were made, minute notes dictated and the corpse sewn up and given over to the embalmer.

With the development of abdominal surgery came the dawn of a new era. Important observations were made at the operating table, and a new branch of medicine was developed. It was that of the pathology of the living. I can well recall the time when this new science was offered to the profession. It created commotion as did Virchow's announcement of cellular pathology. Many doubting brethren asked me, "What is this living pathology?" "How can there be any *living* pathology?" This latter question suggested to me that my questioner could associate pathology only with the post-mortem table. I explained to him that pathology is the science of disease, and that living pathology is the science of disease in the living. He caught the idea, and went forth thinking.

Living pathology, then, is the science of disease in the living. It immediately began to minimize the value of carefully taken post-mortem protocols. It explained symptoms, signs and the natural history of disease; it developed diagnosis and brought operative treatment earlier into people's lives. By these means it has prevented years of suffering, and, like the fender on a tram-car, has snatched patients from the jaws of death, thereby helping to approximate the average span of life more nearly to the three-score-and-ten mark.

To my mind, no better illustration exists than that offered by disease of the skin. Here the character and extent of the disease, including the size, color, consistency, sensitiveness and amount of congestion and exudate in the lesion, may all be observed, and the course of the disease followed with the eye, and the effect of treatment directly seen. Who would prefer to study skin diseases after death? What is the comparative value of the two methods? Two decades ago, it was found that abdominal disease could be studied by the same direct method, the only hindrance being the opacity of the abdominal wall, an obstacle that was soon overcome. Abdominal pathological lesions in their living state, including size, color, consistency, amount of inflammation and infection, and their extent and in all stages, were studied and compared to the disturbance previously caused the patient by the disease. Further questions, suggested by the operative findings, were put to the patient during his post-operative convalescence. In this way symptoms and signs, vague or frank, were explained, and their cause put upon a firm pathologico-anatomical basis. In this way the term "chronic dyspepsia" gradually became altered in its sense. Previously it had been bottomless, and for that reason created in the mind of the practitioner the idea that there was a vague indefinite something wrong in the abdomen, that, in fact, the stomach was "out of kelter." This something he had to call something to satisfy the laity, so he called it "a functional disorder," or "biliousness," or "torpidity of the liver," and finally "chronic dyspepsia," — all of which meant "*non cognosco*." Now, having been put upon the firm foundation of living pathology, the term "chronic dyspepsia" means "*cognosco*," "I know," "I am acquainted with," "I recognize," that there is a lesion in the abdomen, be it never so slight, and that Nature is signaling for help, crying "CHRONIC DYSPEPSIA!" "CHRONIC DYSPEPSIA!" "CHRONIC DYSPEPSIA!"

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* Read before the John Aitken Meigs Medical Society, Dec. 20, 1907. Held at the residence of Dr. Joseph Potsdamer, Philadelphia.

Gentlemen, he who has faithfully studied normal anatomy, pathological anatomy, physiology, living pathology and the natural history of disease knows his body, and he who knows his body recognizes in symptoms and signs the "STOP, LOOK AND LISTEN!" of Nature. This warning is usually manifested by nerve disturbance, and although this nerve disturbance may be expressed as pain, yet it may be expressed in numerous other ways, for, from our physiology, we know the various functions of nerves, and from our anatomy, we know their distribution. In the first instance, nerves are motor, vasomotor, secretory and sensory, and trophic or inhibitory. In the latter instance, we know the profuse and intimate distribution of nerves to the organs in the upper abdomen. I need not detain you with this consideration, it is merely suggestive of the possibilities and explanations of symptoms and signs that may arise in disease in the upper abdomen. You know the effects and results of infection and of inflammation. I need dwell no further on these elementary principles of the pathology of the living, except to emphasize the fact that they have been beacon lights to the surgeon in his moulding of the modern conception of chronic dyspepsia.

The cause of chronic dyspepsia is chronic disease in the gastro-intestinal canal of associated glands. Also, factors that disturb the equipoise of the abdominal sympathetics, such as ptosis of any organ or organs within the abdomen. To elaborate on this etiology would consume considerable time, therefore I shall confine my remarks this evening to diseases of the appendix, of the stomach and duodenum, and of the biliary passages as factors in producing chronic dyspepsia.

That the appendix plays the most important part of any abdominal organ in both acute indigestion, chronic indigestion or chronic dyspepsia is proven by the fact that practically all cases of appendicitis give a history of indigestion, and that after a patient has gotten well of the operation for removal of the appendix all the dyspeptic symptoms have disappeared. This is the observation of surgeons doing this line of work. Sir William Macewen in a lecture at the Charing Cross Hospital, upon "The Functions of the Cecum and Appendix,"[1] calls particular attention to the symptoms of indigestion in connection with this disease. I have been able to verify this in numerous cases which have come under my observation, and I therefore have no hesitancy in stating that the appendix is the most frequent, but least recognized, cause of chronic dyspepsia. Irritation of the appendix is due to concretions, angulations, or congestions; no history of preceding inflammatory attacks can be obtained, but the patients are subject to vague intestinal pains, flatulence, and constipation. When the appendix is chronically inflamed, the symptoms of chronic dyspepsia are accentuated with each recurrent attack, and usually a history of preceding attacks can be elicited. In both cases, there may be a state of partial or complete invalidism, which cannot be cured by medical means. These recurrent attacks of dyspepsia are interpreted too often as indigestion, and the attending physician does not awaken to the fact that it is a chronically diseased appendix that is responsible, until an acute attack supervenes, with perforation, peritonitis, etc. If the patient is fortunate enough to recover, he recovers too from his dyspepsia; then the doctor realizes that the "chronic dyspepsia" was a diseased appendix. Many a precious life has been lost by dilly-dallying with these cases until perforation and general septic peritonitis carries the poor subject to his long home.

When the appendix is the seat of non-inflammatory irritation, "It is a common occurrence to treat these patients for dyspepsia and constipation, with no permanent result; and unless the true cause of their malady be discovered, they drift from one doctor to another, until finally they have an acute attack, or give up in despair," as Black stated in his recent paper.[2]

Diseases of the stomach or duodenum are extrinsic or intrinsic. The extrinsic are due to diseases arising primarily in other regional organs, in which process the stomach or duodenum becomes involved secondarily. The most frequent and familiar example of this is stricture of the pylorus by a band of adhesions with partial or complete anchoring of the pylorus to the gall bladder, liver or to the duodenum by adhesions, the result of chronic gallstone disease. Nature, by means of adhesions, glues the gall bladder to the stomach or duodenum and, by ulcerative inflammation, bores a communication between the respective viscera so related (an internal biliary fistula). Diagnosis of this condition is based upon the presence of a dilated stomach, associated with a history of chronic gallstone or duodenal disease. Of the intrinsic, the most frequent is ulcer of the stomach or duodenum; after that, in my experience, carcinoma. Both of these maladies nearly always express themselves by chronic dyspepsia. While hour-glass stomach and peptic ulcer of the jejunum may give rise to chronic dyspepsia, yet their comparative infrequency exempts them from discussion to-night.

More cases of gastric and duodenal ulcer are operated upon every year, and why? Because physicians, having learned from the pathology of the living as taught by the surgeon, and with the surgeon having studied these lesions at the operating table, recognize the intimate connection between chronic ulcer and chronic dyspepsia. I have no hesitancy in saying that I can make good diagnosticians of physicians who will favor me with their presence at my operations. During this year, including an absence of six weeks, I shall have made 2,000 autopsies upon living subjects.

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[1] London Lancet, 1904.

[2] N. Y. State Jour. of Med., Aug. 1907.

Ulcer of the stomach and duodenum occur with nearly equal frequency, and often co-exist. Gastric ulcer occurs more frequently in women, and duodenal in men. The cause common to these ulcers is excess of hydrochloric acid in the stomach. The history common to both is that of a long standing dyspepsia, extending usually over a period of ten, twenty, or even thirty years. Symptoms produced by gastric ulcer differ somewhat from those produced by duodenal. In gastric ulcer, in addition to the symptoms of chronic dyspepsia detailed above, there is usually pain in a fixed spot in the epigastrium, soon after eating, and relieved when the stomach becomes empty. This pain may radiate to the left scapula. There may be tenderness below the xiphoid, and a little to the right of the median line. Vomiting of blood is a variable sign. During acute attacks, rigidity of the supra-umbilical part of the right rectus muscle is frequently present. Vomiting occurs, particularly when the ulcer involves the pylorus, producing by cicatricial contraction, or by extensive tissue hyperplasia, stricture of the pylorus, with subsequent dilatation of the stomach. Tissue hyperplasia in these cases may be so marked as to be noticeable as a distinct tumor from without, and strongly suggestive of malignancy, when seen from within. Given a patient with such symptoms, especially a young and anemic female, and the therapeutic indication is gastro-jejunostomy and not a quassia cup. In this way the grave event of perforation or of fatal hematemesis may be forestalled.

In duodenal ulcer the pain occurs several hours after the ingestion of food, or, in other words, when the acid chyme reaches the duodenum. It radiates to the back and usually to the right, towards the loin. It is relieved by food or by alkalies, which absorb or neutralize the acid in the stomach, thus preventing chyme entering the duodenum until the acid contents of the stomach increases again, — this process being in perfect accord with the well-known physiological principles of Pawlow. The pain comes on so long after eating as to be present when the patient's appetite is aroused for the next meal; hence, the " hunger-pain " of Moynihan, or, if I may coin a new term, " opsonodynia." The pain is increased by flatulence, so that belching gives some relief. Tenderness is usually present a little below Robson's point.

I have frequently noted heartburn in this condition, and attributed it, as well as pyloric spasm, to the excess of acidity. Constipation is common in these cases.

Now it will be seen that many of the symptoms detailed above are those the cause of which was formerly thought to be chronic dyspepsia, until hemorrhage or perforation awoke the physician to a stern sense of the reality In addition to the complication of hemorrhage, perforation, adhesions and chronic pancreatitis, there may develop, as a result of ulcer of the stomach or duodenum, that far more serious complication of cancer. In fact, it is not unreasonable to state that the majority of cases of gastric cancer arise in the bed of an old ulcer. As bearing on cancer of the stomach, it is well to quote the forecast recently made by Moynihan: " It is, I submit, only by early exploration (biopsy) of possible cases of carcinoma of the stomach that the knowledge will be gained, by comparison of the symptoms with the pathological conditions then disclosed, which will equip us with the power of early positive recognition of this disease."

In the introductory remarks I stated that in the days before living pathology, gallstone disease was included under the diagnosis of " chronic dyspepsia," because of *non cognosco* — that is, it was unrecognized as gallstone disease until jaundice intervened. On the contrary, present-day pathology, derived from biopsies, shows that jaundice is an unusual sign of gallstone disease, and is not necessarily present in common duct cholelithiasis. How, then, do we diagnose gallstones? We diagnose them by the symptoms of chronic dyspepsia which they cause. How often do we hear it said of a person that " he (or she) is a dyspeptic," as though consigned to a permanent state of ill health? I venture to suggest that, could the gall bladder of many of these so-called " dyspeptics " be opened into, veritable quarries of stones would be revealed, and if not stones, then the effect thereof.

The early symptoms of cholelithiasis are those with which the physician should familiarize himself, and not the late ones. If he familiarize himself with the early symptoms, and submit the patient to operation, more patients with cholelithiasis will recover; but if he is able to diagnose gallstones only when complications, which give rise to well-marked symptoms, are established, he has advanced no further than his medical forefathers, and more patients will die.

The early symptoms of cholelithiasis are flatulence, epigastric uneasiness, sense of heaviness in the pit of the stomach, and pain — occasionally colicky — soon after eating. There may even be nausea, and rare and apparently causeless vomiting.

The symptoms of chronic infection of the gall bladder are, dragging sensation in the right side; a slight feeling of oppression in the stomach; dyspepsia manifested by eructations of gas, and at times anorexia and hyperchlorhydria, and pain after food, but not coming on for some hours, which usually attacks the patient at night or in the early hours of the morning. It frequently happens that in the absence of obstruction of the cystic duct, and subsequent development of hydrops of the gall bladder, there is no discomfort. Even with stone in the common or hepatic ducts the course of the disease may be latent. The immediate cause of colic is an inflammatory process, — a slight infection reaching the gall bladder by way of the common duct, which, in the presence of stone, may bring colic by inciting the gall bladder to contractions in its efforts to force the stone into the cystic duct.

From statements in textbooks, the notion is widespread that gallstones may exist in the gall bladder for many years and not cause symptoms. I do not believe this. Such teaching, handed down to us, we were willing to accept until the pathology of the living taught us otherwise. I believe that many cases of chronic dyspepsia, the so-termed gastralgia, catarrh of the stomach, gastritis, etc., but where jaundice has never been present, are the result of gallstones which, while not causing trouble definitely referable to the gall bladder, nevertheless are factors in many ailments for which patients take so-called digestants, prepared food, restricted diet and so on, and even journey to Carlsbad. Such attacks occur at intervals, extended usually over some little period of time, and are frequently brought on by indiscretions in diet. Colicky pain, in the presence of an enlarged gall bladder, is suggestive of the passage of a stone through the cystic duct. If the pain is colicky, without enlargement of the gall bladder, there is probably a calculus in the common duct. But there are many cases whose history contains but little to favor diagnosis of gallstone disease, but which, upon operation, show unsuspected havoc wrought by disease of long standing. It is in these cases that the so-called exploratory incision is indicated. No one can diagnose all cases of gallstone disease through the abdominal wall, but in cases where there is strong suspicion of the ailment, intra-abdominal diagnosis is justifiable. Masterly inactivity in acute infections of the biliary system should be replaced by *masterly activity* in lithiasis of the gall bladder or its ducts.

Should the gallstone subject not be seen by the physician in the early stage of the disease, or, if seen, treated for some time by malicious medical means, there will have been opportunity for the play of much-to-be-dreaded complications of gallstone disease. Three of the most vital organs in the upper abdomen — the liver, stomach and pancreas — may ultimately be irreparably damaged. Gallstone disease is rarely or never unaccompanied by infection. Infective cholangitis may ruin the liver. It may distort, if not destroy, the gall bladder or its ducts; by continuity, it may spread along the pancreatic duct, producing chronic interstitial pancreatitis; by contiguity, to the delicate peritoneum in the vicinity of the gall bladder, giving rise to plastic peri-cholecystic peritonitis, which may involve the stomach or duodenum, with ultimate production of stricture of the pylorus, and dilatation of the stomach.

Dilatation of the stomach from pyloric obstruction leads to stagnation of the stomach contents, with much circulatory, and consequently secretory, alteration. A pouch is formed in the greater curvature, which, like the maxillary antrium, has its opening at a much higher level than its floor. In this pouch, food of several days' consumption lodges and putrefies. The musculature abandons its attempt at overcoming the obstruction, becomes flabby, and loses most of its motor activity. The organ becomes congested, and perversion of secretion takes place. At this point the physician comes along with his pepsin, pancreatin or papain, or all three at once. If he knows little living pathology and much therapeutics, then much to his surprise the "digestants" do not digest; the "torpid liver" remains torpid; the "neuralgia of the stomach" becomes worse; the "sick stomach" remains sick and "out of kelter." If he knows much living pathology and little therapeutics, then, since a little knowledge is dangerous — much to his chagrin, the dilated stomach remains dilated; the adhesions at the pylorus do not become absorbed; and the olive oil does not dislodge the gallstones from the dense tissue that surrounds them, in the meantime, the patient's suffering continuing unabated, which event would be the most favorable result of such treatment, the usual result being that the suffering becomes worse. If the physician knows much living pathology, which has been learned by the results of observations of surgical operations, and much therapeutics, the surgeon is called in, consulted as to diagnosis and treatment, and the patient has ninety-six chances out of a hundred for recovery. "The natural power of recovery is often so great that all that is needed is but to remove any unfavorable condition."[3]

Please note that I am not discussing acute dyspepsia to-night. The treatment of this condition is undoubtedly purely medical. Here is an outline of my treatment for chronic dyspepsia:

If a patient presents symptoms of chronic dyspepsia, chronic indigestion, indigestion that has existed for a considerable length of time and has not been relieved by judicious medical treatment, he should have a most careful history taken, and then be subjected to a thorough abdominal examination, including palpation, to determine enlargement, general or circumscribed or displacement of the viscera, and tenderness, localized or general. The stomach should be examined as to size, motility, contents, position and so forth. The stools examined chemically and microscopically. It is my practice to give a test meal, where I am not able to determine the condition otherwise, or even when I can, but want to know for purposes of record, if not for the purpose of guidance in subsequent treatment of the case. When the test meal is removed the stomach is distended with air and the outline of the stomach made out; also a full meal of articles of diet that the patient is accustomed to eat, and the stomach washed out at the end of eight hours; in this wise I am able to determine, as definitely as one can, the chemistry of the stomach, its motility and size. I confess that often these stomach analyses shed no light upon the diagnosis, yet in other instances they do, and occasionally constitute the only findings upon which we can base an opinion. Microscopical examination yields information of but little value. It may reveal occult blood, or the Oppler-Boas bacillus. This organism may be present in advanced stages of carcinoma of the stomach, but is by no means pathognomonic of this disease. Isolated carcinoma cells do not form sufficient grounds upon which to base a diagnosis. When the case has reached this stage, showing Oppler-Boas bacillus and carcinoma cells, it is already too late for mechanical interference to promise anything.

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[3] Mackenzie Bunley Caledonian Med. Jour., July, 1907.

In gallstone, as well as duodenal, disease, in many instances we have hyperchlohydria, while in incipient malignancy of the stomach there is certainly diminished hyperchlohydria and even a trace of lactic acid which, associated with the symptoms of chronic dyspepsia referable to the stomach, alone warrants opening the abdomen. What part can medical therapeutics play in these lesions? I often wonder why internists persist in the use of medicines under these circumstances, and yet is it not a common practice?

That a gastric or gastro-intestinal neurosis must be considered and excluded before opening the abdomen of the patient we must bear in mind, and not allow our enthusiasm in the good that is done by radical treatment to get the better of our judgment. When we cannot satisfactorily determine whether neurosis is responsible for the symptoms, we should refer the patient to a neurologist, and if at first sight he cannot definitely determine this point, the patient should be given the benefit of the doubt and have rest treatment and so forth, under the direct guidance of the neurologist and not the surgeon. The mistake I think all we doctors too often make is that we do not recognize our limitations; therefore, I agree in favor of division of responsibility, and the placing of responsibility where it belongs, be that the internist, the neurologist, or the surgeon. I insist upon the doctor, under whose particular line of work the patient comes, assuming the entire charge of the patient. I have always regarded it a mistake for an operative case not to be treated by the surgeon. I am further of the opinion that surgeons too often are not familiar enough in after-treatment. I attribute much of my success to the personal care my patients receive after being operated upon; hence why I often refuse operations that will not be done in the hospital I attend.

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A METHOD OF OBTAINING EXTENSION FOR FRACTURES IN THE UPPER TWO-THIRDS OF THE HUMERUS.*

BY HOWARD A. LOTHROP, A.M., M.D.,
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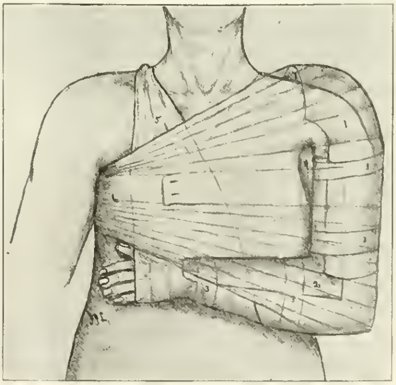
Fractures in the upper third of the humerus are common, and failure to unite is rare, but a certain characteristic deformity when the fracture is near the tuberosities is not an unusual result. In these cases, chiefly because of muscular action, the upper extremity of the lower fragment is displaced upward, inward and forward. The deltoid and muscles of the upper arm give rise to the shortening, and the pectoralis major draws this fragment forward-inward. If the shortening is not overcome, it is almost impossible to avoid the anterior displacement of the lower fragment because the upper fragment acts as an obstruction behind it.

The usual method of obtaining extension for fractures at the upper end of the humerus is by relying upon the weight of the arm and forearm to tire the muscles and drag down the lower fragment. This is favored mechanically by allowing the sling or supportive apparatus of the forearm to include only the hand and wrist. In a large number of cases this method is inefficient and other means must be resorted to.

The practice of adjusting a weight at the elbow is an old method, but it is cumbersome and uncomfortable and its efficiency is questionable. Some patients are put to bed and an extension apparatus applied so as to exert a pull on the fragments in opposite directions. Such treatment is irksome and its results are not commensurate with the attending discomfort.

The following method was devised in an attempt to correct a marked deformity in a case of fracture of the surgical neck. This technic is new so far as I am aware. The injury was already of two weeks' duration and the deformity was very conspicuous. It was the usual displacement, *viz.*, upper end of lower fragment displaced forward, inward and upward so that it presented in front of the head of the humerus and nearly as high as the clavicle. The patient was a child and some union had taken place. The exact position of the fragments was determined by x-ray photographs. Under ether, union was completely broken up and the following apparatus immediately applied.



To illustrate apparatus.
1. Shoulder cap; its lower corner in front in contact with angle of splint.
2. Internal angular splint.
3. Adhesive plaster straps.
4. Axillary pad for high fractures.
5. Sling for hand and part of forearm.
6. Bandage: upper turns firmly applied so as to force arm downward, lower turns simply protect elbow.
7. Space between shoulder and shoulder cap.

1. A tin, internal angular splint was applied, but the short arm of the splint was adjusted to patient's forearm and the long arm was of sufficient length to reach to a point a little above the level of the acromio-clavicular articulation. This

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* Read at a clinical meeting of the Staff of the Boston City Hospital, Nov. 21, 1907.

vertical arm need not reach above the level of the axilla, provided the coaptation splint reaches the angle of the tin splint for direct resistance, as shown in diagram.

2. A stiff felt shoulder cap, suitable in size and shape for the patient, was selected. This was padded and placed on the outer aspect of the shoulder. Its front portion covered the vertical arm of the internal angular splint. By means of strapping, the shoulder cap was fastened to this arm of the internal angular splint in such a position that its upper rounded extremity was two inches above the convexity of the shoulder, thus leaving a considerable space. By means of strapping, the tin splint and the shoulder cap were made one piece. By means of one or two, rather wide, circular strips of adhesive plaster, this apparatus was adjusted firmly to the upper arm. If the fracture is near the middle of the shaft several narrow coaptation splints may be added. Downward pressure on the top of the cap would produce extension in proportion to the degree of force exerted. Pressure directed backward would carry the upper end of the lower fragment in the same direction. A high axillary pad is necessary for high fractures.

3. A sling was applied for support only of the hand and distal half of the forearm which was thus maintained horizontal across the chest.

4. A four-inch gauze bandage was then applied.

The essential features of this apparatus are, first, the careful adjustment of the splints just described, so as to leave a large free space above the shoulder and under the upper end of the shoulder cap; and, second, the application of the bandage so as to exert pressure on the top of the cap downward and backward. The opposite axilla should be padded and a pad should be adjusted carefully between the front edge of the cap and the arm at the site of fracture, if of the surgical neck, the former to protect from the pressure of the bandage, the latter to help force the upper end of the lower fragment backward. The usual axillary pad is necessary for high fractures.

All turns of bandage should pass from before backward around the affected side and from time to time during application the fragments should be moulded into position. All turns of bandage should pass from behind under the opposite axilla; some pass horizontally and others come from the top of the shoulder cap. After the bandage has been applied there should still be a free space between the top of the shoulder and the cap, although it is concealed by the bandage, so as to allow for further dropping of the arm when subsequent bandages are applied, if necessary. On account of the solidity of the apparatus applied to the arm the resulting force exerted by the turns of bandage passing obliquely between the opposite axilla and the top of the shoulder cap is in a downward direction. Hence, extension is obtained and maintained continuously. The elbow and upper forearm may be protected by loosely applied turns of bandage.

On the following day, without disturbing the apparatus, the position of the fragments should be determined by means of x-ray photographs, and, if necessary, further extension may be obtained by applying extra turns of bandage without disturbing the first bandage. Subsequent treatment should be carried out in the ordinary manner.

Medical Progress.

PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE.

BY HENRY A. CHRISTIAN, M.D., BOSTON.

LIVER ABSCESS IN TYPHOID.

Liver abscess is one of the rare complications of typhoid fever. Comparatively few of these cases have been reported, and the number in which careful bacteriological studies have been made is small. Three cases in which the bacillus typhosus was present in pure culture have been described recently. Sennert [1] gives a case in a male of eighteen years, who, as the result of a fall, had fractured the right sixth and seventh ribs. Two months later he was taken sick with symptoms of mild typhoid, in the course of which liver abscess developed. The diagnosis was confirmed by exploratory puncture and operative treatment resulted in cure. It is possible that the trauma at the time the ribs were fractured injured the liver and the typhoid bacilli found here a locus of lowered resistance.

Vanema and Grünberg [2] give a second case. This was a woman of thirty, who, during convalescence from typhoid, after a week of freedom from fever, developed a rise in temperature with enlargement of the liver. After a considerable lapse of time, operation showed an encapsulated perihepatic abscess and an abscess of the right lobe of the liver containing a pure culture of typhoid bacilli. After a tedious convalescence the patient was discharged from the hospital cured.

Lengemann [3] reports the third case, also healed by operation. The patient was a girl of five and one-half years, who in the latter part of a typhoid attack developed a hectic type of fever, with enlargement and tenderness of the liver. Later there were signs of fluid in the abdomen. Puncture of the abdomen yielded two liters of cloudy brownish fluid, containing typhoid bacilli in pure culture. Subsequent operation showed a liver abscess which was successfully drained.

Several other cases of liver abscess during or following typhoid have been reported in which the bacillus typhosus associated with other bacteria, streptococci, staphylococci, etc., was present. Vanema and Grünberg think liver abscess may arise in connection with typhoid, (*a*) following suppurative pylephlebitis, (*b*) as part of a general bacterial infection, (*c*) following inflammatory conditions of the biliary tract, (*d*) as a result of trauma. When it is recalled that small foci of necrosis are very common in the liver of typhoid, that acute cholecystitis is not a very infrequent complication, and that ulcerations of the intestine are constant with direct drainage by the portal vein into the liver, it seems strange rather than otherwise that abscess of the liver is not a more common complication of typhoid, yet the fact remains that it is rare.

TUBERCULAR CIRRHOSIS.

Jagic[4] believes, on the basis of cases previously reported, that chronic tuberculosis is capable of producing in man changes in the liver anatomically identical with those of cirrhosis. Clinically there is usually lacking direct evidence of diseased liver, since the liver condition is masked by the chronic tuberculosis. This is particularly true because in these cases there is apt to be peritoneal tuberculosis with ascites. The symptoms, common in alcoholic cirrhosis, such as pain in the hepatic region and icterus, are usually lacking in the tubercular cases. Jagic reports a case in which the clinical diagnosis of tuberculosis of the pleura and peritoneum with probable tubercular cirrhosis was made. At autopsy the liver showed changes which the author regards histologically as beginning cirrhosis with scattered tubercular nodules.

This view of Jagic is supported by the experimental works of Stoerk.[5] Bartel[6] had reported the frequent finding of cirrhotic changes in the liver of guinea pigs which had been injected with tubercle bacilli. Others have reported similar findings. Stoerk studied the liver in 120 guinea pigs infected with tubercle bacilli by way of the portal vein, and almost without exception he found cirrhotic changes proportionate to the length of time elapsed since inoculation. In these guinea pigs apparently there is first a formation of fairly typical tubercular tissue in the periportal spaces. Later, the fibroblasts increase and bundles of new connective tissue are formed. Proliferation of the bile capillaries takes place with metamorphosis into liver cells. There is considerable resemblance in these later stages to the changes found in types of cirrhosis in man.

SPLENIC TUMOR, ICTERUS AND ASCITES IN CIRRHOSIS.

In addition to the evidence of hepatic abnormality obtained by percussion and palpation enlargement of the spleen, icterus and ascites are important diagnostic signs of hepatic cirrhosis. Klopstock[7] has studied 250 fatal cases of cirrhosis at the Friedrickshain hospital in Berlin with regard to these signs, and his statistics are interesting in connection with others tabulated in his paper.

Splenic tumor is very common. In his 250 cases the spleen was enlarged in 198. Frerichs had found splenic enlargement in 18 of 36 cases, Bamberger in 47 of 51 cases, Oppolzer in 22 of 26 cases and Förster in 20 of 27 cases. Naunyn in 160 cases found it absent in only $\frac{1}{6}$ of the cases. Usually the organ is twice to three times its normal size and firm. Hyperplasia of the pulp is commonly found on microscopic examination; often there is an increase in the connective tissue. In the early stages of cirrhosis there may be a soft infectious spleen. Klopstock attributes the enlargement of the spleen to the action of the same toxic substances that produced the cirrhosis rather than to portal stasis. In favor of this view are those cases reported by some, in which splenic enlargement appears to antedate any very great degree of portal stasis. Again, in other hepatic conditions associated with venous stasis, splenic enlargement is not so constant a feature. Of this latter, chronic passive congestion from cardiac disease is an example. Here the spleen is usually not so large as with cirrhosis of the liver.

In connection with splenic enlargement Banti's disease is considered. Klopstock does not regard this as a disease *sui generis* but as a "conglomerate" of various conditions, as anemia with marked splenic enlargement, cirrhosis of the liver with early and evident splenic involvement, congenital syphilis, chronic malaria and pseudoleukemia. It seems quite certain that at present the classification of cases with splenic enlargement is very unsatisfactory; and whether we agree with Klopstock or not in regard to Banti's disease, all will admit that, so long as our present, almost complete, ignorance of the etiology of many cases of splenic enlargement continues, there can be little hope of a satisfactory grouping and understanding of these cases. Some of them are undoubtedly related closely to cirrhosis of the liver.

Icterus is not so common an accompaniment of cirrhosis as is splenic enlargement. Frerichs found it 7 times in 36 cases, Fagge, 45 in 135 cases, Harting, 9 in 28 cases, and Klopstock, 66 times in 250 cases. There appears to be some relation between the degree of icterus and the size of the liver. Icterus is much more common in the hypertrophic than in the atrophic type. Age seems to bear a relation too, as in the young the cirrhotic liver is much more apt to be large possibly because the liver earlier in life is more capable of regeneration than it is later. The mass and function of liver cells, the character and distribution of the newly formed connective tissue, catarrh of the biliary ducts, all are factors in the causation of icterus.

Ascites is commonly present: in 66⅔% of Frerichs' 36 cases, 84% of Förster's 27 cases and 69% of Klopstock's 250 cases. Portal stasis is an important factor in producing ascites, but not the sole one. Chronic peritonitis possibly caused by the same agent that produced the cirrhosis often plays an important rôle.

The rather frequent coincidence of cirrhosis with peritoneal and intestinal tuberculosis is pointed out. The tubercular infection may be secondary, a result of the lowered resistance caused by the cirrhosis. On the other hand the tuberculosis may, in some cases, play an etiological rôle, a relation which has already been considered under the previous heading.

SUPERFICIAL VENOUS CIRCULATION IN CIRRHOSIS.

Gilbert and Villaret[8] believe that considerable aid in diagnosis can be had from a study of the superficial veins of the thorax and abdomen, particularly in those cases where obstruction to deep seated venous trunks produces a cutaneous collateral route for the blood. Their method is to mark out on the skin the superficial veins and to determine the direction of the blood flow by wiping the blood out of the veins and observing the direction from which they fill. In this way they have studied a number of cases which showed various types of collateral cutaneous and venous circulation. In cases in which the superior vena cava was obstructed they found superficial dilated veins over the superior part of the thorax and dilatation of the long superficial thoraco-epigastric veins and their branches. In the obstruction of the superior vena cava the current was from above downward. With obstruction of the inferior vena cava the dilated venous channels appear chiefly below the umbilicus and involve branches of the superficial epigastric veins. The current here is from below upward. When the obstruction becomes more marked dilatation of the circumflex iliacs and long thoraco-epigastric veins takes place, but the median veins of the thorax are not dilated.

In diseased conditions of the liver, which are of more particular interest in connection with the subject now under discussion, obstruction to venous channels is of two types. First, there is obstruction to the inferior vena cava itself, either as the result of the pressure of an enlarged liver, or, in some cases, as a result of cirrhotic changes in the liver, when the inferior vena cava runs very close to the posterior surface of the liver, or, as is sometimes the case, is partially surrounded by liver tissue. In other cases the ascites of cirrhosis of the liver presses on the inferior vena cava and causes obstruction. Under these conditions there are dilated venous channels both above and below the umbilicus. The dilated veins run from the inguinal region to the umbilicus, and there are dilated veins about the umbilicus. From the umbilicus the veins radiate upward either toward the xyphoid region or laterally to the axillary region. Second, the obstruction is purely portal, and in this case dilated veins appear above the umbilicus and usually radiate upward to the mid-thoracic or lateral thoracic region.

Frequently when the first type of collateral circulation is present it will change to the second type following removal of the ascitic fluid. The fact that these two types of obstruction occur in cirrhosis of the liver has led to confusion in the discussion of the collateral channels following interference with the portal circulation; but a study of the superficial veins is frequently of assistance in diagnosing the actual disease, particularly when the veins are studied before and after tapping. Sometimes cirrhosis of the liver can be distinguished from cancer of the liver because in the latter there is more apt to be an irregular or localized venous dilatation instead of the more general one previously described.

HEMATEMESIS IN CIRRHOSIS.

Severe hematemesis is not infrequently an accompaniment of cirrhosis of the liver. In some cases it is the first sign of the disease. In a good many cases it is the fatal issue. In many of these cases the hemorrhage takes place from an esophageal varix, resulting from a dilatation of the collateral venous channels by way of the gastric, esophageal and azygos major veins. In other cases apparently autopsy shows no dilated esophageal varix, and careful examination of the mucous membranes of the gastro-intestinal tract fails to reveal any ruptured vein.

Mouisset and Beutter[9] have described a fatal case of hematemesis in cirrhosis not due to rupture of an esophageal varix in which they explained the hemorrhage as probably a diffuse capillary hemorrhage associated with a high portal pressure. In that case, however, the spleen was considerably enlarged and this enlargement of the spleen may have been a factor in producing the hemorrhage, as it is well known that in conditions of splenomegaly severe gastric hemorrhage may occur.

PROLONGED CATARRHAL JAUNDICE.

In cases supposed to be catarrhal jaundice, if the jaundice persists for some time, there is always an increasing doubt in the mind of the medical man as to the correctness of his diagnosis. Cases apparently of long continued jaundice, however, may be of catarrhal nature and completely recover. Audibert[10] reports a case in which the jaundice persisted for one hundred and forty-six days with an onset of disease typical of catarrhal jaundice, with no evidence during its course of obstruction of the biliary passages by gallstones, and with complete recovery.

A FUNCTIONAL LIVER TEST.

In recent years the effort has been made to obtain some method of determining the functioning power of various organs. This study has been directed chiefly toward the heart and the kidney. The liver has received less study. However, attempts have been made to determine its activity by means of feeding varying amounts of levulose to the patient and examining the urine for this substance. In cases in which the liver is diseased an alimentary levulosuria has been obtained, and this fact has sometimes been used as a means of diagnosing obscure liver conditions.

Glaessner[11] has attempted in another way to measure the functional capacity of the liver. His test is based upon the fact that the normal liver is able to convert 20 to 25 gm. of amino acids into urea, and this urea is excreted in the urine. In cases in which the liver is defective in functioning capacity the excretion in the urine takes place in the form of amino-acids and the amount of nitrogen excreted in this way can be determined by suitable tests. Such tests Glaessner has devised, which appear to be satisfactory for the recognition of the particular forms of amino acids which he feeds in his tests.

He found that in normal cases no amino acids were excreted, but all of them were converted into urea. In pneumonia, tuberculosis, rheumatism, cardiac, pulmonary and nervous affections, none were excreted. In the fatty liver 20% to 30% of the fed amino acids were excreted as such. Cancer of the liver behaved like the normal liver. The highest excretion of amino-acids, 50% to 70%, occurred in cirrhosis, phosphorous poisoning and syphilis of the liver. The author explains the difference between cancer and cirrhosis by assuming that in the latter there are diffuse degenerative changes affecting the entire liver, while in cancer much of the liver tissue remains uninjured. It is possible that the application of this method may be of service in diagnosing some of the more obscure hepatic conditions. However, many more cases must first be studied to thoroughly test the method, and the method will probably always remain one which can be carried out only in a well equipped chemical laboratory.

FEVER IN SYPHILIS OF THE LIVER.

The possibility of intermittent fever being due to syphilis of the liver is not very generally recognized. In 1898 Gerhardt described such cases, and in 1903 Klemperer redirected attention to this condition. Géronne [12] reports a case in a woman of twenty-three with repeated attacks of vomiting, jaundice, dark colored urine and pale stools, associated with attacks of fever and chills every two to six days. Jaundice and fever usually accompanied menstruation. The liver was enlarged to a finger's breadth below the costal margin, its edge smooth and sharp. The edge of the spleen was easily felt. The husband of the patient admitted having had syphilis. Treatment with mercurial ointment and sajodin resulted in complete cure and a return to normal size of both liver and spleen.

Mannaberg [13] reports 6 such cases. The first case was a woman of forty-five who daily or every other day for a year and a half had had chills of varying intensity, with fever followed by sweating. She had taken much quinine without any effect. Blood examination gave no evidence of malaria. Both spleen and liver were enlarged. The liver was tender. The husband of the patient had died of tabes dorsalis. On the basis of this syphilis of the liver was considered possible, and potassium iodide given in large doses. The effect was very marked, for in two weeks the attacks of fever ceased, the liver decreased in size, and the patient had remained well when last heard of, several years later.

The second patient was a man of seventy-one, who for a period of about a year had had frequent chills with fever followed by sweating. Examination showed jaundice, an enlarged liver with an uneven, rough surface, and an enlarged spleen. The old age of the patient suggested strongly the presence of carcinoma. Questioning as to his antecedents yielded a possible syphilitic history; consequently active mercurial treatment combined with iodides was undertaken. In about two weeks the patient was very much better, the liver decreased in size and for three years the patient enjoyed good health. Three years later the patient died. Autopsy showed syphilis of the liver and an esophageal varix whose rupture had been the immediate cause of death.

The third patient was a man with a similar history of chills and fever, and enlarged liver and spleen. Examination of the blood showed no malarial parasites. Mercury and iodide treatment resulted in cure. This patient had acquired syphilis eight years previously.

The fourth case was a twenty-four-year-old maiden, who for a period of several years had had frequent febrile attacks beginning with a sensation of chilliness but without definite chills. The liver was enlarged, nodular and slightly painful. The spleen was enlarged. Blood examination showed no malarial parasites, though at the time of the examination there was a temperature curve typical of quotidian fever. The condition was supposed to be a malignant tumor of the liver, but treatment with mercury and iodide was undertaken and resulted, as in the previous cases, in cessation of the fever, decrease in the size of the liver and spleen, and a rapid restoration to health.

The fifth case was in a fifty-one-year-old man, who twelve years before had developed symptoms of tabes dorsalis. During the past year there had been frequent attacks of fever with chills. Both liver and spleen were enlarged. Vigorous anti-syphilitic treatment much improved the patient's condition for a time, but later the patient's condition grew worse and he died. This case apparently belongs to the same group, though treatment was not so successful.

The sixth case was in a nineteen-year-old maiden, who for four weeks had had daily attacks of chills and fever without any great disturbance of her general good health. Blood examination showed no malarial parasites nor was there any positive evidence in this case of involvement of the liver or spleen. Anti-syphilitic treatment, however, cured the condition, and it is possible that this case may belong in this group.

NEGATIVE LIVER PULSATION.

A positive, systolic liver pulsation is frequently observed and usually indicates a tricuspid insufficiency. A negative, diastolic or presystolic liver pulsation is more infrequent. Mackenzie attributes the latter to tricuspid stenosis, and there is no doubt that it occurs in this condition. Vollhard has described the same condition in chronic pericardial exudate. Jagic [14] has studied a case in which the heart showed a short systolic murmur audible at the apex and in the pulmonic and tricuspid areas. The liver was much enlarged to palpation, the edge rounded, the surface smooth. There was a marked pulsation of the liver, expansile in character and synchronous with ventricular diastole. The diastolic or presystolic character of the liver pulsation was determined with certainty by means of a double recording manometer. This liver pulsation continued from Jan. 3, 1906, to May 16, 1907, even when there was broken compensation. A clinical diagnosis in this case of mitral stenosis with open foramen ovale was made. Autopsy showed obliterated pericardium with open foramen ovale.

In stenosis of the mitral valve there is a hindrance to the flow of blood from the left auricle into the left ventricle. With contraction of the left auricle part of the blood is thrown into the right auricle by way of the open foramen ovale. This increase in pressure is propagated thence into the veins of the neck and to the liver, in the latter producing a pulsation synchronous with ventricular diastole. In pericardial obliteration there is a deficient contraction and dilatation of the ventricle which when there is an open foramen ovale leads to a stasis in the auricles, and this is propagated back into the veins of the neck and the liver. A negative liver pulsation should always suggest the diagnosis of patent foramen ovale when the diastolic pulsation of the liver is marked.

CARDIAC MURMURS IN BILIARY COLIC.

Riesman[15] describes two cases in which systolic murmurs arose *de novo* in the course of biliary colic. He believes that as a result of the severe pain in predisposed cases cardiac dilatation may occur with the production of a systolic mitral murmur. The condition is important to know chiefly in preventing the diagnosis of a chronic endocarditis and advice against operation. On the other hand its presence suggests some cardiac weakness and a possible danger in prolonged anesthesia.

THE DIAGNOSIS OF LIVER ABSCESS.

The mortality following operation on cases of liver abscess has remained high owing to difficulty in early diagnosis. In Egypt, liver abscess is relatively common, and the medical men there have opportunity to acquire much experience in dealing with the condition. Axisa,[16] of Alexandria, discusses several points in the diagnosis. He considers the most important sign on physical examination to be an enlargement of the liver upward. This is more significant than an enlargement downward. This may appear early in some cases and in these prognosis is good. Unfortunately, however, in other cases there may be no enlargement of the liver upward at any time during the course of the disease, or a pleuritic exudate may render it impossible to determine whether the liver is enlarged upward or not.

Exploratory puncture may fail to reach an abscess, or it may cause a general peritonitis, a danger which is greater than was formerly supposed even in cases of amebic abscess. Exploratory operation is not justified merely on strong suspicion of liver abscess. Leucocytosis is an important additional sign, occurring in 80% of 32 cases studied by Legrand and Axisa. Additional evidence may be obtained by determining the total nitrogen excreted in the urine, that excreted as urea and that as ammonia. In 20 cases of liver abscess, Axisa found the ammonia nitrogen increased, the urea nitrogen decreased with little change in the total nitrogen. This in a way is a functional test of the liver activity, and when found indicates extensive liver disease. Another test is an alimentary levulosuria which was found in cases of liver abscess even when smaller amounts (30 to 40 gm.) of levulose were fed. These conditions, leucocytosis, increased ammonia with decreased urea excretion and alimentary levulosuria, are suggestive of liver abscess when there is fever and pain or tenderness in the hepatic region, even without demonstrable enlargement of the liver, and are factors which should be taken into account when considering the advisability of exploratory operation.

THE EARLY DIAGNOSIS OF ICTERUS.

Many methods for determining the presence of small amounts of bile pigment in the urine have been described. Even the more complicated of these sometimes fail to give us evidence of beginning icterus, and the simpler tests are often very unsatisfactory. Much earlier information may be obtained from an examination of the blood serum, and this is emphasized by Posselt.[17] Posselt's method is exceedingly simple, and consists of drawing the blood from a prick in the ear or finger into a U-shaped capillary tube, such as is used much now in obtaining blood serum for Widal's or for opsonic work. Two tubes are filled in this way, one centrifugalized at once, the other in half an hour. The first serves to show the presence of hemoglobinemia. The second, if there is no hemoglobin tinting of the serum, is better for the bile test since the blood has now clotted. In most cases simple examination of the serum is sufficient, for the presence of a citron or canary yellow tint to the serum is evidence enough of the presence of bile pigment. However, if desired, some of the chemical tests for bile pigment may be applied to the serum. This method is especially useful when it is desired to compare serum obtained at intervals, and in this way the early progress in the development of icterus may be observed. Not infrequently icterus may be discovered by this method when there is very slight suggestion of jaundice in the skin, and some time before bile appears in the urine.

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Book Reviews.

Deutsches Bäderbuch. Verlag von J. J. Weber, Leipzig. 1907.

This quarto volume of 648 pages is undoubtedly the most complete work on the subject of baths yet published. It is, in fact, an encyclopedia of German balneology compiled by men of high scientific attainment with the co-operation of the Imperial German Board of Health. It is hard to imagine such a book coming from any other country than Germany, so thorough and exhaustive is its treatment of the entire subject. In addition to the pages of text there are thirteen colored plates graphically showing the comparison of spring analyses, together with a general map and Hellmann's rain map. The introduction concerns itself with the geological survey of the various waters, their origin, analysis and significance. Following this section is a detailed presentation with chemical analyses of all the baths in the German Empire. The book, in general, does not permit of detailed review in the limits of our space, but it is evident that we have in it a most valuable source of information on a subject about which the general practitioner, particularly in this country, is for the most part ignorant. We cordially recommend it to those who are contemplating sending patients to foreign baths, as well as to those who take a particular interest in therapeutics by natural means. The volume is admirably bound and printed, and reflects much credit upon those who are responsible for its publication. The plates to which we have referred are not bound in with the pages, but are conveniently slipped into a pocket on the inside of the back cover of the book.

The Diagnosis and Treatment of Diseases of Women. By Harry Sturgeon Crossen, M.D., Clinical Professor of Gynecology, Washington University; Gynecologist to Washington University Hospital and Chief of the Gynecological Clinic; Associate Gynecologist, St. Louis Mullanphy Hospital; Ex-President of St. Louis Obstetrical and Gynecological Society; Fellow of the American Association of Obstetricians and Gynecologists, etc. With 700 illustrations. St. Louis: C. V. Mosby Medical Book and Publishing Co. 1907.

This is a good-sized book of 800 pages, bound in crimson cloth. As indicated in the title, the work is devoted exclusively to diagnosis and treatment, the author stating in the preface that he has found these two departments of gynecology, the chief stumbling blocks to the practitioner of medicine. He refrains, wisely it seems to us, from taking up in detail the laboratory technic of bacteriology and pathology. The subject matter is divided into seventeen chapters, and an appendix containing useful formulæ. Only so much is said of the anatomy and pathology as will make the subject under consideration clear to the reader. The illustrations, some seven hundred in number, are an important feature. They are partly from original photographs and from drawings by R. W. Mills, and partly from plates borrowed from fifty-four different leading works on gynecology, neurology, anatomy, medicine and surgery. The borrowed illustrations are remarkably well chosen, and add materially to the value of the book; the original illustrations, on the other hand, are of uneven merit. The author tries to be a purist in the matter of wearing rubber gloves at all times, therefore many of the pictures show little besides a mass of black from the gloves. In places the illustrations are crowded together so closely that the text is separated unduly. The semi-diagrammatic drawings by Mr. Mills are excellent, the one showing an antero-posterior section of the body in the erect position, a composite of frozen sections and sketches from a living model, being altogether one of the best we have seen. There are minor points in which we are not in agreement with the author, notably, the position of both hands in making the bimanual vagino-abdominal examination, the customary employment of two fingers for the vaginal examination, the habitual use of rubber gloves; but, on the whole, the book abounds in useful practical points in clinical technic and deserves to be used extensively.

Some Points in the Surgery of the Brain and Its Membranes. By Charles A. Ballance, M.V.C., M.S., F.R.C.S., Surgeon to St. Thomas's Hospital; President of the Medical Society of London, etc. With illustrations. London and New York: Macmillan & Co., Limited. 1907.

Ballance's delightful and stimulating book does indeed contain "some points," and should be studied by physicians and surgeons alike. It is not a formal treatise, but is a discursive writing, a collection of lectures, the three Lettsomian lectures of the Medical Society of London for 1906. The author tells us, and we may well believe, that "the short time devoted to a lecture, and the large amount of material available for each one, made him decide to give the lectures as lantern demonstrations." He pays a pretty compliment to some of our best American work: "Fresh from a visit to the great hospitals and laboratories of Philadelphia and Baltimore, I am impelled to express my admiration of the splendid work accomplished and in progress by the distinguished members of the Philadelphia School of Neurology, and by Dr. Harvey Cushing, of Baltimore." The charm, interest and lucidity of Ballance's style add greatly to the value of the book, and furnish a new and attractive setting to those statements even with which surgeons are familiar.

The author opens his first lecture with an interesting and sympathetic sketch of John Coakley Lettsom, the great English physician of the eighteenth century, in whose honor the lectures were established; he then goes on to consider the group of diseases having for their anatomical basis a lesion of the *meninges*, and in the succeeding seventy-five pages he throws a flood of light upon this topic. Almost eagerly he discourses of what surgeons may do for the relief of meningeal inflammations, arguing that as twenty-five years ago acute abdominal infections were almost as fatal as the acute infections of the meninges, and as to-day these abdominal infections are cured by surgery, so he is convinced that our treatment of intracranial infections has been too long encrusted with conventionality, and that " we are no longer justified in regarding such cases as hopelessly lost, and in remaining with folded hands. The rather we must attempt to save them by doing the utmost within our power." Lesions within the skull are particularly difficult of diagnosis because for such diagnosis we are almost entirely dependent upon symptoms rather than upon signs, though quite recently we have learned the value of lumbar puncture and the occasional importance of Roentgen pictures. Information may be secured also from tapping the meninges, and we know, from the figures of Key and Retzius, that a considerable flow of cerebrospinal fluid may be obtained from just below the cerebellum, where the surgeon most easily may establish drainage. Ballance sketches broadly and rapidly a picture of the lesions which lie between the cortex and its bony envelope. He discusses hematocele of the subdural cavity, citing a number of striking cases, and calling attention to such serious end-results as those described by Bright, who wrote in 1831, " there is a species of partial accumulation of fluid in the brain. . . . I mean serous cysts forming in connection with the arachnoid and apparently lying between its layers, or attached by thin adventitious membranes." Ballance shows how, gradually, through the labors of anatomists and surgeons, we have come to recognize and deal properly with these lesions. He devotes several pages also to a discussion of Cushing's work on the intracranial hemorrhages of the new born, and applauds that investigator's urgent advice that such damage to the infant head should be remedied promptly by surgical measures.

Infections of the meninges must be recognized and combated. We must not sit down and wait upon nature. We must remember that true infections are due to pyogenic organisms, that the resulting inflammations, with their infective exudates, must be drained; and we must remember also that these true infections are never to be confused with that vague thing, " pseudo-meningitis," called by Quincke in 1893 *meningitis serosa*, a relatively minor disturbance, characterized by injection, congestion, edema and exudation, and not associated with infective organisms. In meningitis serosa, therefore, lumbar puncture, by the withdrawal of fluid, relieves tension and promotes recovery. In true infective meningitis, on the other hand, lumbar puncture is of service as an aid to diagnosis only. We are reminded of the five channels of infection leading to meningitis: (1) through diseased bone of the skull; (2) through a preformed channel such as a foramen; (3) through a congenital defect in the bone; (4) along one of the processes of the dura which dip into the bone, and (5) through the circulation. Moreover, there is the common traumatic source of infection giving rise, as it were, to a " stab culture." Diffuse suppuration in the subdural cavity is uncommon except as the result of direct infection by injury. The dura is a highly resisting membrane, and certain varieties of pus seem to have but little tendency to perforate it. For this reason an infected dura may limit the progress of grave disease for many days, far longer often than would an infected peritoneum. The dura seems to be waiting often for the surgeon to intervene and save the patient, for whom that protecting membrane is making its faithful struggle.

The author makes further suggestive remarks on the *diagnosis* of meningitis and especially on the *symptoms*, insisting upon the frequency of that trilogy,— headache, vomiting and constipation — with which we group a great number of subordinate symptoms, — psychic, motor, sensory, sympathetic, and paralyses, anesthesia, coma. Coming to the *treatment* of meningitis, we have not yet found the appropriate antitoxins, for which Paracelsus looked hopefully four hundred years ago; but Ballance urges us to remove effectively and thoroughly the focus of the disease, to clear out middle-ear suppuration, and, most of all, to drain the accessory nasal sinuses. For, alas! the operation for the cure of frontal and ethmoidal suppuration is still regarded much in the same way as was the mastoid operation twenty years ago.

Ballance has a few words to say on tuberculous meningitis. But here his conclusions are less satisfactory. In regard to general suppurative meningitis, repeatedly he assures us that we must expose the source of infection, give free exit to the suppurative exudate, and, if possible, combat the disease with the appropriate antitoxins. He cites encouraging cases; he urges more frequent drainage operations, opening below the cerebellum; and he conceives the possibility of continuous irrigation. The author follows these preliminary paragraphs on meningitis with encouraging little essays on such grievous conditions as the basal meningitis of infants, and congenital hydrocephalus, concluding from his own studies and experiences, and from the abundant recent work of others, that light is beginning to dawn even upon these fields.

Having stimulated our interest and curiosity with the method and the subject-matter of his first lecture, Ballance goes on with his second lecture, which he devotes to the subject of Brain Abscess. There are sixty-six informing pages. " Not many years ago but few surgeons had even made any attempt to operate for brain abscess; but at the present time in every surgical clinic such operations have been performed.

" Although we are at present only on the threshold of a perfect understanding of the surgical treatment of abscess of the brain, yet the labor of many workers during the last twenty years has not been in vain, and the future is bright with promise."

After pointing out the four most frequent sources of brain abscess (traumatism, inflammations of the cranial bones, general infections, and local infections other than those of the head) the author passes quickly over those abscesses due to head injury, as being well understood, and dwells earnestly on the nature of abscess resulting from cranial suppurations. He shows especially how the infection spreads through a narrow channel from the surface of the brain inward until it passes beyond the cortex, when it assumes large bulk and gives rise to the familiar symptoms. Almost always that abscess situated below the cortex communicates with the surface through a "stalk" which is usually demonstrable, although upon first inspection the deep seated abscess may appear to be entirely dissociated from any cranial lesion.

We are reminded of the interesting fact that cases of abscess of the brain have been met with apart from any other intracranial tuberculous lesions, which have yielded pure cultures of the tubercle bacillus.

Rarely brain abscess is the result of acute specific fevers, and more rarely still brain abscess may complicate such distant local disease as gangrene of the lung.

The author devotes several pages to an interesting discussion of the symptoms of brain abscess, clearing up many obscure points, and teaching us to differentiate these localized inflammations from other intracranial disease. He classifies the symptoms of abscess as follows:

1. Those symptoms due to the mere presence in the body of deep-seated pus, independent of its locality, such as the febrile state with perhaps shivering and vomiting.
2. Those symptoms due to increase of tension within the closed cavity of the skull, such as purposeless vomiting, slow pulse, torpor.
3. Those symptoms due to irritation or suppression of function of particular parts of the central nervous system, such as epilepsy, anesthesia, paralysis and perversion, or loss of one or other of the special senses.

Under the third heading he quotes numerous enlightening cases and makes evident, among other facts, that though partial defects of speech in incomplete forms of aphasia are explained by some as consequent on lesions of definite centers, yet this view remains unproved, and is not accepted by other prominent neurologists.

The author dwells constantly also on the intricate structure and functions of the brain, complicating for the novice in countless ways the question of diagnosis. Yet he shows us how progress is being made, and how symptoms and signs once thought paradoxical and confusing are beginning to group themselves in a logical and reasonable order. His discourse on the clinical evolution and diagnosis is masterly, and should be read by every student of this fascinating subject.

The paragraphs on the treatment of brain abscess deal with the technic of operating, for operation must be our remedy. And that remedy is no new thing. Said Dupuytren nearly one hundred years ago:

"In certain cases of deeply-seated fluid collections we must incise the dura mater, the arachnoid, the brain itself, if the focus is at the surface of this organ, and by this bold proceeding patients have been saved." "Relying also on the success of J. L. Petit, Boyer concurs in the advice of Quesnay and does not fear to plunge the bistoury quite deeply into the very substance of the brain."

That is the essence of Ballance's advice: plunge the bistoury *assez profondément.*

The final lecture, more than half the book, deals with tumors of the brain, and the author approaches that great subject from many points, heaping up information, making suggestion after suggestion. He does not despair of the future of this branch of brain surgery, but he does convince the reader that it is a field not likely to yield fruit to the general surgeon untrained in neurological studies. In many respects the expert's knowledge is partial, but we have data sufficient to prove that positive and cheering progress is being made. The author refers confidently to his previous monograph respecting the outcome of 400 operations for brain tumor, showing that in a large proportion of those cases notable improvement or cure resulted, and in some instances recurrent growth even was dealt with successfully. Again he emphasizes a fact of grave interest to general practitioners as well as to surgeons, that all cases of brain tumor merit surgical treatment; for even should we not remove the tumor we may secure immense relief from the agonizing symptoms through the decompression operations of the present day. One need not concern himself here with Ballance's interesting classification of brain tumors, beyond observing with him that "certain histological varieties of tumors are peculiar to the brain, otherwise the morbid anatomy of brain tumors is that of tumors elsewhere."

He describes types of tumors suitable for operation: the well defined accessible fibroma; the solitary tubercle; the syphilitic gumma; the infiltrating glioma or sarcoma, the symptoms of which can be palliated even though the growth be not removed; cysts, simple and malignant, which should be dealt with by drainage or by ablation, and finally those deep-seated tumors which cannot be localized, but may be rendered less grievous through the operation of decompression. "No patient should be allowed to become blind from optic neuritis."

When we are considering the *symptoms* and *diagnosis* of cerebral disease we must ask ourselves three questions: Is there an intracranial tumor? If so, where is it? What is its nature? To the first question an answer can often with confidence be given; to the second much less frequently, and to the third, rarely. We recall the symptom-complex, *headache, vomiting* and *optic neuritis*, as indicating the probability of tumor, though one or all of these may be absent; and when we come to localizing signs we are often faced with most dark and perplexing problems, for Ballance reminds us that the clinical experience of the surgeon fails constantly to bear out the dicta of the neurologist. Moreover, localizing symptoms occurring late have less definite localizing value than the same symptoms occurring early. Says our author: "As a practical operative detail I wish to draw attention to the value of lumbar puncture before opening the dura when there is much intracranial pressure. This procedure facilitates exploration and saves the brain tissue from damage."

Ballance has interested himself especially in tumors of the cerebellum, and emphasizes the fact that tumors which are capable of enucleation are more frequently met with below than above the tentorium. We need not consider here the difficult subject of cerebellar diagnosis, but it is interesting to read Ballance's remarks on cerebellar function, muscular co-ordination: "The conductor of an orchestra does not play any instrument or energize any performer, but it is through his influence that the work of each individual performer is exactly adapted to that of every other. Without such guidance, though all the parts might be played correctly as parts, there would be 'asynergia,' and the effect on the audience would differ from that intended by the composer. Muscular movement is in some such way co-ordinated through the cerebellum."

When discussing tumors of the cerebrum Ballance devotes several pages to cerebral localization and quotes Cunningham's interesting observations on man as a left-brained but right-handed animal. Continuing, the author corrects many of our misapprehensions regarding the cerebral centers and winds up with this striking passage: "The diagnosis of intracranial disease is a far more complex problem than that of intra-abdominal disease. The maxim that diagnosis must precede operation is only true of those diseases, the signs, symptoms and course of which are fully comprehended. When the early clinical manifestations of a disease are ill understood, and when danger attends delay, the surgeon is content to act upon a provisional diagnosis. Many lives are thus saved, and diagnosis becomes perfected." And so we are urged to explore the brain for the sake of diagnosis.

The remaining paragraphs of this lecture are concerned with such special topics as tumors of the occipital lobe, the frontal lobe and the parietal lobe, with many striking illustrative cases; and the writer speaks hopefully of operations for certain tuberculous brain tumors.

These three lectures, taken as a whole, are remarkably stimulating and helpful. Ballance has the rare quality of optimism in the face of frequent failure, and intelligent tolerance in the face of dull and illiberal obstruction. He concludes by quoting Sir James Paget, "no good work is ever wholly lost," and he looks with clear and confident eyes into the future of the great field he has begun to till. J. G. M.

The Reduction of Cancer. By the Hon. Rollo Russell. London and New York: Longmans, Green & Co. 1907.

This is an extremely readable and ingenious little book of sixty-two pages. The author undertakes to show by statistics and the quoting of literature that cancer is most common among highly civilized peoples who live on a variegated animal diet, and drink alcohol and tea and coffee. He preaches a gospel somewhat similar to that of Horace Fletcher. His book is suggestive, even if lacking in scientific accuracy.

Cancer of the Stomach. By A. W. Mayo Robson, D.Sc., F.R.C.S., Member of the Royal College of Surgeons, etc. New York: William Wood & Co. 1907.

This book is Mayo Robson's contribution to the Nisbet Modern Clinics Series. It is a little handbook of two hundred and thirteen pages, and is written in the author's well-known convincing style. While it contains little new information, it groups, classifies and condenses into simple and easy form the most recent knowledge of the subject. We commend the work cordially to our readers.

Compend of Surgery. For students and physicians, including minor surgery and a complete section on bandaging. By Orville Horwitz, B.S., M.D., Professor of Genito-Urinary Surgery, Jefferson Medical College; Surgeon to St. Agnes Hospital; Fellow of the College of Physicians, Philadelphia, etc. Sixth edition, revised and enlarged; 195 illustrations and 104 formulæ. Philadelphia: P. Blakiston's Son & Co. 1907.

This little book continues to uphold the reputation of its author as a thorough, careful and painstaking student and writer. To those persons who deal in quiz-compends of science, we commend it.

A Textbook of Physiology for Medical Students and Physicians. By William H. Howell, Ph.D., M.D., LL.D., Professor of Physiology in the Johns Hopkins University. Second edition. W. B. Saunders Company. 1907.

The first edition of Professor Howell's textbook was very favorably noticed in these columns about one year ago. The book has been widely used by medical students throughout this country, and their experience has thoroughly justified the high praise which has been accorded to Professor Howell's exposition of the subject. In the second edition now issued the author has made no fundamental change in the arrangement or scope of the volume, but has made such corrections and eliminations as proved desirable and has added new material developed in the progress of the science since the first edition. The alterations have improved a book which was already an admirable treatise on physiology.

THE BOSTON

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PUBLIC HEALTH AND WELFARE.

The active interest which his Excellency, Governor Guild, has taken in matters relating to the public health in Massachusetts is well known to our readers. We are therefore not surprised to find in his recent inaugural certain matters discussed which have a very direct bearing upon this question. Among other recommendations, it is urged that the cattle bureau be set upon a more permanent footing; that a general revision of all laws relating to rabies, glanders, tuberculosis and other diseases of animals should be enacted, placing all regulation under one authority. Special investigation is held to be necessary of the whole question of the supply, shipment and condition of milk. While not minimizing the excellent work which has already been done in relation to this great problem, the statement is made that still further improvements are possible. One of the most suggestive statements in the message is that relating to the treatment of the insane, inspired in part by the recent shooting at the State House, to which we have previously alluded in these columns. The Governor draws attention to the fact that hitherto extreme precautions have been taken against the improper incarceration of sane persons in public institutions, but that no such precautions are required by law in the discharge of the insane from the hospitals in which they may be confined. He therefore, and we think with reason, suggests that in future no person shall be discharged from an insane hospital without the joint recommendation of two specialists in insanity approved by the same court in which the patient was originally committed. Justice to the community demands that release should only be permitted on a proof of return to sanity equivalent to that of the original insanity. Such a plan as suggested by the Governor would free hospital superintendents from an onerous responsibility and would certainly conduce to the greater security of the public. In regard to the treatment of intemperance, it is urged that the laws should be radically changed and that the opinions of individual judges should be circumscribed through the formulation of a general classification. Intemperance should be treated rather as a mania than as a crime. Concerning the recognized evils of the present system of expert testimony, the following excellent suggestion, to which a great majority of the medical profession will agree, is expressed in the following words:

"A solution of the difficulty is not easy. I believe, however, the evil might be alleviated if not absolutely cured by permitting the Court of its own volition to appoint disinterested experts who should have no connection with the case for the plaintiff or the defendant, or with such experts as either might summon. It might also be advisable to permit both parties to a suit to unite in an application to the court to appoint an expert or experts for a particular case, agreeing that such appointment shall be the exclusive source of expert testimony in that case. In either event, reasonable compensation, to be determined by the Court, should be paid by the county in which the case is tried."

That the problems of the different states are not radically unlike is shown by certain recommendations in the message of Governor Hughes, of New York: Governor Hughes calls attention to the importance of dealing more stringently with the question of bovine tuberculosis. He refers to the measures taken in neighboring communities for their own protection which have made New York state the recipient on a large scale of tuberculous cattle, and, stating that such a condition is intolerable, urges that the subject should be thoroughly examined and expert advice obtained as to the best measures to be adopted. He expresses his gratification at the public sentiment which is being aroused in regard to human tuberculosis, and recommends to the legislature the adoption of such measures (including adequate milk and meat inspection) as will further tend to prevent the spread of the disease. He thinks the laws relating to adulterations and impurities in food should be codified and presented in a single comprehensive statement, and recommends the passage of a pure food law which will prevent the sale of adulterated or improperly branded foods.

Referring to the quarantine station at the port of New York, he states that there is a divided authority. The health officer has general supervision and control of the quarantine establishment, but the custody of Hoffman and Swinburne islands, where persons subject to quarantine are detained, is in the control of three quarantine commissioners. While expenditures for general quarantine purposes are made by the health officer, the commissioners have the care of the buildings and improvements on the islands. This division of authority answers no useful purpose. Treating the matter impersonally, and without reflecting on the commissioners, it seems to him that their offices are unnecessary and should be abolished. In regard to the state hospitals for the insane, the Governor states that the over-crowding of these institutions is largely in the southeastern part of the state, and advises that an additional hospital should be provided there at the earliest possible moment. He recommends that the lease to the state of Ward's Island, in the East River (the site of the Manhattan State Hospital), which expires in 1912, should be extended if satisfactory arrangements can be made with the authorities of New York City. As regards the charitable institutions, he thinks that, while absolute uniformity may be impracticable, legislation should provide so far as possible for a uniform system of management. At present these institutions, unlike the hospitals for the insane, are not governed by a reasonably uniform law; some of them being required to report to the legislature, and others to the State Board of Charities. Having stated that requests are being constantly made for the increase of salaries of employees in state institutions, he recommends that in order to obtain desirable uniformity, and to provide a method by which any necessary changes may be effected with due regard to the entire service of the state, provision shall be made for the classification and fixing of salaries in the charitable institutions, in the hospitals for the insane, and in the prisons, by a board of control in which the respective classes of institutions, through their supervisory boards and officers, shall have suitable representation. The action of the board may be made subject to the approval of the Controller and the Governor.

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SERUM TREATMENT OF CEREBROSPINAL MENINGITIS.

An article for which we have been somewhat prepared by the daily press appears in the January number of the *Journal of Experimental Medicine*, from the pens of Simon Flexner and J. W. Jobling, of the Rockefeller Institute of Medical Research. For several years Dr. Flexner has been investigating the possibility of modifying the course of an infection with the Diplococcus intracellularis by various antisera with the purpose finally of obtaining an antidiplococcus serum for the human infection. The success in animal experimentation has led to a study of the effect of an antiserum in man, prepared in the horse, with results which are most encouraging. Cases of epidemic meningitis, occurring in various places, both here and abroad, have served as a basis of the report before us. The paper gives a detailed statement of each of the series of cases studied with a discussion of the significance of the results, all of which are of extreme interest.

The mode of administering the antiserum has been by direct inoculation into the spinal canal, a method indicated as most efficacious through various experiments on the lower animals. It appears from observations made in man that the antiserum exerts a definite and injurious influence upon the diplococcus in the cerebrospinal fluid, whereby its multiplication is restrained, and it is presumably rendered more subject to phagocytic inclusion and digestion, at the same time being deprived of its capacity to grow outside of the body in culture media. With scientific caution the authors conclude their investigation with a statement that possibly the wisest policy is to defer general discussion of the efficiency of this serum treatment until a larger series of cases than they present has been collected. Definite conclusions are not attempted, but merely statements of observed facts, or obvious deductions therefrom. Of forty-seven cases subjected to the treatment, thirty-four recovered and thirteen died. Of the thirteen fatal cases, four were clearly beyond relief of any sort, hence it is fair to say that the number dying during the course of the treatment may justifiably be regarded as nine instead of thirteen. Comparing the cases treated with the serum and those not, in the same epidemic, the reduction in mortality of the serum treated cases is striking. For example, in one epidemic twelve patients died and six recovered. Of those who recovered, three were injected with the antiserum and no patient receiving the serum died. In another epidemic of twenty cases, nine were not treated with the antiserum; eight of these died and one recovered. Of the remaining eleven cases treated with the antiserum, three died and eight recovered. In general, the evidence is very decidedly in favor of the curative effect of the serum, although, of course, the cases are too few to venture a dogmatic statement, which the authors very definitely express in the following words: "In order to avoid unnecessary repetition in preparing this discussion, some of the above propositions have been stated in a manner that might readily convey the impression that we regard it as evident and established that the antiserum has proven its usefulness as a therapeutic agent in epidemic meningitis. The facts of our belief, at the present time, are quite otherwise. No one could be less convinced of the final fact of its value than we are. On the other hand, we believe that the data at hand warrant a wider trial of the antiserum, particularly as no other and better means of combating the disease is available."

The conservatism of this statement is such that no one should have an exaggerated idea of the claims of the antiserum. It is, however, evident that results of importance have already been achieved, and that we may look with some confidence toward further research which will place epidemic meningitis in the category of diseases for which a definite treatment is available.

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THE OPHTHALMO-REACTION TO TUBERCULIN.

The issue of the Journal for Sept. 19, 1907, contained an interesting letter from our Paris correspondent under date of Aug. 30, on Calmette's Ophthalmo-Reaction to Tuberculin. The discovery and introduction of this simple and improved method of diagnosis in early tuberculosis was therein ascribed to Calmette of the Pasteur Institute of Lille. According to our correspondent, it is a French discovery, and first-rate men in France have taken it up vigorously and were investigating it on a large scale and as quickly as feasible.

The *Lancet* for Dec. 28 contains a communication from its Berlin correspondent in regard to this ophthalmo-reaction in tuberculosis in which no mention is made of the relation of Calmette and his fellow investigators to the method. It is simply stated that some time ago, at a meeting of the Berlin Medical Society, Dr. Wolff Eisner mentioned the interesting fact that the instillation of some drops of a solution of Koch's tuberculin into an eye produced a marked reaction, consisting, first, of hyperemia of the conjunctiva and the caruncula, followed by a swelling and hypersecretion lasting for a few days and subsiding without any injury to the eye; that this reaction developed almost exclusively in tuberculous subjects and did not make its appearance in non-tuberculous cases. These statements were confirmed by other authorities who were present. One observer found that the reaction developed in 72% of cases of undoubted tuberculosis, in 40% of suspected cases and in 4% of cases that were not suspected. Other investigators found the reaction in 78½% of undoubted tuberculosis, in 75% of suspected cases and in 52 cases without apparent symptoms of the disease. Two other speakers at this meeting had made the instillation in 93 cases in which tubercle bacilli were present in the sputum and found that 90 of these cases showed the ophthalmo-reaction. Of 60 cases without bacilli, but where the subcutaneous injection of tuberculin had proved positive, the ophthalmo-reaction developed in 51 cases; among 136 patients who showed the clinical symptoms of tuberculosis the reaction appeared in 119 cases. At a well known sanatorium the reaction was found to be present in nearly every case of undoubted tuberculosis.

We are glad to meet with and to give further publicity to these further confirmations of Calmette's earlier observations, as previously recorded in our pages (see also Current Literature, p. 69), and we reproduce as timely in this issue the last paragraph of our correspondent's letter:

"But where the method will triumph will be in the obscure cases, and, above all, as a help toward an early diagnosis! and therein lies the key to success with these patients, as I need not tell you! If the method holds its promises, and enables the practitioner, struggling with a subjective diagnosis of incipient phthisis before objective disturbance is discernible, to affirm at the end of twenty-four hours and without possible risk of harm: 'This is tuberculosis; the patient must resign present occupations and take to the hills,' it seems difficult to overestimate the practical value of what will then prove to have been Calmette's idea of genius."

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"OPTOMETRY" AND "OPTOMETRISTS."

We publish in another column of this issue a letter showing the point of view of the petitioners for new legislation in behalf of "Optometry" and "Optometrists," but we note that the writer omits any reference to what seems to us the most important phase of this question, *viz.*, whether the "practice" of "optometry," as defined by these gentlemen, does not imply the exercise of medical care and advice to their patrons.

The relation of functional nervous disabilities to ocular strain is well known. Certain diseases of the eye are controlled and prevented by the proper prescription of glasses. It is evident that the direction and care of such cases is the duty of an educated medical man.

If a Board of Registration of opticians should be established by the Commonwealth, and should undertake, as suggested by our correspondent, to raise the standards of qualifications of "optometrists," would the medical side of these qualifications be omitted, and would there not be finally established under the approval of the state, a lower grade of oculists without a medical education? Indeed, medical functions are already assumed, and we have seen a circular issued by the firm of opticians to which our correspondent belongs which states: "Our method of examination measures carefully the strength of the muscles. The cornea, lens and retina are carefully examined with the ophthalmoscope and oblique illumination to ascertain if any abnormal conditions are present."

This certainly implies an ability to recognize and estimate accurately the importance of poorly defined anomalous conditions when found and to advise the patient whether treatment is or is not necessary, — surely the most important function of a medical consultant.

A careful reading of this letter will show a disposition to limit the practice of medicine to surgery and the use of drugs, a position which various irregular practitioners have assumed before the courts since the establishment of medical practice acts.

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MEDICAL NOTES.

Training in Medical Organization. — The students of the University of Pennsylvania Medical School have formed an organization, the purpose of which is to acquaint the undergraduates with the workings of the American Medical Association, after which it is very closely modeled. The various student societies take the place of the state organizations and elect members to a House of Delegates which transacts all the business of the association. An annual meeting is held at which papers are read by chosen members, thus encouraging original research and a scientific spirit. The organization is named The Undergraduate Medical Association of the University of Pennsylvania, and already has over two hundred and fifty members.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Jan. 1, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 67, scarlatina 44, typhoid fever 3, measles 50, tuberculosis 66, smallpox 0.

The death-rate of the reported deaths for the week ending Jan. 1, 1908, was 21.90.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Jan. 4, 1908, was 228, against 273 the corresponding week of last year, showing a decrease of 45 deaths and making the death-rate for the week 19.51. Of this number 123 were males and 105 were females; 224 were white and 4 colored; 124 were born in the United States, 97 in foreign countries and 7 unknown; 43 were of American parentage, 147 of foreign parentage and 38 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 58 cases and 1 death; scarlatina, 41 cases and 2 deaths; typhoid fever, 4 cases and 1 death; measles, 58 cases and 2 deaths; tuberculosis, 60 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 43, whooping cough 0, heart disease 15, bronchitis 8 and marasmus 3. There were 7 deaths from violent causes. The number of children who died under one year was 41; the number under five years 58. The number of persons who died over sixty years of age was 61. The deaths in public institutions were 80.

There were 12 deaths from la grippe reported during the week.

A Centenarian. — The death of Mrs. Mary Landry, of East Boston, at the reputed age of one hundred years and seven months is announced. She was born on Arichat Island, Cape Breton, May 10, 1807, and had passed the greater part of her life there. She was the mother of ten children, of whom the oldest is now seventy-five.

Bequests. — Through the provision under the will of Robert E. Brigham, among many other beneficiaries, the following Boston institutions have each received a payment of $1,000: the Massachusetts Charitable Eye and Ear Infirmary, Boston Dispensary, Channing Home for Consumptive Women, Children's Hospital, Boston Home for Incurables, Perkins Institute and Massachusetts School for the Blind, New England Hospital for Women and Children.

A Minimum Fee for Life Insurance Examinations. — At the last quarterly meeting of the Essex North District Medical Society, Oct. 9, 1907, the secretary reported that a majority of the members, and many non-members residing in its jurisdiction, had signified approval of the resolutions presented at the annual meeting in May, 1907, favoring five dollars as the minimum fee for "ordinary" life insurance examinations. And it was voted that the secretary inform the members of the society and the other physicians residing in the district, to whom a copy of the resolutions had been sent, that the society recommend the adoption of such a fee, to date from Oct. 9, 1907.

NEW YORK.

Increase of Marriages and Births. — In the year 1907 both the marriages and births in the city were considerably in excess, both in actual numbers and relatively to the size of the population, of any previous year. The births recorded amounted to 125,126, as against 111,772 in 1906; giving a birth-rate of 28.15 per thousand of the estimated population, the highest rate since the present Health Department was established in 1847. While the actual number of deaths in 1907, 79,205, was greater than that in 1906, 76,203, the death-rate, 18.48, was lower than in the latter year, owing to the increase in population. The most notable feature in the mortality statistics of the year is the marked increase in deaths from organic diseases of the heart. These numbered 7,726, an increase of 1,680 over 1906, and constituted one half of 1% of the total mortality of the city.

Death of the "Human Needle Book." — A notable case, that of Mrs. Mollie Desmond, known among the hospitals of New York as "the human needle book," terminated fatally at the Fordham Hospital on Dec. 30. In June, 1906, Mrs. Desmond, while suffering from despondency in consequence of desertion by her husband, attempted suicide by swallowing the contents of a combination package of needles, 144 in number, and of all sizes from a darning needle down. Strange to say, the needles did not prove immediately fatal, but in a short time they began to travel to all parts of her body. During the eighteen months which elapsed before her death she was at times in various hospitals, resuming her work after each operation, and at last all but ten of the needles had been extracted from various parts of the body, including the nose, the cheek, the back, the chest, the abdomen and the soles of the feet. About the middle of December she was admitted to Fordham Hospital for the second time. She was then in a serious condition, one or more of the remaining needles having apparently reached the region of the heart, and before the surgeons had succeeded in locating the exact source of danger the patient died. The result of the autopsy has not as yet been announced.

Woman Superintendent of New York Post-Graduate Hospital. — An innovation, in the placing of a woman at the head of a large general hospital, has been made at the New York Post-Graduate Hospital, where Mrs. Annie M. Rykert, for several years matron of the hospital, has just been appointed superintendent.

Poor Physique of High Scholarship Students. — In an address made at Columbia University on Dec. 28, before the Society of College Gymnasium Directors, Dr. Dudley A. Sargent, of the department of physical training at Harvard, advocated the adoption of measures by the universities to bring their high scholarship men up to a standard of physical proficiency in some degree approaching that of the college athletes. He showed from tests made at Cambridge that, while the average student had greatly improved physically in the last twenty-five years, the "grind," or the man who ranked high in his studies, had as a rule remained practically the same. "The scholarship man of to-day," he said, "may be said to represent the student type as it existed some forty or fifty years ago, and is what the average student probably would be at the present time but for the opportunities he has had for physical improvement. The average student of 1850–60 was characterized by a drooping head with a pale face and dull, sunken eyes, a flat chest and rounded shoulders, and with emaciated limbs, soft, flabby muscles, and general lack of good physical, mental and moral tone. It was this sad condition of the student class in the early fifties that led to the revival of interest in athletics and physical training in the schools and colleges which the last half century has experienced. If scholarship men cannot be induced to take time to improve their physique, for fear of lowering their college standing, then make physical training a part of the college curriculum and give them credit for their standing in their physical work."

Obituary.

NICHOLAS SENN, M.D.

In the death of Dr. Nicholas Senn, of Chicago, which occurred last week, the medical profession of this country loses a conspicuous figure. Dr. Senn was born in the canton of St. Gall, Switzerland, Oct. 31, 1844. He was brought to this country at the age of nine years, and was reared on a farm in Wisconsin. He later studied medicine at the Chicago Medical College, graduating in 1868 with distinction. After a medical service at the Cook County Hospital, in Chicago, he practised in Fond du Lac and later in Milwaukee. He received the appointment of Surgeon-General of the Wisconsin National Guard and became the first president of the Association of Military Surgeons of the United States, of which he was the organizer. In 1884 he was appointed professor of surgery in the College of Physicians and Surgeons in Chicago, and three years later professor of the principles of surgery and surgical pathology in what was then the Rush Medical College, now affiliated with the University of Chicago. From the year 1893 he had made his home in Chicago, and served for a number of years as Surgeon-General of the Illinois National Guard. It will be remembered that at the time of the Spanish-American War he took an active part in the medical service at Chattanooga, Santiago, Ponce and Montauk Point. For these services he was made Chief Surgeon of the Sixth Army Corps, Lieutenant-Colonel of Volunteers and Chief of the Operating Staff of the Army in the field. At the close of the war he resumed his practice in Chicago, but of late years had spent much time in widely extended travel. On several occasions he was appointed delegate for foreign congresses, and also throughout his active life he devoted much time to writing, chiefly on medical subjects connected with surgery. A number of books from his pen are still in use. He is said to have had a private library of very considerable value. Dr. Senn will take his place among the increasing number of foreigners who have reached a high position in the medical profession of this country.

Current Literature.

MEDICAL RECORD.

DEC. 7, 1907.

1. MEYER, A. *Six Cases of Malignant Endocarditis.*
2. *PECK, C. H. *Perforated Gastric and Duodenal Ulcer: a Report of Eight Cases.*
3. MEYER, W. *Tuberculins and Sera; a Synopsis of the Different Preparations in Use.*
4. LA PIERRE, L. F. *Alcoholic Delusional Insanity.*
5. ELY, L. W. *The Treatment of Joint Tuberculosis in Children.*
6. BLAKE, J. A. *The Surgical Aspects of Malignant Endocarditis.*

2. Peck reports 8 cases of perforated gastric and duodenal ulcer, with an operative mortality of two. Previous gastric symptoms were missing in several cases. In 3 cases the diagnosis of appendicitis with peritonitis was made before operation. Gastro-enterostomy was not performed in any case, as the writer believes this operation is better held in reserve as a secondary operation. He merely sews up the perforation and makes no attempt to excise the ulcer. Up to the present time there had been no distressing gastric symptoms in the cases that had been followed. [R. I. L.]

THE LANCET.

DEC. 14, 1907.

1. *GODLEE, R. J. *The Bradshaw Lecture on Prognosis in Relation to Treatment of Tuberculosis of the Genito-Urinary Organs.*
2. *MILLER, R., AND WILLCOX, W. H. *On Some Gastric Conditions in Wasted Infants with Special Reference to Hypertrophic Pyloric Stenosis.*
3. HALL, G. *Two Cases of Congenital Deficiency of the Muscles of the Abdominal Wall, Associated with Pathological Changes in the Genito-Urinary Organs.*
4. RUDGE, F. H. *A Case of "Caisson Disease."*
5. SCOTT, S. R. *Three Successful Cases of Operation on the Labyrinth.*
6. ROPER, A. C. *Twenty-six Cases in which Both Eyes were Operated on for Senile Cataract.*
7. BRAHMACHARI, U. N. *Compensatory Collateral Circulation with "Caput Medusæ" in Cirrhosis of the Liver without Ascites.*
8. ROBSON, H. J. *The Synchronous Movements of the Lower Eyelids with the Tongue and Lower Jaw, Observed in Certain Diseases; a Sign of Disease in Connection with the Lower Eyelids.*

1. Godlee presents a most interesting paper on the subject of prognosis of tuberculosis of the genito-urinary organs. He believes that the disease is always chronic, and that acute conditions are, for the greater part, exacerbations of a process which has been in existence a long time before. The chief interest in the paper lies in his consideration of the treatment of these conditions by means of bacterial vaccines and the opsonic index. He is strongly of the opinion that Wright is rather an enthusiast, and has too lightly cast aside ancient and well-established methods of treatment in these conditions, such as the surgical removal of the local process, hygiene and fresh air. He believes that many of these cases have been cured, are being cured and will be cured without the aid of bacterial vaccines; that these vaccines are valuable without doubt in certain cases, but they are by no means the only thing of value. Furthermore, he thinks that in the present stage of the technic of this procedure, the entire matter is extremely uncertain, and that the published results of Wright must be taken with a grain of salt.

2. Miller and Willcox discuss the value of analysis of the gastric contents in wasted infants, with special reference to hypertrophic pyloric stenosis. They consider three conditions: (1) atrophic dyspepsia or marasmus; (2) hypertrophic pyloric stenosis; (3) acid dyspepsia, sometimes known as spasm of the pylorus. They go over in detail the signs and symptoms of each of these three conditions, and then give their method of analyzing the extracted contents. Their test meal consists of two to three ounces of diluted milk, which is withdrawn thirty minutes after it is taken. The total acidity and the total amount of rennin are then calculated according to the method they describe. They speak briefly of the treatment of these cases, especially those of hypertrophic pyloric stenosis. They advise giving the smallest practical doses of food in this condition, owing to the danger of setting up a diarrhea, which often proves fatal. A non-coagulable mixture of milk should be used. They make no mention of surgical treatment. [J. B. H.]

BRITISH MEDICAL JOURNAL.

DEC. 14, 1907.

1. *GODLEE, R. J. *The Bradshaw Lecture on Prognosis in Relation to Treatment of Tuberculosis of the Genito-Urinary Organs.*
2. POLLARD, B. P. *Note on Nephropexy.*
3. DONALDSON, R. *Pericolitis Sinistra with Abscess Formation: Recovery.*
4. *MACKIE, F. P. *The Part Played by Pediculus Corporis in the Transmission of Relapsing Fever.*
5. HABGOOD, W. *A Possible Explanation of Late Return Cases in Scarlet Fever.*
6. BELL, C. E. *Strangulation of Small Intestine Through a Rent in the Mesentery.*
7. PORTER, F. J. W. *The Treatment of Scabies.*
8. BRYSON, M. *Case of Ptomaine Poisoning from Mutton with Marked Bradycardia.*

9. Fraser, L. *Case of Ruptured Tunica Vaginalis.*
10. Atkinson, T. R. *Large Fatty Liver in an Infant; Sudden Death.*
11. Thompson, G. S. *Case of Appendicitis Complicated by Intestinal Hemorrhage.*

1. See *Lancet*, Dec. 14, 1907.

4. Mackie has investigated an epidemic of relapsing fever which occurred in the Nasik Mission Settlement in Bombay. This epidemic broke out in a mixed settlement of boys and girls living under similar conditions. A very high percentage of the boys fell victims to the disease in the course of a few weeks, while a much smaller percentage of girls fell ill and at infrequent intervals, extending over three months. The only factor which could be found to cause this marked difference was that the boys were infested with body lice, from which the girls were almost entirely free. On an examination of these insects taken from the boys' wards, a large percentage were found to contain living spirilla of relapsing fever. They were found chiefly in the stomach of the lice, where multiplication took place. An attempt to infect a monkey by means of these lice failed. The writer believes that the body louse is a very important etiological factor in the transmission of this disease. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 43.
Oct. 24, 1907.

1. *Kuttner, L. *The Treatment of Chronic Diarrhea.*
2. Neisser, A. *Atoxyl in Syphilis and Frambesia.*
3. Hart, C. *The Genesis of Tuberculosis of the Lungs.*
4. Löwenstein, E. *Intracellular Location of Tubercle Bacilli in Sputum and its Diagnostic Importance.*
5. Hippius and Lewinson, J. *Oxyuris and Appendicitis.*
6. Hirschberg, M. *Acute Orchitis from Pyocyaneus Infection.*
7. Veckenstedt. *Inflammotion and Stricture of Wharton's Duct, Due to Trauma.*
8. Becker. *Treatment with Fibrolysin.*

1. Kuttner in a very concise article directs attention to a number of important points in the treatment of diarrheas. Regulation of the diet is of great importance in all but the nervous types; here restriction does more harm than good and they are often checked with surprising rapidity when the patient returns to a mixed diet. Schmidt's test diet should be used as a basis for regulation. As this or that article of food is seen to be imperfectly digested, the diet is changed accordingly. In fermentative processes the carbohydrates and in putrefactive processes the albumins are chiefly concerned. Ocher-colored stools in adults suggest disturbances in the small intestine; green stools suggest jejunal diarrhea in adults; in infants, they are due to increase of alkali in the upper parts of the intestine or to an oxidizing ferment. Fermenting stools are usually light brown, foamy and have an acid or cheesy smell; they generally indicate the milder intestinal disturbances. Putrefying, dark-colored stools indicate serious trouble, such as dysentery or carcinoma of the large intestine. After a Schmidt test meal, visible muscle fibers mean intestinal indigestion; larger pieces of connective tissue locate the trouble in the stomach. Blood is rarely found in the stools in simple catarrhal conditions; it is more common in "nervous congestion." Macroscopic traces of pus always mean ulceration or perforation of the mucosa. If nuclei are present in the muscle scraps, some disturbance in the pancreatic digestion may be suspected; the absence of nuclei is not conclusive, as putrefactive processes are likely to distroy them. Remains of starch point to the small intestine. Affections of the pancreas are not always followed by the passage of a larger proportion of fats, yet the stools in such cases show much less splitting of fats, consequently microscopic examination shows neutral fat present. When pure mucus without the admixture of fecal matter is present, the catarrh is in the lower part of the large intestine, rectum, flexure, or descending colon. Fluid fecal masses mixed thoroughly with mucus indicate the upper part of the large intestine. The small intestine is indicated whenever there are flakes of mucus, cell nuclei, abundance of muscle fibers, free grains of starch, positive bilirubin test and fermentation. Acute catarrh of the large intestine causes diarrhea, but catarrh of the small intestine does not necessarily cause it, unless the upper part of the large intestine be involved. Cancerous affections often begin with diarrhea; and with elderly people, who previously have had regular stools, such diarrheas should cause suspicion. High rectal cancer can sometimes be palpated as the patient stands, stooping forwards. If examination of stools shows no mucus or putrefaction pointing to catarrh, and there is nothing to indicate organic trouble, then the diet should be not restricted, but if scraps of meat and connective tissue are in the stools on a test diet, then the meat should be reduced and soft foods ordered. Examine the gastric juice, and if HCl is deficient give hydrochloric acid in large doses. If motor insufficiency be present, rinsing out of the stomach is indicated. In nervous types, the underlying affection requires treatment. Drugs to arrest the diarrhea should be given very cautiously. [L. G. M.]

No. 44. Oct. 31, 1907.

1. Aschaffenburg, G. *The Latest Theories of Hysteria.*
2. Klieneberger, O. L. *Tests of Intelligence among Students.*
3. Kölpin, O. *Absence of the Knee Jerk without Disease of the Nervous System.*
4. Wolff-Eisner, A. *Absence of Glycogen in Leucocytes in Myeloid Leukemia and Its Importance in the Theory of Immunity and Phagocytosis.*
5. *Cassel. *Epidemic Cerebrospinal Meningitis in Children.*
6. Bommes. *Dislocation of the Tarso-metatarsal Articulation.*
7. Hoehne, F. *The Small Practical Value of Mercury Suppositories in Syphilis.*

5. Cassel says that cerebrospinal meningitis has become endemic in Prussia, and urges lumbar puncture as a prompt and sure means of differentiating the epidemic from the other varieties, especially in infants. The healthy bacilli carriers are a greater menace than the sick confined to their beds. In 49 cases in Berlin in 1905, he was not able to discover contagion of other individuals. He cites the work of the army surgeons, who were able to examine all the members of the battalions in which epidemic meningitis had occurred, and by isolating the sound bacilli carriers were able to arrest an epidemic in its incipiency. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 42.
Oct. 15, 1907.

1. *Escherich, T. *Tetanoid States in Childhood.*
2. *Curschmann, H. *Pain and Blood Pressure.*
3. Haecker, R. *A Method of Removing Foreign Bodies from the Esophagus.*
4. Lanzer, W. E. *The Removal of Foreign Bodies Deep Down in the Esophagus.*
5. Naab, J. P. *The Etiology of Perityphlitis.*
6. Schönwerth, A. *Review of One Hundred Operations for Appendicitis.*
7. Haeberlin, C. *Treatment of Granulating Wounds.*
8. Grasmann. *The Iodin-Benzin Method of Disinfection of the Hands.* (Continued article.)
9. Schmidt, H. *Fluid Somatose in Convalescence from Childbirth.*
10. Bennecke, H. *A Case of Fatal Reflex Anuria after Passing Sounds on a Patient with Advanced Chronic Interstitiol Nephritis.*
11. Krencker, E. *B. Coli Communis Septicemia in Two Cases of Abdominal Disease.*
12. Rosenthal, J. *A New Röntgen Apparatus.*

1. Escherich reviews the subject of tetany in children and calls attention to a tetanoid condition occurring very commonly, especially in rachitis and allied conditions. It is characterized by slight muscle contractions and a general hyper-irritability of the muscles and nerves, also by a diminished anodal and an increased cathodal irritability. Many causes have been assigned for this condition, but none are satisfactory. Of late, the tetany produced by the removal of the parathyroid in animals has caused an awakened interest in the tetany of children, but so far no connection between this condition and the parathyroid has been demonstrable. Parathyroid extract has no effect on the condition. Erdheim has noticed changes in

rats whose parathyroids were removed which much resembled rachitic changes in man. It is yet to be proved whether there is any relation between the parathyroid and rickets, however.

2. Curschmann has observed the influence of pain on the blood pressure, and found that in most cases pain caused an increase in blood pressure; in analgesia of the skin, whether owing to organic lesion or to hysteria, no rise in blood pressure followed the application of the electrode. In tabes and lead poisoning during the attacks of abdominal pain the increase in blood pressure was very great (up to 210 mm.), falling at once after the attack was over. In the pain associated with cancer and ulcer of the stomach, gallstones, appendicitis, and hydrops of the gall bladder, there was practically no rise in blood pressure. This may be, in certain cases, an important point in differential diagnosis. [R. D.]

No. 43. Oct. 22, 1907.

1. Naunyn, B. *Experimental Pharmacology.*
2. Freund, H. *The Treatment of Dysmenorrhea by Breast Applications.*
3. Ritter, C. *The Treatment of Inoperable Tumors with Artificial Hyperemia.*
4. *Schenker, G. *Observation on the Use of Marmorek's Serum in the Treatment of Tuberculosis.*
5. Uffenorde, W. *Plastic Operations for Malformations of the Auricle.*
6. Adam. *A New Method of Treatment in Gonorrheal Conjunctivitis of Adults.*
7. Dehler. *The Treatment of Typhoid Carriers.*
8. Melchior, E. *A Case of Widespread Necrosis of the Liver in Syphilitic Hepatitis.*
9. Bratsch, W. *A Case of Fatal Mercury Poisoning.*
10. Grünwald, H. F. *Additional Remarks on the Subject of the Clinical Recognition of Blood in Feces.*
11. Grasmann, M. *The Iodin-Benzin Method of Disinfection of the Hands.* (Concluded.)

4. Schenker has treated 39 cases of tuberculosis with Marmorek's serum. His procedure was to give 5 cc. or 10 cc. by rectum twice a week. During the whole period the patients were under a strict hygienic regimen (out-of-door treatment, etc.). Most of the cases treated (29 out of 39) were in the third stage, according to Turban's classification. Out of these cases 8 were cured, 11 markedly improved, 10 considerably improved and 4 showed slight improvement. The author concludes that the serum has an antitoxic action in tuberculosis, as shown by the disappearance of the bacilli from the sputum, and from the urine in genito-urinary tuberculosis. It is especially useful in tuberculosis in the first or second stages, and also in bone or peritoneal infections. In the third stage the author has had no such success with any other method of treatment; it brings the disease to a standstill, even if it does not cause a cure. In severe and long-standing infections the serum must be used for a long time; two hundred and fifteen days was the longest period. The serum, when given by rectum, has no unpleasant or dangerous action. Open-air treatment and the best of care and hygiene must be linked with the serum therapy; the open-air treatment is especially to be recommended. The drawback to the widespread use of Marmorek's serum is its cost, which is considerable. The author believes that this serum is a great step in advance in the therapy of tuberculosis. [R. D.]

No. 44. Oct. 29, 1907.

1. Pfaundler, M., and Moro. *On the Physiology and Pathology of Infant Feeding.*
2. *Strubell, A. *The Opsonic Theory.*
3. Hart, K. *The Surgical Treatment of Beginning Apical Tuberculosis.*
4. Bennecke, H. *Clinical and Bacteriological Observations Based on the Study of Three Cases of Epidemic Cerebrospinal Meningitis.*
5. v. Hoesslin, H. *The Relation between Bronchial Asthma and Edema of the Lungs.*
6. *Kaufmann, M. *Carbohydrates Appearing in the Urine during Delirium Tremens.*
7. Hosch, H. *Delirium Tremens after Cessation of the Use of Alcohol.*
8. Ohkubo, S. *Multiple Cavernous Hemangiomata in the Intestine.*
9. Orth, O. *Sarcoma and Trauma.*
10. Neumann, O. *The School of Tropical Medicine in Liverpool.*

2. Strubell's article contains a review of Wright's work, with a description of his methods and of some of his results. It is enthusiastic in its praise of Wright and his work, but contains no new contributions to the subject of vaccine therapy.

6. Kaufmann has found small quantities of carbohydrates in the urine of patients with alcoholic delirium. Usually these are not glucose. The author believes the explanation of this is a toxic influence on the medulla oblongata, a condition like that which Claude Bernard described in certain cases of diabetes. When the alcohol and the toxic products of unnatural metabolism set up during the delirium are thrown off, the carbohydrates disappear from the urine. [R. D.]

No. 45. Nov. 5, 1907.

1. Emmerich, R. *Pyocyanase in the Prophylaxis and Cure of Certain Infections.* (Continued article.)
2. *Saathoff. *Influenza Septicemia.*
3. *Lazarus, P. *Experimental Hypertrophy of the Islands of Langerhans after Phloridzin Glycosuria.*
4. Moro, E. *Experiments on Artificial Feeding of Infants.*
5. Hess, W. *The Estimation of the Viscosity of the Blood.*
6. Revenstorf. *The Risk of Drowning for Swimmers.*
7. Frey, G. *Treatment of Chronic Empyema of the Antrum.*
8. Engel, H. *Orthotic Albuminuria in Nephritis.*
9. Schmidt, F. *The Origin of Albumin in the Urine.*
10. Meusel, E. *Late Operation in Appendicitis.*
11. Kuckro. *Multiple Sclerosis or Cerebrospinal Syphilis.*

2. Saathoff reports the case of a young man who entered the clinic with symptoms of a mild infection. This developed rapidly into a severe general septicemia, with symptoms of meningitis and malignant endocarditis, which conditions were proved by autopsy. Blood cultures during life were uniformly negative. The bacteriological examination from the autopsy showed pure cultures of the influenza bacillus. It has been held that the influenza bacillus never causes a general septicemia, which idea this case would prove to be erroneous.

3. Lazarus has found that in guinea pigs who have been treated over long periods with phloridzin, the islands of Langerhans in the pancreas are greatly hypertrophied; that their number is increased, and that the blood supply is greater than under normal conditions. This is probably an hypertrophy due to added amount of work thrown on the islands by the influence of phloridzin on the sugar metabolism. Diabetes in man is often due to an atrophy of these islands. [R. D.]

Berliner Klinische Wochenschrift. No. 45. Nov. 11, 1907.

1. His, W. *Address, Delivered at His Installation in Berlin.*
2. *Joanovics, G., and Kapsammer, G. *The Value of the Newer Diagnostic Methods in Tuberculosis.*
3. Schnütgen. *The Nature of the Leucocytes Occurring in the Urine of Bright's Disease.*
4. Lewandowsky, M. *Loss of the Color Sense Due to Focal Processes in the Brain.*
5. *Michael, C. *The Effect of Rectal Feeding on the Gastric Secretions.*
6. Falk, E. *Distortions of the Vertebral Column Having Origin in Fetal Life.*
7. Dege. *Hernia Cruralis Pectinea sive Cloquetii.* (Concluded.)
8. *Rabinowitsch. *The Epidemic of Recurrent Fever in Kief.* (Concluded.)

2. Joanovics and Kapsammer have used the method described by Bloch in animal injections for the diagnosis of tuberculosis. The suspected material is injected into the inguinal region of a guinea pig; at the same time the

inguinal lymph glands are bruised by pinching. After careful investigations the authors conclude that after fourteen days a diagnosis of tuberculosis, if present, can be made by examination of the inguinal glands. This is a gain of at least two weeks over the old method. The authors have tried the allergin test of Pirquet (injections of tuberculin into the conjunctival sac) and the ophthalmo-reaction of Wolff-Eisner and Chantemesse on tuberculous guinea pigs without satisfactory results.

5. Michael has made a large number of observations on the gastric secretions of patients receiving rectal feeding. He has been unable to demonstrate an increase of gastric juice in either well persons or patients with diseases of the stomach after the rectal enema had been given. The author claims that there is no danger, therefore, to the stomach in cases of ulcer, etc., from administering rectal feeding.

8. Rabinowitsch gives a large number of statistics gathered from the recent epidemic of relapsing fever in Russia. His statistics are based on the review of 4,080 cases, of which the author personally studied 1,000. Men are affected three and one half times as often as women. Hunger, dirty dwellings and general bad hygiene play an important part in the etiology of large epidemics, and the disease is seen, therefore, almost exclusively among the poor. Though in the blood of bedbugs which have bitten infected people it is possible to demonstrate Obermeyer's spirillum for days afterward, still the author does not believe that the infection is carried by these insects, for he bound several such bedbugs close to his skin, and though bitten several times, did not contract the disease. He believes that the spirilla are taken in through the mouth, and the portal of entrance is the gastro-intestinal tract.

[R. D.]

Deutsches Archiv für Klinische Medizin. Bd. 91, Heft 1 and 2, 1907.

1. Plehn, A. *The Water Equilibrium of the Blood.*
2. Boruttau, H., and Stadelmann, E. *Creosote and Lysol Poisoning.*
3. *Schlayer, Hedinger and Takayasu. *Nephritic Edema.*
4. *Stadler, E. *An Experimental and Histological Study of Heart Hypertrophy.*
5. Hesdörffer, E. *The Pathology and Physiology of Spinal Temperature-sense Disturbances.*
6. Nicolaier, A., and Dohrn, M. *The Value of the His Method of Uric-Acid Determination.*
7. *Bruck, E. *Blood Pressure during Sudden Severe Exertions.*
8. *Gottstein, E. *Polymyositis.*
9. Bittorf, A. *The Distribution of Proteolytic Leucocytic Ferment and Anti-ferment in the Urine, Blood and Sputum during the Course of Croupous Pneumonia.*

3. In a previous paper Schlayer and Hedinger (*Deutsch. Archiv f. klin. Med.*, 1907, Bd. 90, Heft 1 and 2; reviewed Boston Med. and Surg. Jour., clvii, 1907, p. 165) presented the results of a study of general blood pressure, local renal circulation and diuresis as influenced by various stimuli in rabbits suffering from various forms of toxic nephritis. They made two groups of nephritis, tubular and vascular. The present paper is a continuation of this method of study applied to rabbits in which nephritis has been produced by uranium nitrate, with particular inquiry as to the cause of the edema which results in the uranium nitrate animals in contra-distinction to other forms of toxic nephritis. Neither a histologic study of the kidney nor an examination of the urine explains the difference. At the beginning and the end of the process the uranium nitrate nephritis corresponds to the author's tubular type. However, there is a definite functional difference during the course of the process between the uranium nitrate and the other edema-free forms of tubular nephritis. At a time when the latter kidney responds to stimulation with an increased diuresis, the uranium nitrate kidney fails to respond, though there is no apparent change in the renal blood vessels. This is not the result of sodium chloride retention, as it may be produced by giving water with very slight salt content, and as well by other diuretics. However, caffein still produces a diuresis, which is in accord with its action on many cases of human nephritic edema. This failure to respond to other diuretics is a result of the renal lesion, but cannot lie in the tubular epithelium. It is the result of some alteration of the renal vessels which renders them impermeable, and with this impermeability is associated the production of the edema, though there is no demonstrable anatomical lesion of the renal blood vessels. Sodium chloride and water retention are factors during this stage in the production of the edema, but there is probably an associated lesion of the cutaneous blood vessels, also the result of the action of the uranium nitrate. Edema, however, does not occur until the renal blood vessels lose their power of dilatation and diuresis is interfered with.

4. Various views have been advanced to explain the cause of the tissue changes in the hypertrophied heart. Most of these have been based on the study of human hearts, but in these the factors concerned in the production of cardiac hypertrophy have not been simple. Stadler, by producing mechanical valvular lesions in rabbits, has been able to eliminate inflammation as a cause, and so to study the simple mechanical factor. In these rabbits after several months there is an increase in connective tissue, and this is distributed most abundantly in those parts of the heart in which mechanical distention was most marked. These findings support Dehio's mechanical explanation of the origin of "myofibrosis cordis," and are against the inflammatory explanation of the tissue changes in the hypertrophied heart. Inflammation, on the other hand, is the cause of the foci of connective tissue proliferation found in many human hearts. Aside from these, both muscle and connective tissue changes result from mechanical causes associated with the increased functional demands on the heart.

7. Bruck has investigated the changes produced in the blood pressure by the exertion of lifting a weight, and attempting to exhale with the glottis closed. In each the changes are the same, and there is very little difference between the healthy man and the man with cardio-vascular disturbances except in degree. The usual result is an immediate rise in blood pressure followed in a few seconds by a fall, with later a more prolonged rise. Individual differences are marked more in the degree than in the character of the change. The first rise is explained by the increased intra-thoracic pressure forcing the blood from lungs to heart; the fall by the same pressure obstructing venous inflow, and the subsequent rise in large part by the effect of a secondary rise in intra-abdominal pressure. Following these changes, x-ray examination shows a slight enlargement of the heart (slight acute dilatation) and during the exertion often there is evidence of cardiac compression.

8. A man of twenty-three during three years had several attacks of pain and swelling in the muscles of the arms and legs, with a similar condition in the knee and ankle joints, which persisted over considerable time. In some attacks there was dyspnea, with swelling and reddening of the vocal cords. The temperature was moderately elevated. There was no leucocytosis, no eosinophilia. Blood cultures were negative. In one attack there were pleuritis and pericarditis. Excised portions of muscle showed a granular degeneration with loss of nuclei in many fibers associated with very slight changes in the connective tissue stroma. The case was regarded as one of polymyositis of unknown origin. The associated symptoms and complications similar to rheumatism are of special interest.

[H. A. C.]

The Ophthalmo-Tuberculin Reaction. Letulle (*Presse Med.*, July 3, 1907) reports his experience with the Calmette ophthalmo-tuberculin reaction. Of fifty patients ill with some acute disease other than tuberculosis, 40% reacted to this test. In certain among this number evidence of tuberculosis became manifest during convalescence. He believes it is of value in acute febrile conditions where there is any doubt as to the diagnosis, and also to determine whether an old tuberculous lesion has or has not been lighted up by some intercurrent illness. Its ease of administration, the absence of constitutional disturbance and the simplicity of the entire procedure make it in his mind a valuable aid.

OLMER AND TERRAS (*Presse Med.*, Sept. 18, 1907) report less favorably on this test. They believe it is too sensitive and that only extremely marked reactions should be considered, and that at best it is only to be taken as one of many slight signs on which an early diagnosis of tuberculosis should be based.

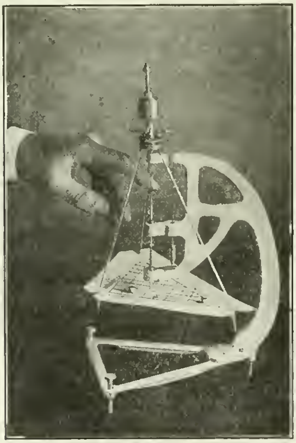
MANTOUX (*Bull. Med.*, Oct. 26, 1907) tried this test on two hundred healthy subjects from two to sixteen years. Eight per cent of the number clearly reacted, the majority of them being among the older children. These results do not agree with the clinical examinations of the children which had been previously made. He believes, nevertheless, that a marked positive reaction is of value and should be given careful consideration.

[J. B. H.]

Miscellany.

A MECHANICAL DIET INDICATOR.

THE mechanical diet indicator, devised by Prof. Irving Fisher, of the Department of Political Economy at Yale University, and described by him in the *American Journal of Physiology*[1] and in the *Journal of the American Medical Association*,[2] is a machine for the purpose of indicating automatically the proteid, fat and carbohydrate in any given dietary. By the use of this device, it is easy to discover what proportions these elements bear to each other in any given ration, and if the ration does not conform to any given standard, it indicates what are the directions in which it can be most easily remedied.



The machine consists of an iron standard about nine inches in height, from which is suspended a "basket" holding a triangular card on which is printed a right angle triangle, called by Professor Fisher a "food map." Each particular food has a particular location on this "food map." The "latitude" of any food represents (in calories) the per cent of its food value in the form of proteid, and its "longitude," the per cent of its food value in the form of fat. Its distance from the third side, or "hypotenuse," of the triangle, represents in like manner, the carbohydrate.

The machine is most easily used if various foods are served in standard "portions," each containing 100 calories of food value, or in simple multiples of fractions of such standard "portions." The weighted pins are placed on the "food map," the weights of which represent these portions (or multiples or fractions). In this way, the food value of every article eaten in the course of a day is represented by the weight of the different pins while their position on the "map" indicates the percentages of these food values in the three forms of proteid, fat and carbohydrate. The "basket" is allowed then to hang freely, and a pointer indicates on the "food map" the center of gravity of the pins. This center of gravity represents the entire ration, its "latitude" indicating the per cent of calories in proteid, and its "longitude" the per cent in fat, etc. The total calories are represented by the total weight of the pins. The "food map" is so arranged that when a ration is properly "balanced," the center of gravity of the foods eaten will fall within a certain area, called the "normal rectangle," and indicating a normal ration.

All "foods may be classified according to their location relatively to this rectangle. Thus all foods above the rectangle are 'high proteid foods'; all below, 'low proteid foods'; all within, 'normal proteid foods.'"

Professor Fisher uses as the normal "rectangle" the results of his colleague, Professor Chittenden, although the same method would apply to the older standards of Voit, Atwater, etc.

One advantage of the mechanical diet indicator is the extreme ease and rapidity with which the result is obtained as contrasted with the tiresome calculations which are necessary when the ordinary arithmetical method is pursued. The center of gravity, being automatically found, solves at a stroke all arithmetical problems. Another advantage is that the "food map" gives a graphic picture of the food contents of various foods. After a given food has been once located on the "food map" it can be remembered with the same facility that the location of a city on a geographic map can be remembered. In this way, it is possible, after a little familiarity with the method, to make an approximate application of it mentally. Professor Fisher used the method in his experiments with nine students who for five months tried the effects of the thorough mastication advocated by Mr. Horace Fletcher. By means of the Indicator, each man's daily ration was observed during this period, although no diet was prescribed, the men following the leadings of their appetites. The most notable effect of thorough mastication observed by means of the Indicator, was the gradual reduction in proteid, which at the end of the experiment corresponded closely for most of the men with the standard set by Professor Chittenden.

Professor Fisher has not patented the Indicator, and any one is free to make or manufacture it. It can now be obtained from Modern Medicine Company, Battle Creek, Mich.

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[1] April 2, 1906, vol. xv, no. v.
[2] April 20, 1907, vol. xlviii, pp. 1316–1324.

Correspondence.

OPTOMETRY AND OPTOMETRISTS.

The Massachusetts Optical Society.
incorporated oct. 23, 1907.

Boston, Jan. 3, 1908.

Mr. Editor: In your issue of Dec. 26 appeared an article entitled "The Optometrist. A Warning Word."

I feel confident that your readers desire to hear both sides of this question, and in consequence venture to reply to certain statements contained in the above-mentioned article. I shall omit all personalities brought out in the article and confine myself to the facts in issue.

First as regards the word "optometry."

On page 4134 of the Century Dictionary and Cyclopedia is given the definition of the word "optometry." It has been in the Century since 1901. In the twelve states where laws are now in force they are called "Optometry Laws" and the men are known as Optometrists. Is it a thing to be wondered at if those who practice optometry choose to be known as Optometrists?

The American Association of Opticians has been mentioned. It was organized in New York City in October, 1898. The idea of an American association was first considered at a meeting of the New York Optical Society held at Saratoga, N. Y. It has never been in any way connected with any wholesale optical house in this or any other city. Its membership on Dec. 1, 1907, was 3,188, and we expect by our 1908 meeting to have at least 5,000.

It is very timely that the point has been brought up in regard to the ease with which any person can claim to be an Optometrist. This is one of the points we have made repeatedly. It is our desire to make this word signify a high standard in optometry, and I know of no way to bring this about except by our present effort.

Exceptions are taken in this article to our plan to allow all who have been engaged in optometrical work two years prior to the proposed legislation to receive a certificate without examination. This has always been the policy of the Commonwealth in enacting legislation of this description, and in proof of this I would refer your readers to the original medical, dental and pharmacist acts, wherein an identical provision was inserted. Furthermore, provision is made that if any one proves to be incompetent who has been registered with or without examination, such person's certificate can be revoked.

In the Journal article the author states that "Section 5 reads well. Means little." We suggest to him and to your readers that if it reads well it means exactly what it says, because if enacted it would then be law, and statute laws are interpreted strictly.

It is further stated in your Journal article that "The reasons for the passage of their bill are adroitly worded and put to catch the unwary. They can be easily answered and such answer will be forthcoming at the proper time." Why not answer these arguments *now*, and inform the public at once why the bill should be defeated? If these arguments can be so easily answered surely the author of the Journal article has nothing to fear by answering them now.

I am pleased to enclose a copy of our ethics. We surely cannot be held responsible for the statements and acts of those who practice optometry contrary to these. Why should we be held responsible any more than the medical or dental society for the same class that exists in their respective professions?

Mention is made of an address I delivered before the New England Association of Opticians, "Promise is made that the book will be given special attention later." I will send to any one desiring, a copy of this book in order that he may see exactly what I said and not what the author of your article pretends I said. The entire manuscript will gladly be shown to any interested person.

There is no desire or intent in this booklet to show that a physician who studies optometry "is incompetent." It is intended to show that this work belongs to us as much as to the oculist and that an effort is being made to steal our birthright. It is stated that there is "no controversy between oculists and opticians." If "dispensing opticians" was used instead of "opticians" this would be true, but the writer of the Journal's article knows only too well that there is a controversy between oculists and those opticians who do what opticians have done for years, *i. e.*, examine eyes for glasses. An abundance of proof of this statement can be easily furnished.

We desire to call your attention further to the fact that in the Journal's article the author deplores existing conditions as a result of which any one can practice optometry without hindrance. We agree with him that this is undesirable and unwise.

We desire to limit the practice of optometry to capable men. We do not desire to encroach upon the domain of the medical practitioner. This bill will eliminate that class of irresponsible men who are now assuming to practice medicine by attempting to treat diseased eyes.

The difference between the optometrists who are endeavoring to secure enactment of legislation and the author of this article is, that he suggests no remedy for existing conditions, which he states to be "bad," and by advising the defeat of the bill proposed by the optometrists allows conditions to remain as they are, while the optometrists are endeavoring to secure legislation that will in a large measure eliminate these admitted evils, and which will result through the work of the proposed board of registration in elevating the requirements imposed upon those who desire to practice optometry. There is no limit to the standard or qualifications that this board may impose; and is it not reasonable to believe that when the practice of correcting imperfections in eyesight is regulated by law that the Commonwealth will adopt a policy that will insist on a high order of ability on the part of those desirous of entering this practice as their life work? Thus the public will be benefited and protected and that protection is what this bill endeavors to insure.

The Journal article closes thus: "In conclusion let me say that the passage of this law means this, no more, no less. The dignifying of their trade, the cheapening of our profession and the letting down of the bars which guard the practitioner and the public."

In reply I ask the author of this article, and every fair-minded physician, whether he prefers to allow conditions to exist as they are at the present time, where neither the practitioner nor the public is guarded, or whether he desires to secure such protection to the public as is guaranteed in this bill; and we call his particular attention and we invite the particular attention of all your readers to the fact that as above stated the proposed board of registration can from time to time increase the educational and intellectual qualifications of those desiring to practice optometry.

We intend to push our claim in every honorable way and in no other as long as the present chairman occupies that position, insinuations to the contrary notwithstanding. We will fight in the open, and for what we believe is right, and invite to our standards only those who honestly agree with us.

The proposed legislation will in no way cheapen the medical profession, but on the contrary will absolutely prevent irresponsible and incompetent men, as is often the case at present, from attempting to treat those whose eyes are in such a condition that they need the services of the medical practitioner.

Very truly yours,
Briggs S. Palmer,
Chairman Legislative Committee.

FIFTH PAN-AMERICAN MEDICAL CONGRESS.

75 West 55th Street,
New York, Dec. 31, 1907.

Mr. Editor: As you doubtless know the next Pan-American Medical Congress will be held in Guatemala, Central America, the second week in August, 1908. The International Executive Committee is in hopes that you will give it the same efficient support that you heretofore have given to the former meetings. We are sending a news item, which is the invitation to be sent out to the medical journals of the Western Hemisphere, together with some remarks, which we trust will be published in your Journal.

Very truly yours,
Ramon Guiteras, M.D.,
Secretary, International Executive Committee.

To the Medical Profession.

Gentlemen: The Government and the people of the Republic of Guatemala, as well as the National Committee of the Fifth Pan-American Congress, are actively endeavoring to do all in their power, in a sure and efficient way, to make this meeting a great success.

With this object in view, the committee will be pleased to invite you personally to attend, as well as the members of the society or medical fraternity to which you belong, in order that, through your presence and works, the certain success of the congress, that science expects of its representatives, will be assured.

The committee hopes that you and the other members of your institutions will meet at Guatemala on the 5th, 6th, 7th, 8th, 9th and 10th of August of next year. 1908, and sincerely begs that from now on, you will not hesitate to keep yourself in fraternal relations with this committee, and also that you will let us know beforehand, if you intend to attend the Congress in person or to send some scientific contribution.

The committee hopes to receive a reply shortly to the invitation to this meeting, which will serve as an incentive to unite professional interests, to stimulate the advance of medical science and to contribute to the preservation of the health and the prolongation of the life of the people of the Americas.

We take advantage of this opportunity, to express to you the best regards of

Yours very truly,
Juan J. Orteaga, *President.*
Jose Azurdia, *Secretary.*

It must not be thought that Guatemala is an undesirable place to visit in August, and that it will be very hot and the rain constant. August is the time of the year called canicula, when, although hot, there is but very little rain. The heat of Guatemala does not, however, compare with our summer heat, as it is situated on a plateau which is comparatively cool. The trip down from New Orleans or from New York by steamer to Porto Barrios is an agreeable one. The trip to the Congress and back will be in the hands of the chairman of the Committee of Transportation. Excursion trips can also be made in connection with this congress to Mexico or the various West Indian Islands. The excursions will be in the hands of Thomas Cook & Co., or any one who chooses to organize one. There will be no charges for transportation in the Republic of Guatemala.

R. G.

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CARBOLIC ACID GANGRENE.

Boston, Dec. 31, 1907.

Mr. Editor: The following quotation from Bryant and Bucks' New Surgery, "Treatment of Abscess," vol. ii, part viii, p. 155, is I think worthy of comment, considering the number of cases of carbolic acid gangrene reported lately in surgical literature:

"In mild and uncomplicated abscesses, a simple incision followed by an antiseptic poultice (cotton saturated with a strong solution of carbolic acid) is all the treatment that is required."

I believe the treatment advised in the quotation to be highly dangerous, and such teaching, especially when found in an authoritative work, extremely harmful.

I quote from the same work from the article on Gangrene, page 265, "Gangrene may be produced by a 1% solution of carbolic acid, in twenty-four hours: (Bruns, Peraire). It may be produced in twelve hours by a 2% solution (Lérai), and in from three to four hours if the solution is more concentrated (Hortum)."

Carbolic acid should, I think, be used in surgical work as an immediate application, any excess to be neutralized by alcohol, and never as a dressing over devitalized tissues.

Very truly yours,
Wm. Pearce Coues, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, Dec. 28, 1907.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	0
Chicago	—	—	Waltham	4	1
Philadelphia . . .	—	—	Pittsfield	11	0
St. Louis	—	—	Gloucester	11	2
Baltimore	229	49	Brookline	13	—
Cleveland	—	—	North Adams . .	8	3
Buffalo	—	—	Chicopee	8	5
Pittsburg	—	—	Northampton . .	12	1
Cincinnati	—	—	Medford	8	1
Milwaukee	—	—	Beverly	8	1
Washington . . .	—	—	Leominster . . .	3	1
Providence . . .	79	18	Hyde Park . . .	11	0
Boston	276	46	Melrose	4	0
Worcester	48	11	Newburyport . .	—	—
Fall River	41	18	Woburn	7	3
Cambridge	39	8	Marlboro	4	0
Lowell	26	6	Westfield	5	0
Lynn	31	9	Peabody	—	—
New Bedford . .	35	11	Revere	2	1
Springfield	28	4	Attleboro	1	0
Lawrence	25	—	Clinton	4	1
Somerville	29	11	Adams	2	—
Holyoke	19	12	Gardner	3	1
Brockton	20	7	Milford	9	1
Malden	7	—	Watertown . . .	12	1
Chelsea	11	1	Plymouth	—	—
Salem	16	5	Weymouth . . .	7	0
Newton	8	1	Framingham . .	6	2
Haverhill	10	2	Southbridge . . .	4	2
Fitchburg	12	1	Wakefield	—	—
Everett	13	—	Webster	—	—
Taunton	14	2			

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JAN. 4, 1908.

R. H. Michels, passed assistant surgeon. Detached from the Naval Recruiting Station, Kansas City, Mo., Dec. 31.

P. T. Dessez, assistant surgeon. Detached from the Naval Hospital, Boston, Mass., and ordered to the Naval Recruiting Station, Kansas City, Mo., Dec. 31.

F. E. Sellers, assistant surgeon. Detached from the "Wilmington" and ordered to the Naval Hospital, Annapolis, Md.

RECENT DEATHS.

Dr. Levi Jewett, Medical Director of the Department of Connecticut, died Jan. 3, of pneumonia, at Cobalt, Conn., at the age of seventy-three. He was a graduate of the Bellevue Hospital Medical College of New York, and served with the Medical Department of the army during the Civil War.

Dr. Peter Townsend Austen, one of the best known consulting chemists in New York, died at his home in that city on Jan. 1, at the age of fifty-five years. He was graduated from the School of Mines, Columbia University, in 1872, winning the highest honors for analytical work: after which he studied for three years at the University of Berlin and elsewhere in Germany. On his return to America he was appointed Instructor in Chemistry in Dartmouth College, and two years later Professor of Chemistry in Rutgers College, at New Brunswick, N. J. From 1877 to 1893 he was also head of the Department of Chemistry in the Brooklyn Polytechnic Institute. For many years he was State Chemist of New Jersey, and during his career he was a writer of acknowledged authority on the subject of his profession.

BOOKS AND PAMPHLETS RECEIVED.

Oxford Medical Publications. Diseases of the Male Generative Organs. By Edred M. Corner, M.A., M.B., B.Sc., M.C., F.R.C.S. Illustrated. London: Henry Frowde; Hodder & Stoughton. 1907.

Oxford Medical Publications. Diseases of the Ear. By Hunter Tod, M.A., M.B., B.C. (Cantab.), F.R.C.S. (Eng.). Illustrated. London: Henry Frowde; Hodder & Stoughton. 1907.

Harvey Lecture.

VASOMOTOR RELATIONS.*

BY W. T. PORTER, M.D., LL.D.,
Professor of Comparative Physiology in Harvard University.

The invitation to address this distinguished audience is especially welcome, because we who are thus honored are given the unusual privilege of speaking more or less informally. This is as it should be. In the conventional lecture, truth is dragged from a warehouse, imperfectly dusted and set before us. We are untouched. Which of us rises when gravitation is mentioned and stands with reverent head before that awful phenomenon? But discoveries in the making have strange power — an amazing, embryonic energy; they trouble yet charm the mind. The glow of the forge and the sound of beaten iron will stir our sluggish souls. To the investigator there is no greater pleasure, saving that of his work itself, than to go with others to the edge of the darkness and point the direction in which he thinks the next light will appear.

At the beginning of any extended study of a physiological theme, it is well to take a general view, with an eye to determining whether the means are justly proportioned to the desired end. We desire, no doubt, that vasomotor relations in man and in other animals shall be fully understood. At once there arises the difficulty that experimentation on man is properly very limited. Human conditions make it usually impossible to subdivide a general problem like the vasomotor relations into those simple constituents which alone can be made the subject of exact experimentation. This great difficulty is not sufficiently appreciated, especially by practitioners. To secure the necessary factoral simplicity, the investigator must inevitably choose the higher animals for all or almost all the exact measurements that he requires. The measurements made on any one species, for example, the rabbit, will primarily be useful as regards that particular animal, but it does not follow that they will be applicable to man and other animals. To apply to man the blood pressure data obtained from the rabbit or from any other species, it must first be shown that the phenomena in question are quantitatively the same in all the higher animals, or at least the limits of variation must be quantitatively determined. It will then be possible to fix the degree of probability that man will follow the law proved true for other mammals. These basal conditions are so evident that the lack of quantitative measurements of vasomotor phenomena from the comparative standpoint must excite surprise. It is known, for example, that the stimulation of nerves afferent to the vasomotor centre is an important factor in the regulation of the blood pressure. A rise in blood pressure has been shown to follow such stimulation in many animals, but the quantitative relations have never been studied.

The writer and Mr. Russell Richardson have therefore measured the rise in blood pressure produced by stimuli of the same intensity applied to the sciatic and the brachial nerves of the rabbit, cat, dog, guinea pig, rat and hen. A mercury manometer was connected with the carotid artery or, in the case of the hen, with the femoral artery. Just enough curare to prevent muscular reflexes was injected through a vein.[1] The nerves were then stimulated with induction currents of uniform intensity, and the consequent rise in blood pressure recorded with the kymograph. The figures thus obtained gave the absolute change in blood pressure upon stimulation of an afferent nerve.

At this point, it was necessary to adopt the principle of percentile values. The absolute change in blood pressure obtained at one level cannot be compared directly with that obtained at a different level. For example, in one series the stimulation of the sciatic nerve in the rabbit, while the blood pressure was 100 mm. Hg, caused a rise of 35 mm., and when the blood pressure was 50 mm., a stimulus of equal intensity still caused a rise of 35 mm. The absolute change was the same in both, but in the first instance this change was 35%, while in the second it was 70%. This is the well-known difference between the moral and the statistical value.[2] An unfaithful trustee robs two women. One of these has $40,000, the other $20,000. From each he takes $10,000. Their absolute loss is the same, but one woman can still live on her income, while the other must work or beg. It is necessary, then, in measuring vasomotor reflexes to take into account the level of the blood pressure at the beginning of stimulation, and this is done by expressing the change in blood pressure as a percentage of this level.

To the percentile values obtained in the investigation of which we speak were added 796 records of brachial stimulation and 248 records of sciatic stimulation obtained from the rabbit, cat and dog in previous investigations.[3] The percentile changes were averaged in each animal. These averages are at present as follows:[4]

	Sciatic.	Brachial.
Rabbit,	56	47
Cat,	47	45
Dog,	25	30
Guinea pig,	34	33
Rat,	55	41
Hen,	54	41

The figures permit the gratifying conclusion that, on the whole, the vasomotor relations in these animals are fundamentally alike.

Important consequences flow from this new fact. The functions of living tissues may be divided into two groups, which may be termed fundamental and accessory. The respiration and the maintenance of body temperature, reproduction, are fundamental; the representation of skilled movements in the cortex is accessory. Existence depends on the first group, civilization on the second. In which class does the maintenance of blood pressure fall?

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* This Harvey lecture was delivered without notes, and was over an hour in length. Considerations of space make it desirable to omit from the present report all data that have not fallen recently under the writer's own observation. Some of the researches mentioned in the lecture as delivered have since been considerably advanced. The additional facts are included in this paper

It is characteristic of the fundamental phenomena that they are little disturbed by afferent impulses. They are of ancient origin; for eons they have practised against the swarms of stimuli that strike upon the periphery. Were our ears more sensitive, we should hear these stimuli as we hear the drum of rain upon the roof. Yet the fundamental functions take their way unvexed. The respiratory rhythm goes on almost without change and the balance between heat production and heat loss is maintained in spite of all vicissitudes.

What I have termed the accessory functions, on the contrary, are comparatively recent. They have not the poise of countless generations, nor can they so readily defend themselves against the afferent stream, which now rises against them as Scamander rose against Achilles. In the beginning, men watched their flocks upon the hills or dug their fields. The irritability of the peripheral organs was sufficient for the day and the evils thereof. In the slow lapse of time afferent and efferent impulses grew up in equilibrium, side by side. Man and the higher animals moved calmly in a simple environment. Compared with the ages that have gone in the attainment of this equilibrium, civilization is of yesterday. Our environment is suddenly changed. Stimuli in our urban life have increased until they drive against us like a storm. At the same moment, our peripheral irritability has been enlarged by the habitual use of newly discovered poisons, by housing skins made for the open air, and by many another device of those who dwell in towns. Much depends, therefore, on whether the blood pressure shall be reckoned with functions that are resistant to afferent impulses or with those that are easily their prey.

The research we are discussing answers this question with at least a considerable measure of probability. It is unlikely that animals so diverse as those here stimulated would give quantitatively so nearly the same response were not the maintenance of blood pressure like the maintenance of body heat, a fundamental phenomenon developed to the same high efficiency in many, perhaps in all warm-blooded animals. This conclusion is supported by the investigations next to be considered. Impulses of moderate intensity are the portion of the fortunate. In surgical injury or disease, we must believe, the cells whose function it is to safeguard the general blood pressure are beaten upon by violent afferent streams.[5] These ordeals are infrequent; in the usual or normal life they may not occur at all. How do the vasomotor cells support these sudden strains? Are they overwhelmed by a summation of extraordinary impulses, or is the margin of strength great enough to meet an emergency so rare that prevision would seem almost wasteful?

This problem has been attacked in two ways. First, by the injury of regions, such as the cerebral hemispheres and the abdominal viscera, known to be richly connected with the vasomotor cells, and secondly, by the direct stimulation of nerve trunks known to contain fibers afferent to those cells.

The injuries to the brain were as follows: 1. Concussion, often with fracture and intracranial hemorrhage, from blows on the head of the etherized animal. 2. Penetrating wounds, produced by driving a pointed instrument into the brain. 3. Removal of brain substance. 4. Increased intracranial pressure. The animals employed were rabbits and cats. The blood pressure was recorded by a membrane manometer, which was frequently calibrated with a mercury column. Afferent impulses were obtained by the electrical stimulation of the central end of the depressor, sciatic, and branches of the brachial nerves in or near the axilla. Precautions were taken to have the curarization uniform. Among the injuries was fracture of the base of the skull with hemorrhage through the external ear. In two experiments, the cerebral hemispheres were completely removed.

In none of the experiments was the change in blood pressure on stimulation of the afferent nerve diminished; on the contrary it was increased. In the experiment of March 13, 1905, for example, the stimulation of the sciatic nerve in the as yet normal animal caused a rise of 28%, but after the removal of the cerebral hemispheres, a stimulus of equal intensity caused a rise of 47%.

Injuries of the abdominal viscera were studied in 1903,[6] and subsequently the normal fall of blood pressure produced by stimuli of uniform intensity applied to the central end of the depressor nerve was measured in the rabbit and the cat. The intestines were then painted with nitric acid or otherwise treated to produce a great fall in blood pressure together with the other clinical signs of shock. After many hours, the stimulation of the afferent nerve was repeated. It was found that the percentile fall obtained during shock was little if any less than that obtained before shock appeared.

The following is an example:

At 9.30 A. M., the intestines of a rabbit were painted with nitric acid. The stimulation of the depressor nerve caused the blood pressure to fall from 67 to 36 mm. (46%). Eight hours later, the rectal temperature was 26°, and the blood pressure was about 35 mm. The stimulation of the depressor nerve still caused the pressure to fall about 40%.

Burning the skin and crushing the testis were also without effect in producing a significant fall in blood pressure. Thus on Nov. 12, 1906, in an etherized dog, the prolonged stimulation of the testes with weak and strong tetanizing currents did not lower the carotid blood pressure, nor did repeated crushing of the testes half an hour later.

Since these experiments were first made, the writer has performed many similar operations in which the results confirm in all respects the conclusion that the vasomotor cells retain their irritability in spite of the extensive injury of peripheral organs and tissues.

The second method of attacking this question was by the stimulation of nerve trunks containing fibers afferent to the vasomotor cells.[7] The central ends of the divided sciatic nerve, the brachial nerves, the posterior spinal nerves, were stimulated. The following are examples:

Experiment, July 10, 1905. — A cannula was placed as usual in the carotid artery of a cat anesthetized with ether. There was a considerable loss of blood through a defective seam in the rubber cannula-tube. The posterior root of the fourth lumbar nerve was stimulated three hours. The rate was eleven induction currents per ten seconds. In spite of the prolonged stimulation following the hemorrhage noted above, and the severe operation upon the spinal cord, the blood pressure fell no more than in a control animal subjected to the same manipulations, except the hemorrhage and the stimulation of the nerves.

Experiment, Nov. 12, 1906. — In an etherized dog, the brachial and sciatic nerves were stimulated with strong tetanizing currents at intervals for two hours and forty minutes, but no significant fall of blood pressure was observed.

Experiment, Sept. 6, 1907. — The large hemispheres of an etherized cat were divided transversely above the pons by a blunt seeker introduced through a small trephine hole. The ether was then discontinued. At intervals of one or two minutes, strong currents from the inductorium were passed through the central end of the sciatic nerve for thirty seconds. This continued from 11.30 A.M. to 1.30 P.M. At the beginning the blood pressure was 80 mm.; on stimulation of the sciatic, it rose to 105 mm.; two hours later, the blood pressure was 60 and rose to 113 mm. on stimulation.

The numerous stimulations made in this investigation uniformly failed to give a significant fall in blood pressure.

Thus neither afferent impulses developed by the injury of important peripheral regions, nor the impulses produced by the stimulation of afferent nerve trunks are able to cause more than a momentary change in that general blood pressure upon the preservation of which the vital functions depend. Apparently, there is an excess of strength, a prevision that is wasteful, since the fate against which it is created does not enter the ordinary life.

A more satisfactory explanation of this remarkable protective mechanism is probably to be found in an observation recently made by the writer and Mr. Richardson. It is known that skeletal muscles do not contract when very weak electrical currents are passed through them. As the stimuli are increased in intensity, a point called the "threshold value" is reached at which the stimulus is just sufficient to call forth a feeble contraction. With a continued increase in the stimulus, there is a continued increase in the contraction, until, at length, the maximum shortening is obtained. The muscle has now done its best and no additional stimulation, however powerful, will call forth any further shortening. The normal heart muscle, on the other hand, will give its m ximum contraction to any stimulus that will make it contract at all. The writer wished to determine whether the vasomotor cells were discharged after the manner of the skeletal or the cardiac muscle. The vasomotor nerves keep the gates through which the blood flows to the tissues. Thus the renal nerves modify the amount that shall pass the secreting cells of the kidney and the rate at which this blood shall move. The problem was whether the gate opened wider to a strong afferent impulse than to a weak one, or whether any adequate stimulus, *i. e.*, any stimulus beyond the threshold value, would at once open the gate to its full extent. Experimentation shows that the former is the case.[8] A wide interval separates the threshold from the maximal reflex rise in blood pressure obtained by stimulating the central end of the sciatic or brachial nerves. The maximal value, however, is unmistakably marked. It is this maximal value that protects the vasomotor apparatus against excessive stimulation.

With this investigation are connected others of much interest. Studies are being made to determine whether the several neurons which make up the vasomotor chain have an equal share in this protective action. It is possible that the brunt of it falls on the muscle of the arterial walls.

We are measuring also the relation between the number of afferent fibers stimulated and the resultant discharge of the vasomotor center. Does the same stimulus applied to many afferent fibers discharge the vasomotor reflex more easily or to a greater extent than when applied to only a few afferent fibres? Upon this must often depend the relation between the size of a stimulated area and the effect of its stimulation upon the distribution of the blood. The bearing of this investigation upon the theory of counterirritants and the mechanism by which surface injuries produce their effects is evident.

Further information regarding these interesting problems is afforded by another investigation, also under way. It is known that cold applied to one portion of the surface of the body may congest a distant region, while the same stimulus applied elsewhere on the surface will fail to do this. The vasomotor system is rich in association paths, creating a community of interest in certain reflexes. Our knowledge of these associations should be increased by systematic exploration, quantitative where possible. We are therefore measuring vasomotor reflexes, nerve by nerve.

With these same studies is combined an inquiry into a different sort of relation between afferent fibers and the vasomotor center. We are not yet certain whether the vasomotor cells are automatic or whether they would be unable to preserve the vasomotor tone without the aid of afferent impulses. These cells may either originate the impulses that keep the vessels constricted, or they may serve simply as transformers of the impulses that are brought to them. The same doubt exists with regard to the reflex or automatic nature of the respiratory center.

It is known, chiefly through the researches of Marckwald, that although great numbers of afferent nerves will superficially modify the respiration, there are some which are especially related to the respiratory center. Thus the separation of the pons from the bulb, followed by the section of the vagi, will completely alter the respiratory type, and the normal rhythmic respiration will give place to spasmodic respiratory movements of remarkable extent. It is important that we should know whether there are afferent nerves that possess a similar relation to the vasomotor center.

But let us turn from observations about to be made to those already secured. In the course of the investigation into the vasomotor reflexes of different classes of animals, it was noted that the normal blood pressure stood at somewhat different levels in different animals. These levels do not agree very closely with the few measurements already recorded in the literature, but that is another question. At present, let us consider the probable analogy between the balance or equilibrium reaction, which we call the blood pressure, and the balance reaction known as nitrogenous equilibrium. Nitrogenous equilibrium may be obtained at different levels. Indeed, it is now a burning question whether scholars should eat much or little proteid. Certainly, nitrogenous equilibrium should vary with the work to be done, just as the ratio of proteid to carbohydrate in the diet of the dairy cow is made to vary with the quantity of milk produced. So also should the vasomotor status vary. The protection afforded by a strong vasomotor tone is not essential to the indoor life and indeed may be disadvantageous as it throws increased work upon the heart. On the other hand, house-bound persons are exposed to dangerous congestions when they carelessly take their low-toned vascular areas out of doors. The maladjustment between afferent and efferent impulses is the source of many ills in our modern life. Who does not know the unhappy person of low vasomotor tone who falls asleep upright in his chair and, being admonished, goes to bed only to find himself wide awake as soon as he lies down. The congestive headache, and even the beginning arteriosclerosis, can be conquered by patient study in this field.

In the research upon the effect of uniform afferent impulses upon the blood pressure at different levels,[9] the writer determined that the absolute change in blood pressure on stimulation of afferent nerves was about the same so long as the blood pressure at the beginning of stimulation was not less than about 55 mm. Hg. Below that point, the absolute change slowly diminished. Above 55 the reflex was independent of the initial blood pressure, but below 55 the reflex lessened at a rate parallel to the diminution in the initial blood pressure.

The relative or percentile change in blood pressure, which is the true index of the condition of the vasomotor cells, increases as the blood pressure falls. In the case of the sciatic nerve this increase persists until the blood pressure is about 30 mm. In the case of the brachial nerve, the increase lessens when the blood pressure has fallen to about 65 mm. Hg,[10] but with both the brachial and the sciatic nerves the percentile rise is greater even when the blood pressure has fallen to about 30 mm. Hg, which is the blood pressure after destruction of the spinal cord, than at the normal level of about 150 mm. Hg. Thus, as the blood pressure falls, the power of the brachial and sciatic fibers increases. The brachial and sciatic nerves here display a protective action. The same stimulus produces relatively a larger increase in the blood pressure as the danger of bulbar and spinal anemia grows. The greater the danger, the greater the reflex.

The investigation regarding the interval between the minimum and maximum value for reflex stimulation has already been mentioned. It will be interesting to determine whether this interval remains unchanged in spite of changes in the level of the blood pressure before stimulation.

It is sometimes asserted that hemorrhage may enable a previously inadequate stimulus to lower the blood pressure even in dangerous degree. A special research [11] has been undertaken, with Mr. H. K. Marks to determine this question. The material, so far as analyzed, does not support the view just mentioned. The stimulation of afferent nerves still produces the familiar rise in blood pressure even when the hemorrhage has reduced the initial blood pressure to a very low level. This question and the allied problem how far anemia of the bulbar vasomotor cells modifies the reflex, the writer expressly reserves for the investigation upon which progress was reported at the meeting of the American Physiological Society in December, 1906. The method employed is the feeding of the brain by an independent circulation, under the control of the operator. Local variations in the circulation of the bulb are thus made possible while, at the same time, the general circulation serves to measure the vasomotor reflexes discharged by the isolated bulb.

There has been of late renewed discussion as to the cause of the symptom-complex termed shock. Concerning the symptoms themselves, there is very general agreement, — they are indeed but too well known to every surgeon, — the abnormal fall of blood pressure, the failing heart, the low temperature, the apparent depression of the nervous system are frequent tokens of calamity. It is the apparent depression of the nervous system that has for many years given such favor to the idea that the low blood pressure is the result of exhaustion of the vasomotor center. Men forget that the brain is not an organ, but a region, very large in proportion to the groups of nerve cells that are scattered through it like settlements in a wilderness of fibers. It is forgotten, too, that these cell groups have the most diverse functions. Thus, as in the writer's experiments, the large hemispheres may be roughly taken away without lowering the normal blood pressure and without affecting the vasomotor reflexes, except to increase them. The depression observed in shock does not therefore justify any sweeping statements regarding the condition of the many separate nerve-organs sheltered by the cranium and the vertebral canal. Rather, should the condition of each group of nerve cells be tested by trustworthy methods. It was with this end in view, no doubt, that experiments have recently been made in this country on shock produced chiefly in dogs. These experiments have led to the statements that the reflex rise of blood pressure on excitation of the central end of the sciatic nerve is diminished during shock and that it fails altogether in the graver stages. These statements are partly correct, but by a common paradox their partial truth makes them wholly misleading. It has been shown above that the blood pressure may fall from 150 to about 50 mm. Hg, and even the absolute rise on stimulation of the sciatic nerve remain unchanged. The fall in blood pressure is the most significant symptom of shock. Opinion as to the extent to which the blood pressure must fall to bring the case within the category of shock can be gained by taking the average of the observations made by some clinician who has experimented on this subject. In the first fifty pages of a recent treatise [12] are recorded 28 experiments on dogs, in which the blood pressure at the beginning of the experiment averaged 132 mm., while the blood pressure after shock was present, averaged 57 mm. Hg.[13] It is evident that in the present writer's experiments the absolute reflex rise was maintained even after the initial blood pressure had sunk to a level usually taken to be symptomatic of shock. But the absolute rise is of little critical value. For reasons already set forth, it is the percentile rise that is the just measure of the efficiency of the vasomotor cells. The percentile rise obtained on stimulation of the sciatic nerve does not lessen as the initial pressure falls, but increases; and this protective action goes on until the blood pressure sinks to the level at which the bulbar and spinal cells become anemic and can no longer do their work.

Before the blood pressure has fallen so low, *i. e.*, before the bulbar cells have been made too anemic, the injection of normal saline solution is of advantage. It is true that the greater part of such an injection finds its way into the portal system and the liver, and only a small part enters the general circulation, but the heart is stimulated and oxygen-bearing corpuscles are carried to the bulb in somewhat greater numbers. When, on the other hand, vascular dilatation is excessive, vast numbers of red corpuscles are withdrawn into the veins where, so far as the bulbar cells are concerned, they are as effectually lost as if they were outside the body. The central nerve cells are very rapidly injured by the lack of oxygen, and their recovery from oxygen starvation is difficult and slow. At this stage, saline injections are of little help. Hemogloblin carriers are needed and transfusions of blood are likely to be more useful.

It has sometimes been suggested that shock is indicated by an abnormal reflex, the blood pressure falling instead of rising on stimulation of the sciatic nerve. Even a fall would indicate that the vasomotor cells were not exhausted, though it would point to a disturbance of their normal equilibrium. This reversal of the normal reflex, however, often occurs when the blood pressure is at the normal level, and when signs of shock are absent. It can be produced by strychnine, chloral, or curare.

The experiments of the writer and his co-workers were necessarily made from the usual laboratory animals. It may be objected, by those who are not well versed in experimental physiology, that the symptoms of shock in the cat or rabbit cannot have the diagnostic value of the identical symptoms in man, because of the differences between man and these lower animals. These differences are marked indeed, but they should not be made the basis of a hasty generalization. It is conceded that skilled movements, for example, are much more highly developed in man and in the anthropoid apes than in such animals as the rabbit and the cat. But experience suggests that the maintenance of blood pressure, like the respiration, belongs to those fundamental functions that are singularly alike in all the higher animals. The fact has already been mentioned that the vasomotor reflexes are essentially identical in the cat, rabbit, rat and hen. As the difference in structure between the cat and the hen, for example, is greater than the difference between the cat and man, it would seem safe to conclude that the vasomotor reactions in man are essentially like those in other high mammals.

A clear distinction should be made between the symptoms of shock and shock itself. The symptoms of shock form a clinical entity about which there can be little dispute; shock, on the contrary, is a pathological state, the data of which are at present hypothetical.

The hypothesis which constitutes the hitherto generally accepted definition of shock declares that the vasomotor cells are depressed, exhausted or inhibited by excessive stimulation of afferent nerves. The fall in blood pressure and the accompanying symptoms are declared to be the result of this depression. The experiments cited above demonstrate that the vasomotor cells are not thus depressed or inhibited and that the excessive stimulation of afferent nerves does not materially lessen the blood pressure. The present hypothetical basis of shock is thus removed. The thoughtful reader will hardly quarrel with this conclusion; he will remember that there is as yet no proof that either the respiration or the temperature can long be altered by afferent impulses.

The literature of this important subject is marred by much loose thinking. There is no conclusive evidence that any of the cases recorded as shock are justly so classed. A symptom-complex exists beyond question, but it would be hard to deny that the changes in the heart-beat and temperature as well as the apparent alteration in the nervous system are not produced by the low blood pressure.

Let us now briefly examine certain sources of error.

Many clinicians would have us believe that every case in which the blood pressure falls far below normal is shock. But this fall can readily be brought about without any injury to or pathological change in the central nervous system. Exposure of the intestines is a frequent means of bringing about so-called shock. Now exposure of the intestines inevitably dilates the largest vascular area in the body. The general blood pressure thereupon necessarily falls. Primarily, this is not shock at all, but simply an hydrostatic phenomenon, identical with the fall in arterial pressure produced in a rubber and glass model of the circulation by reducing the peripheral resistance. It may indeed be very dangerous,—a rabbit may be bled to death in its own portal system by dividing both splanchnic nerves,—but the cause of death is anemia of the bulbar cells; a local anemia. The removal of large portions of the skin acts also primarily in this hydrostatic way by dilatation of extensive vascular areas.

A fall in blood pressure which is really due to inhibition of the heart is often attributed to a reflex lowering of the blood pressure through the action of afferent impulses on the vasomotor centers. In the human subject it is usually impossible to determine with certainty whether the alteration in the heart-beat is primary or is secondary to abnormally low blood pressure. Contrast the two following cases, the first of which occurred in the practice of a well-known surgeon, while the second was observed in the laboratory by the writer and Mr. Richardson.

In operating on a sarcoma, a "mass of glands in the neck had been freely exposed by the high incision and was readily enucleated. Several large branches of the brachial plexus, however, were spread out over the growth, and a secondary division of this portion consequently was necessitated; when this was done, the patient's radial pulse immediately became impalpable. It continued thready and almost imperceptible during the remainder of the operation, which was rapidly completed, and for almost twenty-four hours afterward."

The second instance was as follows: A rat was etherized and the carotid pressure written with a membrane manometer. A small quantity of very dilute curare solution was injected slowly into the external jugular vein. The blood pressure was now 70 mm. The difference between diastolic and systolic pressure was about 20 mm. On stimulating the brachial nerves, the individual heart-beats almost disappeared from the curve, the blood pressure fell 20 mm., and the writing lever traced an almost unbroken line. On injecting warm saline solution, the heart improved and the difference between systolic and diastolic pressure rose to about 15 mm. An effort was now made to stimulate the central end of the already divided sciatic nerve. When the severed nerve was gently raised upon a thread, the heart again failed, and the above phenomena were repeated. Thirty-six minutes later, a saline injection was given, the heart gradually recovered, the blood pressure rose to 110 mm., and stimulation of the brachial and sciatic nerves caused a rise of about 20 mm. Hg.

The clinical picture in these two cases was the same. The graphic record showed that the symptoms in the second case were due to reflex inhibition of the heart. A like explanation probably holds good for the first case. It is at least certain that this first case cannot be used as evidence of vasomotor inhibition.

The action of concussion of the brain upon the vasomotor cells is of interest in this connection. In experiments 3 and 21, performed by the writer and Dr. Storey,[14] a heavy blow on the skull caused the blood pressure to fall 70%. In five observations, the level reached by the descending pressure averaged 33 mm. Hg. This is about the level to which the blood pressure sinks after the destruction of the spinal cord. It seems probable, therefore, that the concussion produced by the blow on the skull threw out of function, for a time, the bulbar vasomotor center, producing an effect equal in degree to the severing of the vasoconstrictor paths in the cord. The anemia of the bulb thus caused is a highly dangerous condition, the persistence of which for a very short period would greatly injure the bulbar cells. The recovery of vasomotor tone under these conditions would be very slow. Unquestionably, the loss of tone due to excessive mechanical vibration of the vasomotor cells from blows on the skull or other agitation of the liquid contents of the cranio-vertebral cavity, is often classed as shock.

These three sources of error throw doubt upon the interpretation of the clinical histories examined by the writer.

The experimental data outlined in these pages are valuable in removing misconceptions and in giving greater precision to the problem, but the material at hand does not justify any theory of the mechanism of shock.

The vasomotor nervous system seldom, if ever, dilates or constricts all the vessels at one time. The same afferent impulse will cause the vasomotor center to dilate the vessels of the face while it constricts those of the abdomen. The effect upon the general blood pressure depends upon the relative size of the dilating and constricting areas. Here the splanchnic nerves, which govern the vessels in the abdomen, have great importance. Shock must therefore be studied from a local as well as a general standpoint.

The necessity of studying the parts, as well as the whole, will be more apparent when the reader remembers that the vasomotor system is composed of three separate neurons,—one in the bulb, a second in the spinal cord, and a third outside the cerebrospinal axis. Experiments[15] undertaken by the writer and Dr. Clark show that the several neurons are essentially individual in their action. Were they all of one order, they would react equally to the same stimulus. In other words, the sciatic reflex and the depressor reflex should both be increased or both be diminished by the action of the same agent. We find, however, that they are affected in different ways by the same drug. Curare, for example, affects the depressor reflex in one way and the sciatic reflex in another. The experiments seem to establish a specific difference betwen the bulbar and the spinal motor cells. Support is given this belief by the percentile curves published by the writer on page 404, vol. 20, of the *American Journal of Physiology*. The brachial and sciatic curves differ from the depressor curve. This matter is of great interest because it justifies the hope that a therapy of the vasomotor cells may later be established.

The individual action of peripheral areas is being studied by the writer and Dr. F. H. Pratt.[16] We have thus far busied ourselves with the effect on peripheral areas of impulses derived from the blood vessels themselves. An artificial circulation is established through the hind limb of a cat and the flow measured by a counter which records the drops flowing out of the femoral vein. All connection between the blood vessels in the limb and those in the body is shut off. If the carotid artery be now opened, the general blood pressure will fall sharply. The vessels of the isolated limb will then constrict. If the general blood pressure be sharply raised, the vessels in the isolated limb will dilate. Thus variations in the general blood pressure give rise to a protective reflex, tending to raise the blood pressure when it has fallen, and to lower it when too high.

The more the circulation is studied, the stronger is the conviction that it is not a fixed state, but a sensitive equilibrium, the result of the constantly varying action of a great number of factors. Hence the difficulty of the subject and the necessity of separating the complicated mass problems into simpler problems, capable of answer one by one. Such a separation can be accomplished only in the laboratory, and it is to experimentation upon animals that we must chiefly look for new knowledge in this field.

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Original Articles.

THE CLINICAL IMPORTANCE OF THE UNEVEN DISTRIBUTION OF HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.

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Until recently one assumption has underlain all the quantitative work done on the gastric contents. A test meal of one sort or another was given, and after a definite interval of time had elapsed, a sufficient quantity was withdrawn, and, among other things, the total acidity and the free hydrochloric acid determined. The assumption that underlies all these methods is that the chyme so obtained offers in every respect a fair sample of the total stomach contents. Certain methods in particular depend fundamentally upon this assumption. This is the case, for instance, with the method of Matthieu and Remond [1] for determining the total quantity of the gastric contents. The contents, so far as possible, are withdrawn. Thereupon 400 cc. of distilled water are introduced into the stomach, intimately mixed with what remains and again withdrawn. A comparison of the acidity of the original chyme with that so diluted will give us, by a simple calculation, the total quantity of gastric contents, but obviously only if the portion remaining in the stomach has the same acidity as that first expressed. Sahli's [2] otherwise very ingenious utilization of the fat remaining in the stomach after the ingestion of a flour and butter soup, since it involves the use of Matthieu and Remond's method, is based upon the same assumption. The same is true of Strauss's specific gravity method. Practically all the textbooks are silent upon this point. Even Boas [3] in the English 1907 edition of his work on "Diseases of the Stomach" fails to mention this possible source of error.

This is the less excusable since, within the last few years, some very important work has been done on the lack of homogeneity of the gastric contents. Some twenty years ago Ellenberger [4] and his pupils showed that when horses were fed first hay and then oats, these two substances, instead of being intimately mingled in the stomach, remained separate, in distinct layers, nearly to the end of gastric digestion. Similar results were obtained with dogs and pigs and seemed definitely to disprove the existence of homogeneous stomach contents, at least in these animals. Unfortunately these observations were ignored for many years, both by physiologists and by clinicians; perhaps because they appeared chiefly in veterinary journals. They have recently been amply confirmed by Scheunert [5] and especially by Grutzner.[6] The latter fed various animals (frogs, rats, rabbits, dogs, etc.) with food, the successive portions of which were of different colors. At varying intervals the stomachs were tied off, removed and plunged into a salt and ice mixture. The mushy contents, frozen solid and cut into sections, showed always a definite stratification. The different portions of the food, far from being intimately mingled, could be seen in layers, separate and distinct, one above the other.

All of these experiments were done with solid food. It might be thought that a liquid meal would result in greater homogeneity of the gastric contents. Prym [7] has investigated the behavior of Sahli's flour and butter soup in this respect. Dogs were given such soup, to which blue litmus had been added. At varying intervals the stomachs were tied off, cut out, frozen solid and cut into sections. The central portion and that near the cardia were usually found still blue in color, the rest having been turned red by the hydrochloric acid. Different portions of these contents were cut out, thawed and their acidity determined. It appeared that the degree of acidity was greater at the periphery of the mass than at the center, and decreased from the fundus toward the pyloric end. All of these observations show that the different portions of the gastric contents not only do not represent a homogeneous mixture of the food taken, but that they contain various amounts of the hydrochloric acid secreted by the mucosa.

It is clear, however, that these results cannot without verification be applied to human beings. Prym administered Sahli test meals to a number of patients, and expressed the stomach contents through a double tube with one opening at the tip, the other 10 cm. higher up. In this way he was able to get gastric contents simultaneously from different parts of the stomach, and found that the two portions varied widely in acidity. Still more beautiful work along these lines was done by Sick.[8] He used a stomach tube, ingeniously constructed, which enabled him at will to obtain gastric contents from fundus or pyloric portion. He found that in man, after a Sahli test meal, the acidity of the pyloric gastric contents was very much less than that of the fundal portion, and that, therefore, even after a liquid meal, the stomach contents are far from homogeneous. This need not surprise us, since Edlefsen [9] found that, in the bladder, the lower portions of the urine are often denser than the upper, so that the first portion of urine passed has a higher specific gravity than the last.

It would seem, then, that the notions, generally accepted, of the processes that take place during gastric digestion require considerable modification. The observations referred to, together with those of Cannon and others, indicate that what happens is somewhat as follows. The fundus of the stomach plays the double part on a receiving and a secreting organ. During digestion its lumen is separated more or less completely from that of the pyloric portion by a definite constriction dividing the stomach into two unequal parts, and offering considerable resistance to the free interchange of contents. The food as it is swallowed is received into the fundus, successive portions lying one above or in part within the preceding ones. The gastric juice does not entirely penetrate the semi-solid food mass, but attacks chiefly that portion which lies in contact with the mucous membrane. This portion becomes digested and liquefied and is transported to the pyloric portion, where the process is completed. Meanwhile the interior of the mass remains alkaline and continues to undergo amylolytic digestion under the influence of the swallowed saliva until the removal of the peripheral portion exposes the more central parts in their turn to the action of the gastric juice. The degree of acidity of different portions of the gastric contents must, therefore, vary widely. The peripheral portion of the fundal contents, since it consists of nearly pure gastric secretion, is most strongly acid, the pyloric contents are less so, while the interior of the food mass in the fundus becomes acid last of all. Incidentally, these observations explain how salivary and peptic digestion can go on simultaneously in the stomach.

In spite of all this, one might suppose that even though the undisturbed chyme be not homogeneous, the violent retching attendant upon the use of the stomach tube in ordinary clinical work may cause such an intermingling of the stomach contents as to obviate this objection in practical work. That this is not always the case was shown by Bardenstein.[10] He obtained the gastric contents in thirteen cases, first by means of expression, and then was able to obtain an additional quantity by means of aspiration. These two portions varied considerably in their degree of acidity, the first portion being the more strongly acid of the two, four times, and the less strongly acid, nine times. He concluded that in all gastric work the aspirator should be used, as only so could the total contents be obtained. He believed, however, that if this precaution were observed, the results obtained would be trustworthy. This last assumption seemed to us sufficiently ill founded to justify us in carrying his observations one step farther. We desired to ascertain whether it was possible by means of the ordinary methods of expression and aspiration to obtain the gastric contents with a reasonable degree of completeness, and if this were not the case, to determine whether, in spite of the intermingling of stomach contents due to retching and the like, the portion remaining in the stomach differed in acidity from the portion obtained sufficiently to introduce a serious error. The following procedure was adopted. Having satisfied ourselves that the stomach was empty, the patient was given a test meal. After a proper interval a stomach tube was introduced, with the patient sitting on a table or couch, and the contents aspirated into a bottle in the usual manner. In addition, the patient was made to retch, the tube was moved up and down, and every effort was made to obtain all the contents possible. The tube was then disconnected from the flask, the patient was made to lie first on his back, then on his right side, and the contents obtainable in this position, by expression or aspiration, collected. It was usually found that after the stomach had apparently been emptied, it was possible, by inflating it, to obtain considerable gastric contents with the escaping air. Finally, in a number of cases, the stomach was washed with a measured quantity of distilled water in order to determine approximately, according to Matthieu and Remond, the amount of gastric contents absolutely unobtainable. This method, in spite of its fundamental inaccuracy, could be used for our purpose, since, as will appear below, the contents remaining in the stomach are probably usually of a lower degree of acidity than those expressed. Hence the results obtained by the method of Matthieu and Remond will usually be too low, and we may conclude that the amount of stomach contents not removable is at least as great as that calculated by this method.

Our observations show conclusively that it is impossible even approximately to empty the stomach by means of expression and aspiration with the patient sitting upright. In some 65 cases so studied we found that after the stomach had been emptied as completely as possible in this position, it was nearly always possible to obtain considerable additional gastric contents when the patient was made to lie down. Indeed, in nearly a third of our cases, the amount so obtained exceeded that previously aspirated in the erect posture, while the method of Matthieu and Remond indicated an unobtainable residue of from 20 to 80 cc. This will be best illustrated by a short table of our last ten cases, in which particular pains were taken to empty the stomach both by expression and aspiration, first in the erect and then in the prone posture.

Patient.	Diagnosis.	Erect. cc.	Prone. cc.	Unobtainable residue (calculated). cc.
Mrs. H.	Gastroptosis,	35	26	25
T. H.	Neurasthenia,	24	34	42
Mrs. F.	Hyperacidity,	23	17	49
H. D.	Pylorospasm,	150	30	64
H. D.	Pylorospasm,	200	30	23
Mrs. A.	Gastroptosis,	120	20	11
A. H.	Achylia,	17	34	?
Mrs. A.	Gastroptosis,	15	65	19
R. H.	Mucous colitis,	10	40	45
Mrs. Q.	Chronic gastritis,	30	25	63

It being clear that the usual methods of expression and aspiration furnish us with only a comparatively small portion of the entire gastric contents, it becomes important to learn whether this portion corresponds fairly well in its degree of acidity with that left in the stomach. We determined this by first obtaining all the contents possible in the erect posture, and then expressing a portion of the remainder, after inflating the stomach with air, the patient lying prone, or nearly so. The acidity of these two portions was then determined and compared. Some 28 patients were so examined one hour after taking an Ewald-Boas breakfast, consisting of 35 gm. of toast and 400 cc. of water. In these 28 cases the acidity of the two portions was in fairly good agreement 11 times; the first portion was decidedly more acid than the second 14 times, the reverse being true 3 times. Sometimes the difference was excessive. Thus in a case of suspected gastric ulcer the first portion of 65 cc. had a total acidity of 103.5* with free HCl, 76.5, while the second portion of 50 cc. had a total acidity of 52 with free acid, 26. The unobtainable residue in this case was calculated as 62 cc., and there was no telling how the acidity of this last, if ascertainable, might have modified the picture. It is clear, however, that the examination of the first portion, the only portion ordinarily obtained for examination, gave a very exaggerated notion of the degree of hyperacidity of the entire gastric contents. Conversely, in a case of tabes dorsalis, the first portion had a total acidity of 29, free HCl, 20; whereas the second portion showed total acidity 65, free HCl, 40. Here the portion ordinarily obtained gave an entirely false impression of marked subacidity. Cases similar, though not quite so marked, were frequently observed.

Three hours after a Riegel dinner the acidity of the two portions was more frequently fairly uniform, as might be expected from the longer period of time during which the contents remained in the stomach. Occasionally, however, marked differences were observed, as in the following case of constipation: first portion, 20 cc. obtained; total acidity, 76; free HCl, 37; second portion, 35 cc. obtained; total acidity, 108; free HCl, 44. The unobtainable residue was not calculated.

It was hoped that a liquid test meal, such as Sahli's flour and butter soup, would give more uniform results. To a certain extent this proved to be the case. Only eight patients were so examined. In five the acidity of the two portions differed by less than 5, but in the other three the differences were more considerable, being 7.5, 12.5 and 16.5, respectively. The unobtainable residue varied from 44 to 100 cc.

Split pea soup (four cases) gave even more divergent results, the first portion usually being decidedly more acid than the second. The differences in total acidity varied from 10 to 31, the free HCl showing a corresponding difference.

Finally, it was thought worth while to test the behavior of a more perfectly fluid test meal. The patients were given 500 cc. of beef tea, warmed, into which the whites of two eggs were stirred. The whole, when properly salted, was palatable and formed an adequate stimulus to the gastric mucosa. The contents were obtained in two portions as before, one hour after the meal had been eaten. Twelve cases were so examined. The total acidity varied from 13 to 105.5, and the free HCl from 0 to 81.5. In 10 of our 12 cases, the two portions agreed nearly or quite exactly, both in total acidity and in free HCl. In the two cases that showed some variation in the acidity of the two portions, the differences were only 3.5 and 4, respectively, differences that are of no practical diagnostic importance. Unfortunately, the degree of acidity of the beef tea itself is so considerable as to rob the results obtained by its use as a test meal of much of their significance. Moreover, its perfect fluidity renders it an inadequate test of gastric motility.

Finally, in a number of cases of pyloric obstruction, the gastric contents were removed in two portions, as above, before breakfast. Their acidities always coincided accurately. This was to have been expected, since the twelve hours or more during which the contents had remained in the stomach gave ample time for equable intermixture of the stomach contents.

In the great bulk of our cases, the first portion obtained was more strongly acid than the second. Since Prym has shown for animals and Sick for man that the gastric content in the fundal portion as a whole has a higher degree of acidity than that in the pyloric portion, it would seem probable that the eye of our stomach tube usually lay in the fundus, and that first the fundal and then the pyloric portion was aspirated. This is made still more probable by the observation that the free HCl in the first portion exceeded that in the second even more than the total acidity of the first did that of the second, an observation fully accounted for by the more advanced stage of digestion near the pylorus.

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* The number used to express the acidity refers to the number of cubic centimeters of N/10 NaOH solution required to neutralize 100 cc. of gastric contents.

Our conclusions may be briefly summarized as follows:

1. When the stomach contents are expressed and aspirated in the usual manner as completely as possible, the patient sitting erect, only a comparatively small portion of the gastric contents can be obtained.
2. After any of the usual test-meals the acidity of the portion so obtained cannot be assumed to represent the acidity of the stomach contents as a whole.
3. If, after this portion of the stomach contents has been removed, the patient is made to lie down, it is usually possible, by means of aspiration, inflation and the like, to obtain a further considerable quantity of stomach contents. This second portion often differs considerably in its acidity from the first portion.
4. Even after this second portion has been removed, the stomach still contains considerable unobtainable residue. The amount of this is apparently independent of the total quantity of gastric contents, and probably varies from 1 to 3 oz. Of its degree of acidity we can know nothing; certainly we have no ground for the assumption that it is identical with the acidity of the contents obtained for examination.
5. The quantitative determination of the acidity of the gastric contents is thus seen to be subject to a grave source of error. This will be diminished if the contents obtainable in the prone position are also examined. It will be further lessened if the acidity of the two portions does not differ very widely, since then we may assume that the acidity of the unobtainable residue will itself not be very different.
6. It follows that, in practice, trustworthy results can be obtained only if the following precautions are observed: the stomach contents must be obtained separately in the erect and in the prone posture; the acidity of each portion must be determined and diagnostic conclusions, based upon the degree of acidity, can be drawn only if the two acidities correspond fairly well, or if the total quantity of gastric contents obtained is so great that the unknown acidity of the unobtainable residue may be neglected.
7. Indeed, the entire concept of degree of acidity of the stomach contents seems not to correspond to anything real. Different portions of the stomach contents have different degrees of acidity. We may speak of the acidity of the contents at the fundus or near the pylorus, or, at most, of the average acidity of the total contents. It is this last that clinicians have attempted to determine, with what scanty success it has been the object of this paper to show.

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AN INTRACANALICULAR PAPILLARY ADENO-FIBROMA FROM THE GROIN.

BY E. L. YOUNG, JR.

(From the Pathological Laboratory of the Harvard Medical School.)

This case, from the Pathological Laboratory of the Harvard Medical School, No. 2297, was given me for study by Dr. S. B. Wolbach. The tumor itself was removed by Dr. P. P. Johnson, of Beverly, Mass., to whom I am indebted for the clinical data and for permission to publish the case.

A papillary adeno-fibroma is so rarely seen outside the region of the breasts that one situated so far away as the groin is of considerable interest. Especially is this true if we consider the tumor in the light of its possible relation to supernumerary mammæ and its own similarity to gland tissue.

The growth in this case was situated in the left groin of a woman of forty-two, near the external inguinal ring, and gave somewhat the appearance of an inguinal hernia. It was first noticed two years before its removal, and during that time had not been sore or painful. It varied somewhat in size, swelling at the menstrual periods. At the time of operation it was a pedunculated mass, 16 cm. by 10.5 cm., with a pedicle 5 cm. long. On section there was thick edematous skin, and subcutaneous tissue which contained little fat; and inside, a tumor mass, 10 cm. by 7 cm. This growth is divided into two distinct parts by a band of connective tissue running transversely. The upper portion, slightly larger and more compact, consists of a thick framework of connective tissue in the spaces of which are nests of a darker and denser growth, which in places seem to form closely packed convoluted projections with fissures toward the center. In other places these nests are apparently solid. The lower part consists also of a connective tissue framework, but here the spaces are larger and are occupied by less closely packed, but more irregular, projecting masses of tissue.

Microscopically, these same differences are seen: a framework enclosing the tumor tissue; the abundant supporting network consisting of both fibrous and elastic connective tissue, and in most places very edematous. It is well supplied with blood vessels and in places shows spots of round-cell infiltration. The new growth consists of both connective tissue and epithelial tissue; and here again is the same difference as is seen with the naked eye. In some parts of the tumor, especially the upper, the nests show cross-sections of ducts lined by a fairly definite columnar epithelium and having a more or less definite basement membrane, together with bunches of more irreuglar cells; the whole imbedded in fibrous connective tissue which, from the presence of numerous

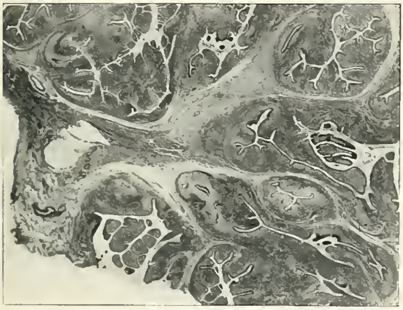

FIG. 1. — Low power view of looser portion of tumor showing intracanalicular fibro-epithelial growth. (About 15 diameters.)

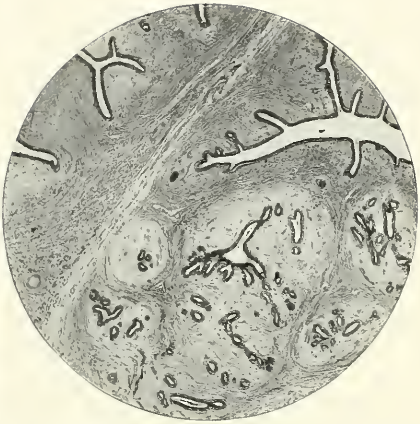

FIG. 2. — Higher power showing epithelial lined canals and tubules resembling breast tissue. (About 100 diameters.)

young connective tissue cells, seems to be in a state of active growth. In other places, especially the lower half, the appearance is of very irregular projections of the framework toward the center of the spaces. These are lined with a single layer of fairly regular epithelial cells.

Serial sections show that in the first mentioned nests the ducts are nearly always united with each other, only the more irregular tubules failing to be so. In those last mentioned there are both papillary and intracanalicular growths.

In the region of the breasts, this would unhesitatingly be called a papillary adeno-fibroma. When we consider the source of such a tumor in the groin, we must take into account the possibility of origin from misplaced mammary gland tissue. A review of the literature on supernumerary breasts shows that the great majority of such structures occur either above and outside of the normal breasts or below and to the inner side. These lines correspond to the upper end of the milk line of the embryo. Within these limits, which *do not* include the groin, supernumerary glands and nipples are not at all uncommon. But outside these milk lines, mammæ eraticæ, as they have been designated, are very rare, less than fifteen being recorded in literature. Among these few are two on the back, one on the face, two over the deltoid, one on outer side of the thigh, one on a labium majus, two or three in the axillæ, one or two in the median line near the umbilicus, and *two in the groin.* Those occurring in the milk lines may be explained on the theory of reversion for, as Darwin says, "On the whole, we may doubt if additional mammæ would ever have been developed in both sexes of mankind had not man's early progenitors been provided with more than a single pair." Those occurring in the median line and the groin seem less readily to be thus explained, for only the lowest orders of mammals have inguinal mammæ. Some of the lemurs and aye-ayes have these mammæ. The Virginian opossum and a few other marsupials have median mammæ. The most probable explanation for the other mammæ eraticæ as well as for those in the groin and median line seems to be the embryonic displacement of mammary gland cells which later develop.

As to tumors arising from such structures, we find very little recorded. Meyer speaks of a tumor of the left axilla which gave no trouble until the third pregnancy, when it enlarged, and became troublesome on that account. It was removed and found to be an adenoma containing some milk. Williams has collected fifty cases of adeno-fibroma from the regions of the breasts, and of these seven, or about fourteen per cent were proven to have arisen in supernumerary structures outside of the normal breast.

To summarize: the tumor here described is one found usually only in the region of the breasts and in connection with the mammary glands; it very closely resembles breast tissue in parts of the growth; it appeared to have some resemblance to breasts by enlarging at the time of menstruation. Such tumors have been recorded which arose from supernumerary breasts. It seems highly probable that this tumor also has arisen from mammary gland tissue, from a mamma eratica.

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THE PROBLEM OF EXPERT TESTIMONY.

BY FRANCIS WAYLAND ANTHONY, M.D., HAVERHILL, MASS.,
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Those who come in contact with physicians throughout the Commonwealth of Massachusetts recognize, no doubt, that there is a strong and increasing sentiment that some measure should be taken to elevate the standard of medical testimony, not alone the testimony of specialists, but the testimony of ordinary physicians, in regard to questions both of fact and of opinion. The evils of the present method are very obvious. The partisanship shown upon one side or the other, sometimes upon both, the juggling with fact, the withholding of free information, the discredit of the profession at large, are matters of common knowledge. The best element at the bar has long felt that some change should be made; the bench, as far as I have learned its expression, is strongly in favor of some method of reformation. One fact that underlies the whole trouble is that the attorneys are few who do not take up a case in court as a man would play a game or enter into a personal contest, often causing to be withheld those matters which would militate against the interest of their client even when they would advance justice. The personal desire to win for the sake of reputation, of increase in clients and for the mere intoxication of victory, overshadows any higher purpose.

Witnesses are almost always more or less biased or influenced by the side upon which they appear. Were it not pathetic, it would be amusing to note the exaggerations, the withholdings, the thousand and one tricks of word or manner that indicate the partisanship that has been engendered. Physicians who testify often unconsciously, sometimes consciously and purposely, become the strongest of partisans. But seldom in a plaintiff's case does the attending physician state only the simple facts of the case without dwelling upon those things which magnify the injury. But seldom would a physician, appearing for the defendant, be willing to give due consideration to the actual sufferings of the patient. This is so much the fact that it was regarded as remarkable in a case which was recently tried in one of the courts of the Commonwealth, when two or three physicians who had treated the plaintiff in the case testified that she had, after the first few months of severe suffering, steadily but slowly improved during a period of three or four years, and that such improvement was likely to continue; when those physicians who had seen her had been ones who had her in care only for the purpose of treatment or advice; when they testified that she was a neurasthenic and that she had the natural tendency to exaggeration that goes with neurasthenia. Of course they testified also to her actual physical injury and objective symptoms. I regret that the physician, summoned by the defendant in the same case, if we may judge by the changes in line of the cross-examination, assumed an extraneous cause for her suffering; when the evidence did not support this, fell back upon a second cause, also extraneous, and, left high and dry here, fell back upon a third cause, neurasthenia, admitting only under the closest probing that many of the symptoms could be explained best upon the basis of trauma, which was the fact.

The cure for this evil is, of course, the elevation of the moral standard of the bar and the medical profession. That there will be many in both organizations whose tendency will be to a low standard has to be sorrowfully admitted. While the best element at the bar is eager for reformation in expert testimony, it has been able to suggest no practical solution of the problem, and in the past, those solutions that have required legislative enactment have been of such a nature as not to appeal to either the bar or bench or the best of the medical profession. The appointment of an expert by the bench upon request of either counsel or upon his own initiative has objections easily seen; for example, the inability of a judge to decide upon the best man of a group of specialists, the absolute unfairness of allowing a report from such an expert to go before a jury without an opportunity to cross-examine the man by whom it was given. Suppose the judge appointed, in a case having neurological questions, one of two men, by many considered equally honest, one of whom rarely appears except to testify on the plaintiff's side, the other, within my recollection, never appearing except for the defendant. With minds of different trend, the report might easily do great injustice to one of the parties to the suit if it was uncontrolled by cross-examination. The difficulty in obtaining men to testify for the State at a compensation lower than that offered by individuals or corporations is another matter that renders such a plan impractical. Personally, I see no need of legislative enactment; I see no need of depending upon the legal profession for the initiative. The question of reform lies absolutely in our own hands. For a number of years past, I have put in practice in my court work a plan to which has been given my name, but which, I do not doubt, has been practiced by others in various sections of this State, and perhaps throughout the country. All the credit that I am willing to take in the matter is whatever may come from giving publicity to the plan and to its practical workings. The substance of this is contained in a vote passed at a meeting in Boston recently, by delegates from several of the district societies in which it was voted, "That this committee recommend to the various district societies of the State, a plan by which physicians, when called to make examinations for the purpose of testifying in court, shall make that examination upon the basis of a professional consultation." I have done this for several years with the result that in a great majority of cases, the medical testimony was absolutely in accord, and in many cases was omitted, either by the plaintiff or the defendant, since there was to be no variation. This plan leaves room for the honest differences of opinion which must necessarily exist in the consultation room. It does not suggest nor presuppose an agreement where honest differences of opinion exist. It does practically assure an agreement upon all questions of fact. It is the height of folly for a physician upon one side to testify to a shortening of a limb of 2⅛ inches, while the physician upon the other side strenuously maintains that the shortening is 1⅞ inches. It allows differences of opinion to be discussed. It takes out of the case all surprise and all glory (?) in "downing" another physician. It is fair to both plaintiff and defendant. It has the support of the profession wherever it has been called to their attention to a degree that has both surprised and pleased me. The bar also, or at least all of the reputable portion of the legal profession that has considered it, has approved the measure, and those of the judges to whose attention it has been called by me have heartily approved of the measure and have been unable to lay before me any objection to its working.

The alleged objections that have been raised, chiefly by a physician who favors legislative enactment, admitting the impracticability of obtaining such enactment, are as follows:

First, that you cannot deal with shysters upon this footing.

My reply to this is a denial of the statement. The shyster physicians are, fortunately, few, and in Massachusetts, as far as I know, with one exception, they desire to be considered reputable. We have to meet them occasionally in cases where court opinions are not to be given, but in the interest of patients, and as in the latter event there is no difficulty in maintaining a professional standing while dealing with them, so in the former the same is true. But if, later, in court they abandon their seemingly fair position, it is easy to make this evident to the jury. If they refuse to meet another physician upon the basis I have suggested, the fact of their refusal can be made public in court.

The second objection is that the attorneys will not consent to the abandonment of biased testimony. We can dismiss this objection in a single sentence. How can they help themselves? If the profession take the stand that I have indicated, the few attorneys who attempt to control the physicians they employ will find themselves compelled to deal with a set of men who will soon be discredited and of no value to their owners.

The third objection is that certain specialists, whose income is largely dependent upon the court work they do, will not agree to the plan. I doubt if any reputable specialist will take this position. I have talked with many of the leading physicians of the State, whose work is in special lines, and without exception, they heartily approve of the plan. Those who do not can take the consequences.

Should a physician see fit to decline to enter upon an examination upon such a basis of professional consultation as I have indicated, whatever may be his reason therefor, it is possible to make this fact public in court at the trial of the case during his cross-examination. This has been recently proven in a case in the courts of this Commonwealth. I saw for a certain corporation a case where severe injury was claimed. I met the physician who had been in charge of the case and with him a Boston specialist. After taking the history and before beginning the physical examination, I said, in substance, "Gentlemen, I should like to make this examination with you upon the basis of a professional consultation; that is, I propose that we examine the patient together, agree, if we can, and should upon all questions of fact, discuss questions of opinion, that our testimony may be presented, if possible, as a unit to the court. If, however, we do differ, that we each may know the opinion of the others." The specialist expressed his approval of the proposition, but, since the case was that of the physician with whom he was associated, left the matter in his hands. The proposition was declined. Upon cross-examination of the physician in court, inquiry was made by the counsel for the defendant as to whether such a proposition had been made to him and by him declined. Objection was raised to the question by the attorney for the plaintiff. The judge ruled that the question was admissible and it was answered. I am informed by one of the best legal authorities in Massachusetts that the question must be admitted when asked. If the question has been propounded in the presence of the person examined, it is admitted as a part of what was said and done in that presence. This makes it doubly strong and such a procedure is advisable. Even if, however, it is made to the physician himself it will be admitted as a question bearing upon his credibility and bias. None of the objections, then, that have been raised seem to me to be of any force.

The plan, as I have said, requires no legislative enactment; it requires no action by the legal profession; it does not even require the enactment of any legislation by the state or district medical societies; it simply requires its adoption by the honest part of the profession and that means 97%. It will be helped materially if its adoption is recommended by the various medical societies throughout the State. If it is put into general practice, let us see what it accomplishes. In the first place, it deprives the "ambulance chaser" of his chief reliance. In the second place, it adds to the self-respect of all physicians who testify in court. In the third place, it is the first step toward the elevation of expert testimony, for the measure is as applicable in other lines as in that of medical testimony. All of us believe that had the noted alienists in a recent case, that has attracted much public interest and comment, seen in the office of one of their number the person whom they examined when no legal question other than that of possible commitment was involved, these gentlemen would have had no difficulty in coming to an agreement upon the case.

My object in writing this communication is to call to the attention of the profession the plan that I have outlined, to assure my brother physicians of its success in my own hands, and to urge its adoption as a measure calculated to raise the standard of the profession in the courts, and to render much more pleasant the duty of testimony by physicians in the courts of the Commonwealth. While I believe it to be sufficient in itself, it is none the less true that it does not interfere with any other measure proposed.

PRACTICAL APPLICATIONS OF OPSONIC THERAPY.

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AND
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(Concluded from No. 2, p. 41.)

PNEUMOCOCCUS INFECTION.

Case VIII. Anna G., thirty-one years, single. *May 31, 1907.* Was well and strong till five years ago. Then began to have swelling and pain in joints of both great toes, gradually followed by involvement of finger-joints and left shoulder. One year later right ankle became stiff and painful. Since then has had constant trouble with all joints, exostoses, and the typical deformities of chronic arthritis deformans. Has had practically constant pain, so great that at times it is controlled only by morphine. Great difficulty in walking owing to pain and stiffness of right ankle, and pain in right knee and hip. For past year has also had painful swellings under metatarso-phalangeal joints of both feet, which feel almost bony in hardness. No history of any previous form of infection could be obtained. Has no fever and has lost little weight. Appetite fairly good. On account of pain does not sleep well. No cough. Has had orthopedic treatment for past four years without any benefit. T. B. index, .84; staphylococcus index, 1.09; streptococcus index, .79; pneumococcus index, .70. *June 4*, pneumococcus index, .81; *June 6*, pneumococcus index, .58.

In three examinations of blood the pneumococcus index was the only one constantly below normal. Others were all within normal limits. Patient was told that it seemed probable that a previous pneumococcus infection was the main cause of her trouble. While the results in the way of deformities could not be relieved, it was possible that by building up resistance to pneumococcus further progress might be avoided and pain relieved. On this understanding treatment was begun. Stock vaccines of pneumococcus were injected weekly, beginning with a dose of 100 millions on *June 11*. The pain has disappeared, except for occasional twinges, never requiring morphine. The joints are not so stiff, and movements are much more free than formerly. The swellings under the metatarsophalangeal joints have practically disappeared. Patient has gained 16 lb. weight, goes about alone, mental condition has improved, she sleeps and eats well, and is much stronger. All the indices remain well above normal.

TUBERCULOUS INFECTIONS.

CASE IX. Helen L., two and one-half years. *March 11, 1907.* An abscess of some months' development in right posterior cervical triangle was opened during the last week of January, 1907. A large amount of caseous material was evacuated, and a sinus has discharged pus ever since. Child is pale and debilitated, and has a poor appetite. No glands to be felt elsewhere. No cough. Lungs and abdomen negative. Her mother and one maternal uncle died of pulmonary tuberculosis. *March 19.* T. B. index, .53. On *March 23*, T. B. index, .82. *March 29*, index, .88. Has had forced feeding and Ol. Olivæ t. i. d. for past two weeks. General condition improved, but no change locally. Given $\frac{1}{1500}$ mgm. tuberculin R. *April 4.* T. B. index, 1.02. Less discharge from sinus. Given $\frac{1}{1000}$ mgm. T. R. *April 11.* T. B. index, 1.21. Color better and appetite improved. Discharge has nearly ceased. Given $\frac{1}{1000}$ mgm. T. R. *April 20.* Sinus closed four weeks from first injection. General condition greatly improved. *April 26.* T. B. index, 1.42. Color good. Excellent appetite. A few small discrete glands can be felt in right posterior cervical region. Patient seemed well and strong.

Since last note patient has had weekly injections of tuberculin R., varying from $\frac{1}{1000}$ to $\frac{1}{500}$ mgm., according to opsonic index, which has maintained a constant level above normal. For past month no glands have been felt, and injections are continued merely as a prophylactic. This case was so undoubtedly tuberculous by family history, her own history and appearance, condition of glands at operation, and the opsonic findings, that tuberculin R. was instituted immediately as the principal line of treatment. The rapid change for the better justified the course of action.

CASE X. R. J., one year. *Sept. 10, 1907.* Has had a cervical adenitis in left posterior cervical triangle for past four months. Abscess opened in July, 1907, and has discharged pus ever since. Eyes, ears, nose and throat examined and found negative. Chest and abdomen negative. Child is very pale, thin and fretful, and has a poor appetite. Temperature normal. Clinically, the case is a typical tuberculous adenitis, though no T. B. have been found. *Oct. 3.* T. B. index, 1.16. *Oct. 8.* T. B. index, .63. Other indices normal.

Treatment was begun with injections of $\frac{1}{1000}$ mgm. tuberculin R. at intervals of six days. At the end of three weeks the discharge of pus from the sinus had ceased, and one week later the sinus itself was closed. The change in the baby's general condition was remarkable. The color is now fairly good, the appetite is improved, and the baby seems brighter and much stronger. She is still receiving weekly injections of tuberculin R., $\frac{1}{1000}$ mgm., as the indices are below normal (.90, .88, .92), though within normal limits.

CASE XI. Rebecca J., eleven months. *March 11, 1907.* Has had a dactylitis of index and middle fingers of right hand, and of fourth metacarpal of left hand for three months. Treated at a hospital for one month for syphilitic dactylitis, without improvement. T. B. index, .45. Not seen again until *March 25.* T. B. index, .59. No tuberculous or syphilitic history in family. Child pale and anemic. Given $\frac{1}{1500}$ mgm. tuberculin R. Since then has had nearly weekly injections of T. R. in doses of $\frac{1}{1500}$ to $\frac{1}{750}$, regulated by the opsonic index. Has shown no clinical negative phase after any injection. There has been a marked improvement in the child's general condition. Locally, no improvement at all was noticed during the first two months of treatment. Since then the swelling of the index finger of the right hand and that of the fourth left matacarpal have entirely disappeared. The swelling of the middle finger has gone, with the exception of a slight thickening near the distal end of the first phalanx.

In consideration of the fact that most cases of dactylitis in infants are tuberculous; that an energetic antisyphilitic course of treatment had accomplished nothing, and that the tuberculo-opsonic indices were very low, it seemed reasonable to assume that this case was tuberculous in nature. The constant, but slow and gradual, improvement, both locally and in general condition, is typical of many forms of tuberculous infection. Since about May 1 the opsonic index has varied from 1.10 to 1.50, having risen from .45.

CASE XII. William C., eleven years. Seen first on *March 2, 1907.* Had had a bunch of glands the size of a hen's egg in right axilla, for past month. Not painful nor especially tender. No history of cut or abrasion of hand or arm. Is very pale, weak and poorly nourished. Appetite poor. There is a slight lateral scoliosis, and a marked protrusion of ribs over precordial area. Heart somewhat enlarged. No murmurs. No cough. Lungs and abdomen negative. A more or less indefinite family history of tuberculosis. Tuberculo-opsonic index, .45. Given exercises for straightening back. After three injections of tuberculin R. ($\frac{1}{2}$ cc. = $\frac{1}{1000}$ mgm.) given at about weekly intervals, glands in axilla could not be felt. As a result of exercise the scoliosis had disappeared, and protrusion of ribs was less marked. Color good, appetite improved, and the boy felt better in every way. Was given weekly injections of tuberculin R., $\frac{1}{1000}$ mgm., as prophylaxis. When seen last, on *April 30*, had gained 10 lb. weight, was going to school, and felt well and strong. Instructed to report for treatment if further symptoms developed.

In this case the opsonic index never rose above normal, but varied usually from .80 to 1.00.

CASE XIII. Mary O'M., twenty-two years. First came for treatment *March 20, 1907.* Had noticed swollen glands in right posterior cervical triangle for past two months. No pediculi, inflamed tonsils, or ear trouble. Has two carious teeth on left side of jaw, which are being treated. Is pale, losing strength and weight, and is feverish in afternoon. Appetite poor. No cough; lungs normal. One gland size of hen's egg below right mastoid process, with considerable induration about it, is nearly ready to open spontaneously. One brother died of phthisis. Tuberculo-opsonic index on March 26, .68. Given $\frac{1}{1000}$ mgm. T. R. Since then has had weekly injections varying from $\frac{1}{1000}$ to $\frac{1}{250}$ mgm. T. R., using the opsonic index as a guide. Since *April 25* the index has been practically constantly above normal, varying from 1.10 to 1.40. The general condition has greatly improved under adverse outside conditions. Appetite is good, and she has gained 5 lb. in weight. Feels strong and energetic. The formerly large gland is hardly perceptible.

There has been a great improvement in this case, although as yet the cure is not complete. Caseation, going on to suppuration and a disfiguring operation, was prevented here, although at beginning of treatment operation seemed unavoidable.

CASE XIV. F. W. R., thirty-four. *May 11, 1907.* Past two years has had occasional attacks of pain across front of chest and over right great trochanter. Slight cough. Heart and lungs negative. Pain behind sternum on coughing. Has lost 4 to 5 lb. weight in past three months and is not so strong. Has felt more run down than usual this spring and is somewhat depressed. Appetite fairly good. Bowels regular. No fever and no expectoration. One sister died of Addison's disease, and another sister is being treated for tuberculosis at present. T. B. index, 1.08. *May 13.* T. B. index, .61. *May 15,* T. B. index, .90. Although there was no clinical evidence of tuberculosis present in this case, in view of the family history, and to stimulate resistance to T. B., weekly injections of tuberculin R. $\frac{1}{1000}$ mgm. were given for three doses. After each injection the patient reported that he felt as stimulated as though he had taken some tonic. *June 7.* Feels well and strong. Has a good appetite, works hard all day, and sleeps well all night. T. B. index, 1.14. No cough or pains anywhere. *Oct. 1.* Still feels perfectly well.

This case is reported merely to note the stimulating effect of small doses of tuberculin R., which has been met with in other cases.

Case XV. H. R., twenty-eight years. *April 3, 1907.* Has had exophthalmic goiter for ten years. Treatment during the past year by Dr. John Rogers, of New York, with a specific serum has been followed by marked improvement. Exophthalmos has disappeared, pulse rate varies from 80 to 100, and there are very few nervous symptoms. Except for this condition was always well and strong till she had pleurisy five years ago. Father and mother alive. One sister died of Addison's disease, the adrenal glands being found at autopsy to be tuberculous.

About one and one-half years ago began to notice small patches of leucoderma around the mouth. For past year has had a slight yellowness of skin, with a yellowish pigmentation of the roof of the mouth, which are suggestive of incipient Addison's disease. Has never had jaundice. Has occasional pains and cramps in legs. No pigmentation has been noticed in flexures of the skin. Treated last fall for chronic bronchitis. At that time she had slight dullness at the left apex in front and coarse râles throughout both lungs. No T. B. found in repeated examinations of sputum. Spent last winter in Aiken, S. C. Since her return has lost weight and strength. Feels listless and weak, getting easily tired on slight exertion. Has a slight cough with little or no expectoration. A four-hourly chart kept for one week showed an entire absence of fever. Weight, 108 lb. T. B. index, .56; staphylococcus index, .98; colon index, .85; streptococcus index, .77; pneumococcus index, 1.35. *April 5.* T. B. index, .62; staphylococcus index, 1.02; colon index, .95; streptococcus index, .45; pneumococcus index, 1.42. *April 8.* T. B. index, .59; staphylococcus index, .75; colon index, .96; streptococcus index, 1.20; pneumococcus index, 1.32. The low indices for streptococci were due to an infection of the throat, which rapidly yielded to appropriate remedies. The constantly low tuberculo-opsonic indices, together with the family history and clinical findings, appeared to be sufficient indications for the use of tuberculin R.

Treatment was begun with injections of $\frac{1}{1000}$ mgm. at intervals of five to seven days. Moderate opsonic negative phases were produced, but no clinical negative phases. On April 18 was seen in consultation with Dr. G. G. Sears. She then had slight dullness at the left apex, with squeaky râles throughout both lungs. Breathing somewhat asthmatic. No T. B. in sputum. During the spring months there was little change, except a decided gain in strength. During last of June was able to take long auto rides without fatigue, and did considerable shopping. Felt better and slept well, and had a good appetite. Injections gradually increased from $\frac{1}{1000}$ to $\frac{1}{500}$ mgm. On advice of Dr. Rogers was given Pil. Ferrous Iod. gr. j, t. i. d., for its specific action in controlling the pulse in exophthalmic goiter. Since then the pulse-rate has rarely been above 100.

About the middle of July had a severe acute attack of bronchitis, lasting a week. Several examinations of sputum for T. B. were negative. T. B. index, 1.39. Following this attack spent a month or so by the sea, where she began to improve. The cough and expectoration entirely disappeared, and there was no fever. During the remainder of the summer there was a gradual increase in strength and a gain of about 5 lb. in weight. The breathing became much easier, and there was no reappearance of cough. The pigmentation in the roof of the mouth was never noticed after the 1st of September, and the yellowness of the skin gradually faded out. The injections were kept up throughout this time, varying from $\frac{1}{1000}$ to $\frac{1}{250}$ mgm., and the T. B. indices varied from 1.12 to 1.55. With the exception of a hard cold, lasting several days early in November, has been feeling very well. The blood-pressure by the Riva-Rocci method varies from 135 to 145, having risen from about 110. Feels strong, has a splendid appetite and sleeps well. There is no cough and the breathing is easy. There is no pigmentation or yellowishness in the mouth or on the body. No dullness is perceptible at the left apex.

MIXED INFECTIONS.

Case XVI. M. P., twenty-seven. *May 9, 1907.* Acute lobar pneumonia in right lung in April, 1906, followed in two weeks by empyema in right chest which was operated upon under ether. Pleural cavity drained by rubber tubes for five and one-half months. Has discharged pus ever since. Operated again in July, 1906. Sinus dilated and curetted. Operation repeated in February, 1907. General health apparently good. No cough. Profuse purulent discharge from sinus. Considerable inflammation about opening of sinus, which is between sixth and seventh ribs in the right mid-axillary line. Cultures from pus show mixed infection of staphylococcus and pneumococcus. T. B. index, 1.60; staphylococcus index, .94; streptococcus index, 1.30; pneumococcus index, 1.04. Owing to the poor growth of cultures it was decided to use stock vaccines instead of the autogenous. No evidence of tuberculosis found then or since. After three injections of staphylococcus vaccine, 250 millions, and pneumococcus vaccine, 100 millions, the discharge practically ceased. *June 6.* There has been no discharge for past six days. Redness and induration about sinus have almost disappeared. *June 20.* Did not return for treatment last week as he felt so well. Slight moisture past twenty-four hours about opening of sinus. Given 250 million staphylococci and 200 million pneumococci. Staphyloccus index, .67; pneumococcus index, 2.77. During following week discharge again stopped. In the month of July the doses were rapidly increased in size up to 1,500 million staphylococci and 250 million pneumococci. The indices meanwhile remained at or above normal. Probably as a result of the large doses the sinus reopened, with profuse discharge of pus. In August the doses were decreased to 250 million staphylococci and 100 million pneumococci, with a consequent lessening of the discharge. About the middle of the month a pocket of pus evidently broke through into a bronchus, as the patient coughed up large amounts of pus for about a week. Since early in September there has been no discharge from the sinus and no pus in the sputum. *Oct. 22.* Staphylococcus index, 1.30; streptococcus index, 1.16; and pneumococcus index, 1.24. Weekly injections of 250 million staphylococci and 100 million pneumococci have been given since. The patient is strong and well, and is working hard every day. No cough or fever. Sinus healed and tissues around it in good condition. Has gained 10 lb. during past month.

Case XVII. M. F. G. *April 6, 1907.* About five years ago developed an abscess over seventh right rib near junction of rib and cartilage. Opened by operation and discharged pus for several months, but finally healed. About one year ago another abscess appeared in same location, and discharged by two sinuses. Has had four operations since, much dead bone having been removed. T. B. have never been found in pus or tissue, and inoculations into guinea pigs have been negative in result. Has been under x-ray treatment for several weeks, with no beneficial result. Is greatly run down, thin, cachectic and despondent. T. B. index, .69; staphylococcus index, .60; streptococcus index, .86. A pure culture of staphyloccus pyogenes aureus was found in pus, but of so feeble growth that a virulent stock vaccine was decided upon instead. *April 8.* T. B. index, .61; staphyloccus index, .53; streptococcus index, .85. In spite of the low T. B. indices it was decided to begin treatment with the stock staphyloccus vaccine alone. It was found that the ordinary minimum dose of 250 million staphylococci produced a marked clinical negative phase, so that the dose was lowered to 100 million and gradually raised. After the second injection of staphylococus vaccine the indices to both staphylococci and T. B. were seen to be above normal. Staphylococcus index, 1.16; T. B. index, 1.19. For three weeks the T. B. index remained above normal. On May 9 it dropped to .56 and an injection of $\frac{1}{1000}$ mgm. T. R. was given. Since that time, with three exceptions, the T. B. index has remained above normal, with occasional injections of tuberculin R. The injections of staphylococcus vaccine were increased in dose gradually to 1,300 million during May, June and July. Up to this time there had been a steady improvement in the general condition, as well as locally. The redness in the tissues about the sinuses had entirely disappeared, and the amount of discharge in 24° was very scanty. Suddenly, after the last large dose of staphylococcus vaccine (1,300 million staphylococci) on July 23, there was a marked increase in amount of discharge. Cultures showed both staphylococcus pyogenes aureus and streptococcus, and autogenous vaccines of each were made. Streptococcus index, .76. Injections of 50 million streptococci and 250 million staphylococci were given Aug. 7 and 13, followed by great improvement. At this time patient went abroad for a six weeks' trip, and returned greatly improved in spirits and general condition. Local condition about the same. Since his return has resumed weekly injections of staphylococcus and streptococcus vaccines, with an occasional injection of tuberculin R., according to opsonic indices. On two occasions a sinus has been dilated to allow the escape of collections of pus, followed by much local relief. At present, cultures from the scanty discharge show no streptococci. The improvement in this case since the beginning of treatment has been remarkable. His strength is increased, color and appetite have improved, and there is a complete change for the better in the mental attitude. Has gained 10 lb. in weight. There is a very scanty discharge in twenty-four hours and the redness and bogginess of the tissues around the sinuses have entirely disappeared. Injections of tuberculin R. in this case, as in many others, have been followed by a stimulating result, whether or not there is evidence of tuberculosis. In this case no such evidence has been found. It was found early in the treatment that the ordinarily minimum dose of 250 million staphylococci was not well borne, the patient feeling sick and miserable for four to five days after injection. On cutting down dose to 100 million there was quite as much improvement opsonically and clinically, and the patient felt much better. After a few small doses such patients will bear gradually increasing doses, if necessary, much better.

Case XVIII. J. J. H., thirty-three years. *May 31, 1907.* Pleurisy in left side four years ago. Except for that, always well and strong till one and one-half years ago, when he developed an abscess at junction of sternum and fourth right rib. Ether and incision. Has had constant discharge of pus since. One year ago developed another abscess over right seventh rib. Opened and drained, and has discharged pus ever since. Since then 5 or 6 sinuses leading to ribs and sternum have opened. Has had x-ray treatment for past five months, with no improvement. Has no cough. Has lost strength since appearance of abscesses. No fever. Fairly good appetite and bowels regular. No expectoration. Has slept out of doors past three months. Weighs 158 lb. No tuberculosis in family. Skin over anterior chest wall about sinuses red, inflamed and boggy to the touch. Bare bone felt with probe. Considerable discharge of pus. Culture shows almost pure growth of staphylococcus pyogenes aureus. No T. B. have been found in pus, tissues, or an inoculated guinea pig. Fluoroscopic examination of lungs by Dr. F. H. Williams showed an area suspicious of tuberculosis in right apex. Clinically, this case is undoubtedly tuberculosis of the rib and sternum, with a mixed infection, but there has been no pathological nor bacteriological proof. T. B. index, .53; staphylococcus index, .62; streptococcus index, 1.01; pneumococcus index, 1.00. *June 4.* T. B. index, .85; staphylococcus index, .73. *June 6.* T. B. index, 1.31; staphylococcus index, .74.

Injections of tuberculin R. beginning with $\frac{1}{2000}$ mgm. and autogenous staphyloccus vaccine (125 million) were instituted and vigorously followed. Through June there was no appreciable local change, though the general condition was greatly improved. During July the doses were rapidly increased up to $\frac{1}{250}$ mgm. Tuberculin R. and 1,400 mgm. staphylococci. As a result, by the end of the month the discharge suddenly increased in amount, accompanied by soreness in the right side of the chest. At this time cultures showed, in addition to staphylococci, a fairly virulent streptococcus, from which an autogenous vaccine was made. *June 10.* T. B. index, .87; staphylococcus index, .89. *June 16.* T. B. index, .97; staphylococcus index, .89. *June 19.* T. B. index, 1.02; staphylococcus index, 1.36; streptococcus index, .81. Since that time, the doses of tuberculin R., staphylococcus and streptococcus have been fairly small, used according to the index. Since Aug. 1 the indices to all the bacteria have remained constantly high, with rare exceptions. There has been a great improvement, both locally and generally. All the sinuses but two have ceased discharging pus. From one of these there is enough in twenty-four hours to form only a crust, and from the other there is only a scanty amount. The streptococci have disappeared from the cultures, and the staphylococci show only a mild virulence. There is no redness, tenderness nor bogginess in the tissues.

Case XIX. C. H. H., sixty-two years. *April 22, 1907.* In good health till six months ago, except for typhoid fever in 1866. In November, 1906, developed an ischio-rectal abscess. Incised and drained till January, 1907. Coincident with this had a periurethral abscess, which opened into urethra. Had been using a catheter recently and infected bladder in this way. Since February, 1907, has not required catheter, and has had good control of bladder. Passes urine about every hour during night. Drinks large amount of water. Some days urine is fairly clear, other days contains large amount of pus and mucus. No pain or discomfort on passing urine, or between times. Recently has been troubled with pain and stiffness of knee-joints. For past two months has been under treatment for defective eyesight. Feels despondent most of the time. Prostate normal. Urine alkaline and of foul odor. Sediment contains considerable pus and mucus. No renal elements. Culture shows colon bacilli. Guinea pigs inoculated with sediment have shown no signs of tuberculosis. Colon index, .55, taken *April 20.* Staphylococcus index, 1.00; streptococcus index, .87. *April 22.* Colon index, .81; staphylococcus index, .89. *April 29.* Colon index, .68. *May 7.* Colon index, .77. Given 30 million autogenous colon vaccine. Next day there was considerable clinical negative phase. Opsonic negative phase, .70. During May and early part of June was given injections of 30 to 50 mgm. colon weekly. Urine lost its foul odor and there was markedly less pus in sediment. Patient became stronger and more cheerful. Colon index, 1.03 to 1.78; staphylococcus index, normal. *June 20.* On account of low staphylococcus index, .75, was given 250 million staphylococcus stock vaccine, in addition to 80 million colon. Since then has had both staphylococcus and colon vaccines weekly, according to opsonic indices. In July cultures from sediment showed both colon and staphylococcus, and fresh autogenous vaccines of each were made. Since July 1 there has been no pain or stiffness in the knees. The foul odor of the urine has disappeared, there is almost no pus in the sediment, although there is considerable mucus at times. Cultures show only the feeblest growth of both colon and staphylococcus. The patient has lost his despondency, has gained 27 lb. in weight since beginning treatment, passes urine only once or twice during night, and says he feels better and stronger than he has for forty years. The opsonic indices to both staphylococcus and streptococcus remain practically constantly well above normal.

Owing to an oversight no test for sugar in the urine was made till Oct. 28, when it was found to be present. He was then ordered a restricted diet, and given codeine sulphate ½ gr. t. i. d. in increasing doses. This condition was the probable predisposing cause of the ischio-rectal abscess and accounts for the defective eyesight.

Case XX. J. W. B., seventy-five years. *April 1, 1907.* Has had cystitis for about four years, following self-catheterization, with a moderate bilateral prostatic hypertrophy. Has had two severe exacerbations, with high fever and delirium. Has been passing urine from one to four times during night. Operated upon in March, 1906, for a strangulated umbilical hernia. Has had two attacks of acute lobar pneumonia, in November, 1905, and March, 1906. Has taken urotropin constantly for past year. Is up and about, but feels listless and weak. Urine alkaline and fecal in odor. Contains much mucus and a heavy sediment of pus, from which an almost pure culture of colon bacilli was obtained, and an autogenous vaccine made. A very weak admixture of staphylococcus pyogenes aureus was seen with the colon bacilli. Colon index, 1.19, and staphylococcus index, .80. Sediment injected into guinea pig for T. B. on April 1, was negative Oct. 21. After two injections of colon vaccine, 100 million and 150 million, the colon index rose to 4.76. *April 17.* Patient feels much better and is stronger. Urine less foul and alkaline. Sediment contains considerable mucus, but very much less pus. *May 3.* From cultures of sediment colonies of colon bacilli and staphylococcus pyogenes aureus were obtained and fresh autogenous vaccines made. Patient feels strong and works in his garden every day. Passes urine once or twice during night, and has no difficulty in control of bladder. Colon index, 1.13, and staphylococcus index, 1.62. Given an injection of 100 million colon and one of 170 million staphylococcus.

Since early in May the patient has had weekly injections of one or the other, or both vaccines, according to the opsonic indices, until the middle of September. When seen about the middle of October the patient expressed himself as feeling better and stronger than he had for several years. Has no periods of depression. The urine has entirely lost its former fecal odor. There is still mucus in the sediment, but practically no pus. Cultures show feeble growths of both colon and staphylococcus with almost no virulence. Colon and staphylococcus indices have both remained well above normal level since July 1. Patient's family regard the improvement in his general condition as remarkable. There has been no local treatment at any time since the opsonic treatment was instituted.

In this, as well as the other cases of bladder infection, guinea pigs were inoculated with urinary sediment, in addition to the cultural and opsonic methods of diagnosis.

Case XXI. Mrs. L., forty-nine years. *March 18, 1907.* Operated upon nine years ago for an ileovesical fistula following an abscess of left Fallopian tube. Secondary operation two years later for abdominal adhesive bands. Has never been in good health since. Has had fever almost constantly, and occasional abdominal pains, thought to be due to adhesions. Weighs 71 lb. with light clothing. Is up and about.

T. B. index, .85; streptococcus index, 1.00; staphylococcus index, .60; colon index, .74. *March 20.* Temperature, 100.6°. Pulse 88. Feels weak and sick. T. B. index, 1.12; streptococcus index, .98; staphylococcus index, .60; colon index, .40. In view of the history and the low opsonic indices it seemed probable that there was some latent colon infection in the pelvis or abdomen, with a probable mixed infection of staphylococcus. A culture of colon bacilli was obtained from the feces, and an autogenous vaccine made. *March 26.* Colon index, .66; staphylococcus index, 1.23. Given injection of 35 million colon alone as there was an unexplainable rise of the staphylococcus index. *April 1.* Colon index, .90; staphylococcus index, .96. Had a marked clinical negative phase lasting four days following previous injection. Injection of 35 million colon repeated. *April 8.* Colon index, 1.00; staphylococcus index, .44. Given 50 million staphylococcus stock culture. In this way cultures were given about weekly, according to which organism showed the lower index, in the expectation of bringing both indices to and above normal. In this patient it was soon evident that the ordinarily minimum dose of both vaccines could not be borne. Following each injection, particularly of colon vaccine, the patient was nauseated, occasionally cyanotic for twelve to twenty-four hours, weak, and with poor heart action. Opsonically the negative phase was not always marked, in some instances the index being above normal. As the staphylococcus indices remained fairly constantly above normal, it was decided to place reliance on colon vaccine, but with greatly decreased doses. Accordingly the dose was cut down to 3 million and this was well borne. This was gradually worked up to 5 million through the month of May, with great improvement in the patient's general condition. During June and July the dose was steadily increased till 300 million colon were well borne. As the staphylococcus index occasionally fell below normal, a dose of staphylococcus vaccine, 50 to 70 million, was given, according to the index. Owing to the patient's nervous condition, and repugnance to the injections, treatment was stopped during the summer. Since beginning treatment the patient has gained 16 lb. weight, is stronger, and feels better than she has for some years. *July 9.* Colon index, 1.75.

This case illustrates very clearly the fact that the recognized minimum dose of 50 million colon and 250 million staphylococcus vaccines may be harmful to some patients. Here the clinical and opsonic results were more beneficial following the doses of 3 to 5 million colon and 50 to 70 million staphylococci. In similar obscure cases the blood should be tested opsonically every other day, for at least three observations, to the various pathogenic organisms, viz.: T. B., staphylococci, streptococci, colon, pneumococci, and gonococci. Those which show persistently low indices are those to be subsequently treated by the proper vaccines, guided by the opsonic index.

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THE "OPTOMETRIST," DOES HE PREACH AND PRACTICE MEDICINE?

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MY article on "The Optometrist," of the 26th ult., has resulted in many queer optical advertisements reaching me by mail, of which the following is easily the masterpiece:

TO THE PUBLIC.

You should use the same care in selecting your optician that you do in selecting your physician. It has been recently discovered that eyestrain is responsible for many of the ills of humanity, such as headache, stomach trouble, piles, constipation, female troubles, epileptic fits, St. Vitus' dance and many other so-called incurable diseases.

The Littlefield system of eye and nerve measurements, of which I am a graduate, has revealed to the world the true cause of these functional nervous diseases, and I extend to you a cordial invitation to call in and have your eyes tested by this new copyright method. I make a specialty of straightening cross eyes in children without an operation, which would be painful and dangerous. Every schoolboy and girl in this country should have their eyes tested by this new system at once to see if there is any latent eyestrain undermining their health.

I furnish glasses of all kinds and descriptions at lowest prices.

Respectfully,
———— ———— ————
Optometist.

We take it that this man would seek registry under the proposed Optometry Bill.

In *Optical Journal*, Feb. 8, 1906, we note a communication from the then president of the New England Optical Association in reference to the founding of an "optometrical academy":

"I first met and conversed with this gentleman on the top floor of a large department store of this city, where he then had charge of eye fitting and glass selling for the firm."

The November, 1907, *Keystone*, an optical or jeweler's journal, gives the subjects of monthly lectures before the New England Association of Opticians as follows:

> "December, 1907: 'Muscular Anomalies'; esophoria, exophoria, hyperphoria, spasm of accommodation. January, 1908: 'Strabismus'; convergent, divergent, alternating, concomitant. February, 1908: 'Methods'; subjective, objective, fogging, retinoscopy, ophthalmoscopy. March, 1908: 'Amblyopia'; alcoholic, tobacco, diabetic, uremic, hysteric, albuminuric, simulated. April, 1908: 'Adjustment of Glasses.'"

All of these subjects, save the last, seem medical rather than optical. In *Optical Journal*, 1904, page 44, President Grainger, of Northwestern Optical Association, says,

> "The optometrist is the one to apply to for relief from headache, eyestrain, etc."

An editorial in the same journal, of the same year, page 71, says that a course in the diagnosis of ocular disease is unattainable, as it can only be found in medical and post-graduate schools, and in these the entrance conditions are rigid. It adds that optometrists must get practical work of this kind by private study and the observation of their own cases. In the July 28, 1904, *Optical Journal* we find a stated talk before the Northwestern Optical Association, in which the speaker says:

> "The optometrist, to meet with the greatest measure of success and to be successful in the greatest number of cases, must use every means in his power to completely, perfectly and positively diagnose not only the errors of refraction, but every abnormal condition of the eye under examination."
>
> "Neuritis, retinitis and albuminuric retinitis are not usually difficult to diagnose."

Before the Canadian Optical Association, in 1904, an ex-president of the National (American) Association of Opticians spoke as follows:

> "The analytical and progressive optometrist is constantly confronted by conditions which emphasize the intimate relationship existing between the various human functions, and the truth that an abnormal condition of one may produce sympathetic reflex disturbances in the other; and he should, therefore, have that comprehensive knowledge of the physiology of the ocular functions, their nerve and blood supply, as well as of those collateral interrelated, and therefore likely to be affected by ocular disturbances or imbalances, so as to be able to recognize symptoms indicating these, and trace such reflexes to their cause."

In the *Optical Journal* of Feb. 23, 1905, we find a communication in which the writer says that he signs a contract to cure ptosis of twenty years' standing. He has a dozen cases on hand, every one guaranteed to be perfectly straight; three cases of spasms, one of bed wetting, many of indigestion of even twenty years' standing, dyspepsia, female troubles, etc.

Before the Nebraska State Optical Society, the *Journal* of Feb. 22, 1906, cites a speaker as saying that he knows of no one who condemns extra ocular muscle development if he understands the subject thoroughly and has given it a fair and impartial trial. He says:

> "It relieves suffering humanity when all else fails, and affords a good legitimate income for the Optometrist."

Returning to 1904, we find the January and February lectures before the New England Optical Association at its monthly meeting to be, "Fundus Oculi: Its Pathological Variations." The March lecture delivered by a layman was, "Ocular Muscles and Clinical Use of Prisms."

In 1906 the present secretary of the Massachusetts Optical Society is quoted in an *Optical Journal* as follows:

> "I think the best plan would be a course in a college, taking up anatomy, physiology, histology and natural philosophy, and then to learn higher mathematics. Perhaps a correspondence course, if it were thorough, might educate the opticians of the country," etc.

This man's business sign reads on the office directory, "Optician & Watchmaker."

In the circular letter recently mailed by the Massachusetts Optical Society to the physicians of this state, we find the statement that,

> "The fitting of glasses to the eyes is a mechanical process dealing with the refracting of the rays of light before they enter the eye."

The same remark is made officially by the president of the National Optical Association when he says:

> "That as the optician refracts or bends rays of light with his lenses before they enter the eye and not afterwards, he is treating light, not treating disease."

We therefore assume that he is correct; that the process is purely mechanical, and that he and his colleagues wish to make mechanical work a profession.

Let us, then, see from their own claims, both written and spoken, whether or not this be true, or whether they do really pretend to treat the eye internally and to diagnose disease, which action would constitute to our mind the practice of medicine.

Going back beyond the birth of so-called optometry we resurrect a letter, dated Dec. 19, 1899, written by the mentor and predecessor in business of our before-mentioned national president.

In this letter to the *Optical Journal*, of New York, he advocates the establishment of a New York optical school and advises them to seek the advice of a conscientious oculist who will lay out a plan and course of study that will insure high standing for the school.

He tells them to place their standard high, and notes that the trustees of the New England Optical Institute recognize that unless the optician is to take a secondary place in optical matters he must have a liberal education. (The New England Optical Institute has long since died.) He gives a synopsis of the sixty lectures to be delivered to his second year students as follows:

> "The individual protoplasmic cells; the amoeba and ovum; general histology; physiology of the blood; physiology of digestion; chemistry of the animal body; general structure of the body; osteology in general; special study of cranial bones; physiology and anatomy of muscular

> system; physiology and anatomy of brain and spinal cord; practical talks on viscera of body; practical demonstration on skeleton, manikin and viscera; the anatomy and physiology of the eye by fifteen or more lectures and five quizzes."
>
> This class is also studying trigonometry and later will take up chemistry. Last year physics, algebra and geometry were studied. Next year will be devoted to pathology, refraction and accommodation. He adds that "the oculist is too much of a physician, and the optician not enough of a physiologist."

(I mention this man in particular because he has been quoted as being among the prime movers of the establishing of an optical association. He was then also connected with a wholesale optical house of this city, as was a colleague whose name was mentioned in the same connection. See the *Optical Journal*, January, 1902, page 46.)

The prospectus of the New England Optical Institute for 1899–1900 says:

> "The student in optometry is taught to recognize *diseased conditions of the eye*, and also such abnormal conditions of the system as effect the eye."
>
> "He is educated to correct all forms of ametropia and disturbances of the ocular muscles; to understand all methods of measuring refraction, accommodation and muscular disorders, and the use of all optical instruments for optometry.
>
> "The graduate of this school will be capable of understanding the most scientific and valuable works upon all subjects which have a bearing upon the prescribing of glasses, and he should be able to judge for himself and take his stand as an *authority on the care of the eye*."

Does he preach the practice of medicine?

I find their third year studies published as "Pathology (including neurology), ophthalmology, optometry (refraction, accommodation, retinoscopy, etc.), mechanical work and clinical training."

Were they studying medicine? Did they diagnose disease? Did they preach medicine?

In the *Optical Journal* of April 15, 1899, we find an article on the ocular muscles as read before the New England Association of Opticians by the lay president of the New England Optical Institute.

He there goes into the deep anatomy of the ocular muscles; into the intimate anatomy of the brain; discourses learnedly on nervous energy, the degeneration of the nerve itself, the degeneration of the arteries, obstruction of blood vessels and troubles which may cause paralysis. He notes how occasionally intoxication, tuberculosis, diabetes, inflammation of the kidneys, diphtheria, influenza or rheumatism may bring on a paralysis of the ocular muscles.

He notes that specific trouble is the underlying cause of nearly 60% of ocular paralysis and wishes the optician to remember that fact. He says that it will be the optician's privilege to correct headaches that have been attributed to neuralgia or other causes, and that have been in physicians' care for a long period of time. He advises them to test carefully the cases of violent headaches, dizziness, nervousness and unconscious spells. He advises them to question the health and to expect in the aged muscular errors arising from *intracranial weakness*.

He sums up a deeply scientific article by advising them to measure the refraction in the dark room; to test each eye separately by the subjective method; to test the muscular balance; to measure adduction, abduction, superduction and infraduction; to test for concomitancy; to test the muscle balance at the near point and the power of convergence in accommodation; to consider the symptoms and the *state of health*, and after having tested the abnormal conditions a number of times, tells them that they are ready to form an opinion and to prescribe intelligently for the refractive or muscle error.

His concluding words refer to the use of prisms. He advises them that after feeling sure that the symptoms complained of do not *come from ill health* or the need of astigmatic or spherical glasses or from peculiar habits of work, they may try their skill at prisms, entertaining the hope that much good and no harm will be done.

Did he then preach the practice of medicine?

Their 1900–1901 announcement gives a faculty of six (three professors and three instructors), covering the subjects, ophthalmology, anatomy, histology, embryology, pathology, chemistry, physics, physiology, hygiene, optometry and mathematics.

Their list of students numbers sixteen. This was the year in which this school sought legislative authority to grant degrees of "Doctor of Optics" and "Bachelor of Physiological Optics," in reference to which matter I quote from a Boston newspaper of that year:

> "The petition has this peculiar feature, that the students themselves of the school are at the same time likely to be both their own judge and jury. This appears in the fact that out of 16 students now attending the school, 9 are named as incorporators; 8 are advertised as trustees, and 4 out of 5 officers of the Board of Trustees are also of these sixteen students. The query arises whether they would refuse to graduate a student who happens to be an incorporator. Would not the faculty take pride in graduating a student who also happens to be a trustee? Would not the faculty literally fall over itself in feverish desire to grant the aforesaid degree of D. O. to a student who had already reached the eminence of officer of this Board of Trustees? Even Poo Bah might well give place to these educators."

I have been thus discursive in reference to this school because it shows how profuse they were in promises, how largely they entered into the study of medicine, how small a place optics took in their curriculum, and how soon the school died when they were refused the privilege of granting degrees.

I would not quote this man, now that he is dead, were it not for the fact that the optical company, of which the president of the National Optical Association is now the leading spirit, has sent leaflet after leaflet to the physicians of this state extolling his teacher's life labors as the originator or discoverer of a perfect, or almost perfect, system of eye measurements, adding request or invitation that physicians refer cases to them for diagnosis or examination.

This jump from 1899 to the present day indicates to my mind that his firm then practiced, as it now practices, medicine in as far as they pretend to correctly fit glasses and to absolutely diagnose disease. In the January number of the *Optical Journal* of 1901, page 46, we find an address delivered before the New England Association of Opticians in which the speaker dilates upon their need of an understanding of physiological optics, adding that the optician should know enough about disease to "know a case of locomotor ataxia from inebracy" (inebriety?), and how certain diseases may affect the index of refraction of the dioptric media. Does that mean that they should know medicine?

In 1904 we reach the tenth annual meeting of the New England Association of Opticians, held at Boston, May 17, and find a speaker addressing them on the subject, "Objective and Subjective Optometry with Retinoscope, Ophthalmoscope and Trial Case":

> "Every refractionist should use the retinoscope, ophthalmoscope and trial case, all of them; with the ophthalmoscope he must learn to differentiate a physiological from a pathological fundus; that because of the great number of cases passing through the refractionist's hands, he can *refract better and faster than an oculist* can, and this being so, why should he not examine the patient's fundus to see whether a diseased condition is present or not?"
>
> In this connection the speaker enthusiastically recommended, because of the plates, Haab's Atlas.
>
> "Look into the eye as a matter of routine," he said, "and soon the oculist's sphere will become restricted to what it should be: surgery, surgical and medical treatment of diseased eyes."

Did he talk and did they listen to a medical discourse? Did he seek to restrict the medical man's field of work? The program of the American Association of Opticians for their annual meeting at Rochester, N. Y., in 1906, contains these subjects as stated addresses: "Monocular Amblyopia Due to Congenital Corneal Asymmetry"; "The Eye in Comparative Anatomy"; "Some Diseases Essential for the Optometrist to Recognize"; "Mechanism of Accommodation"; "Illumination of the Eye by Direct and Oblique Methods," and "The Eye in Relation to Health." During this last lecture it is stated that a free clinic will be held demonstrating the effect of lenses in cases of stammering, partial deafness, St. Vitus' dance and shaking palsy.

Did not their convention take on a medical tone?

That medicine and medical matters are always dominant in these optical meetings is indicated by an address last year before our same New England Association of Opticians. The speaker says:

> "If we have a school and that school is good for anything, it must stand for something; it must stand all criticism. The school that gives us *no title*, that gives us not standing, we do not want. We want a school *that will give us a degree*, but one that will not encroach upon the field of medical profession. We want a school that will make a specialty of teaching refraction. Some six or seven years ago we had a school here, but there has been no attempt made to have such a school exclusively for the opticians."

As a matter of fact, my quoted words on a former page would seem to indicate that they aimed to teach medicine rather than refraction. This speaker adds that —

> "The optician ought to *know every disease, that shows ocular symptoms;* be familiar with the signs of disease, to know the limits of his work and to know them well.
>
> "The school should go into the anatomy of the eye and of the associated parts particularly; should teach physiology as it relates to the eye and its parts.
>
> "The school should have sessions in the evening, so that every one may go, and the course should be one of two or three years."

Once again: Do these gentlemen tread on the domain of medicine? We quote remarks made before our New England Association of Opticians. (See *Optical Journal*, May 31, 1906.)

The speaker first takes the ophthalmoscope and examines the fundus; next the cornea, crystalline and iris.

> "This takes but a short time," he says, "for an expert with the ophthalmoscope, and there is no reason why every man could not be an expert by devoting a few hours a day to practice. He will then be soon able to know *almost at a glance whether or not disease exists.*"

He next examines the refractive media, then goes to the subjective test, after which he gauges the accommodation by the method of Donders; then he proceeds to test the muscles, using Maddox prism, candle or globe.

Though he says much more on the subject, these words suffice to give us an idea of whether or not he examines the eye internally or diagnoses disease.

I take up now some of the national president's literature, and after a hasty glance at the same, note that they say:

> "The family physician meets with many cases where the reflex symptoms indicate eyestrain, and that the physician in such circumstances would find satisfaction in sending cases where the work would be done correctly and where the people will have the ability to fulfill such requirements." *I. e.*, absolute correctness is claimed by this same firm.

They claim, without the use of drugs, to be able to scientifically, practically and accurately prescribe just the correction which a patient should have.

They make an especial announcement that they examine the cornea and retina with the ophthalmoscope and oblique illumination to see whether or not abnormal conditions exist.

They request the privilege of working with the physicians for the relief of cases where the reflex symptoms indicate eyestrain.

Do these gentlemen pose here not only as medical men, but as medical experts or consulters?

Once again the writer asks, Do they preach or practice medicine? Let the reader answer.

Your writer has not quoted their most radical statements. He has selected mild extracts, though he could fill page after page in noting how they could use in some cases the title "Doctor" without let or hindrance; how superior they are in eye knowledge to the medical man, etc.

The physician, the dentist, the pharmacist, have their schools and their stated subjects of study; these men have no schools.

For years the House of Delegates, Board of

Regents or Physiological Section of the National Optical Association have discussed the ways and means of establishing an optical college or optometrical academy, and all to no avail. Not a mouse has answered the mountain's labor, and the school is still in the womb of futurity.

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Reports of Societies.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

STATED MEETING HELD AT THE NEW YORK ACADEMY OF MEDICINE, OCT. 21, 1907.

THE President, DR. THOMAS E. SATTERTHWAITE, in the chair.

The general subject of the evening was

THE STOMACH AND SOME OF ITS AFFECTIONS.

It was introduced by DR. WILLIAM H. PORTER, who spoke on

THE ORIGIN AND DESTINATION OF HYDROCHLORIC ACID.

Certain fundamental facts, he said, must be taken into consideration in making out a logical theory for the formation of hydrochloric acid, namely: (1) The proteid molecule leaves the body by a process of oxidation reduction. (2) The cells of the gastric mucous membrane can produce sulphuric acid. (3) The decomposition of the sodium chloride of the food is generally admitted to be the source of the hydrochloric acid. (4) The intake and output of sodium chloride is always equal. (5) The output of sodium sulphate is always greater than the intake. (6) The food contains an abundance of alkaline sodium phosphate and very little neutral sodium phosphate. (7) The blood contains a considerable amount of the neutral phosphate. (8) The urine is rendered acid by the acid sodium phosphate. From these facts the speaker argued that the proteid molecule is drawn with oxygen into the protoplasm of the gastric epithelial cells, and there, by a process of oxidation reduction, sulphur and hydrogen are split off, with the formation of sulphuric acid, which is discharged into the stomach from the free surface of the cells. The sulphuric acid here attacks the sodium chloride forming hydrochloric acid and sodium sulphate. After the hydrochloric acid has served its purpose in the digestive act, it reacts upon the sodium phosphate in the intestinal tract, restoring the sodium chloride lost in the stomach, and produces the neutral phosphate for the blood. The neutral phosphate, escaping from the blood through the malpighian tufts, comes in contact in the uriniferous tubules with the uric acid, thus forming the acid phosphate and a urate. Considered in this light, the complete utilization of 150 gm. of proteid material daily, after deducting the amount of sulphur required to form the taurocholic acid, leaves sufficient sulphur to produce 5.78 gm. of sulphuric acid. This amount of sulphuric acid, acting upon the requisite amount of sodium chloride, will yield 4.29 gm. of hydrochloric acid and 8.37 gm. of sodium sulphate. The utilization of a smaller or larger amount of proteid material will naturally decrease or increase the production of the acids. The practical deduction to be drawn from this method of accounting for the formation of the acids is that, where there is an increased production of hydrochloric acid, there is a decreased production of taurocholic acid; or, estimating the production for a short time, as is commonly done, this might indicate temporary increased oxidation reduction for a short period. Until some method is devised by which the total daily output of the acids can be practically estimated, all deductions must be largely speculative. Decreased production of the acids naturally indicates the reverse of the above conditions.

DR. J. KAUFMANN read a paper on

LACK OF GASTRIC MUCUS AND ITS RELATION TO HYPERACIDITY AND GASTRIC ULCER.

in which he said he wished to report some observations showing that the secretion of gastric mucus is a necessary function, and that lack of mucus leads to serious disturbances. While it was true that mucus was constantly secreted in the stomach to some extent, it appeared that such secretion was principally connected with the digestive period. From systematic tests he early became convinced that stomach contents under normal conditions show a moderate amount of mucus after meals and that lack of mucus must be considered abnormal. His results were obtained from the routine examination, in the same way, of several thousand cases. The presence of mucus was recognized by its most characteristic quality, its coherency. When no mucus was present, the coherency of the bread mass after a test breakfast was missed, and the lack of mucus was most obvious where the bread was found to be very finely divided and forming a flour-like layer. The presence or absence of mucus should, however, be corroborated by the microscopical findings, which were very characteristic. In these, staining the specimen with Lugol's solution was of great practical service, and from the combined results of macroscopic and microscopic examinations the amount of gastric mucus present in any instance could be readily estimated. Thus it was found that, under normal conditions, a moderate amount of mucus was found in the breakfast, while in pathological conditions the mucus was either increased, decreased or absent.

The amount of mucus did not correspond with the amount of gastric juice. In certain cases of *achylia gastrica*, increased qualities of mucus were seen, and in others, no mucus at all. On the other hand, although cases of hyperacidity, as a rule, showed a lack of mucus, instances were sometimes observed in which there was increased mucus. In his observations after a test breakfast, Dr. Kaufmann had noted a lack of mucus in a great number of cases. This was more frequent than an increase, and might be due to different causes. There was either insufficient secretion, or the secreted mucus was digested, or it was dissolved by the action of bacteria, as was seen in certain cases of bronchoblenorrhea. A certain amount of mucus was possibly digested by an active gastric juice; but several considerations militated against the probability that a complete lack of mucus in the breakfast was entirely due to its being digested. No matter what the cause of the lack of mucus, he thought we were justified in concluding that the lining of the stomach is not well covered with mucus when we find none in the gastric contents after a test breakfast. It was therefore obvious that the mucus is the protective agent of the gastric mucosa. In instances where no gastric juice or gastric juice of low acidity was secreted, it might be of no great importance, whether the mucosa was covered with a thick or thin layer of mucus; but the case was altogether different where there was an active gastric juice, and especially one of high acidity, because it was the layer of mucus which protected the mucosa against the action of the acid secretion.

An analysis of many histories had convinced him that all the subjective symptoms recognized as belonging to hyperacidity were most pronounced in patients whose stomach contents were found entirely free from mucus. That the lack of mucus played a great rôle here became clear to the speaker on noting complete absence of mucus in some of those well-known cases presenting all the symptoms of so-called hyperacidity, yet whose stomach contents showed no excess of acids, but only normal or even subnormal figures of acidity. There had always been some difficulty in explaining the occurrence of "hyperacidity symptoms" in cases where there really was no hyperacidity, and most authors maintained that in such instances, a sensory neurosis was the underlying cause of the hyperesthesia of the gastric mucosa. We had a more satisfactory explanation, he thought, if we considered the lack of a sufficient cover of mucus, as the principal cause which renders the mucosa so sensitive to secretions of a high or even moderate degree of acidity. The correctness of this position was strengthened by the fact that no treatment removes more quickly all the so-called hyperacidity symptoms than the application by lavage of solutions of silver nitrate. When, after such treatment and after the patient had been relieved of all subjective symptoms, he had often been much surprised to find, instead of the expected lowering of the acidity, that the high figures of hyperacidity remained unchanged. Such observations undoubtedly proved that hyperacidity cannot be the only cause for the suffering of these patients. That the lack of mucus was a factor became plausible when, in such cases with persistent hyperacidity, distinct qualities of mucus were found in the stomach *after* the treatment with silver nitrate, while the examinations made before this treatment had revealed no mucus at all. The increased secretion of mucus by the use of silver nitrate was easily understood from Pawlow's experiments, and Dr. Kaufmann's clinical observations showed that when the nitrate was used in dilute solutions, its property of inducing an increased secretion of mucus might be turned to advantage from a therapeutic point of view.

The effect of an insufficient covering of the mucosa might lead to more serious disturbances than simply discomfort and pain. Without a sufficient covering of mucus, the gastric mucosa became more easily injured by the many deleterious agencies, mechanical, thermic and chemical, to which it was constantly exposed, and when once injured, even though slightly, the damaged part became more prone to the invasion of bacteria and to the digestive action of the gastric juice. It was probable that such injuries were the primary factor in the development of gastric ulcer. The majority of cases gave the history of a more or less prolonged period of suffering from the so-called hyperacidity symptoms, and, as had been seen, such suffering was due just as much to the lack of mucus as to an increased acidity. It could be seen now that the lack of mucus played also a part in bringing about the first lesion of the mucous membrane. Furthermore, a treatment which brought about an increase of gastric mucus helped to cure gastric ulcer, and we could thus understand the effect of the time-honored treatment of this condition by silver nitrate. How important an increased secretion of mucus was for the healing of a gastric ulcer was demonstrated by the clinical experience that the development of a mucus gastritis proves more conclusively than anything else that the ulcer has healed. An increase of mucus, therefore, though apparently pathological, might often prove to be nothing but a more active manifestation of a useful function which served to protect the mucous membrane. The routine examination of stomach contents had so far been principally directed toward the secretion of gastric juice and its disturbances; but a more careful study of the protective secretion of mucus and its modifications would greatly help us to understand and to treat gastric affections.

Dr. Otto Kiliani, read a paper on

THE SURGICAL TREATMENT OF GASTRIC ULCER.

There could be no question, he said, that this disease was one which belongs, in most instances and at most times, entirely to the domain of the physician; but until very recently, the impression had prevailed that ulcers of the stomach warranted or necessitated surgical interference only when they had reached the accidental stage, namely, in cases of acute perforation and for uncontrollable hemorrhage. This conception was entirely wrong in two ways, since there were, first, a number of conditions which allowed of and necessitated surgical treatment where patients were not *in extremis*, and as, secondly, the indication for operation in apparently uncontrollable hemorrhage was exceedingly doubtful. The acute free perforation of an ulcer into the peritoneal cavity, without any formation of adhesions, was extremely rare, and, therefore, operation for *indicatio vitalis* hardly ever became necessary. In hemorrhage from an ulcer, also, operation really became very rarely necessary, because, even in extreme cases, the hemorrhage stopped just before the crucial point, or as soon as the patient passed into deep collapse. The surgical treatment would be apt to fail here, because the patient could not stand the shock of an operation and because, quite frequently, it was impossible to find or get at the bleeding vessel.

The ordinary indications for the operative treatment of ulcer were, uncontrollable violent pain, inflammation with or without pus-forming adhesions, the formation of scar tissue, with symptoms of stenosis, and suspicion of malignant degeneration. The best observers in medical and surgical clinics had finally reached the conclusion that a patient with ulcer who has been subjected to one or several systematic courses of rational medical treatment, with little or no improvement, or who gets recurrences again and again, ought to be operated upon. The procedure of choice for this condition was gastro-enterostomy. The object of all other forms of operation was to treat the ulcer *per se*, by removal or otherwise. Gastro-enterostomy, on the other hand, aimed at forming anatomical conditions which partly overcame mechanical difficulties, partly set the stomach at rest, and gave the ulcer a chance to heal. It was a safe operation, with generally excellent therapeutic results. During the last three years. the average death-rate by different operators had not been more than 3½%, while if we considered the fact that only the very worst cases of ulcer came to operation, the mortality of this type of ulcers, if not operated upon, was at least 30%.

Dr. Achilles Rose read a paper on

MODERN METHODS IN THE MEDICAL TREATMENT OF GASTRIC DISEASES.

A rational therapy of affections of the stomach, he said, presupposed an exact diagnosis, and the new aids to this consisted in the fact that increased importance had been attached to the influence of the nervous system upon digestion, since Pawlow's experiments had been known, and, furthermore, the knowledge that certain mechanical changes form an important factor in the anomalous secretions of the stomach. In the treatment of disease in general physical and dietetic methods had more and more asserted themselves in modern times, and this was particularly the case in the treatment of gastric and intestinal disorders. Physiologico-chemical exploration of the stomach and examination of its contents were certainly indispensable in many instances, but the opinion entertained for some time, that neither a correct diagnosis nor a rational therapy was possible without an examination of the stomach contents, had proved an unfounded exaggeration. The same held true as regards irrigation of the stomach, and the conditions in which this measure was indicated had now been clearly defined.

The examination of the stomach commenced with inspection, which had been raised to a high degree of perfection by Knapp. Then followed palpation to establish sensitiveness to pain by pressure, and also to determine the presence, nature and significance of splashing sounds. Percussion served to indicate the size of the stomach and define its lower border, while auscultation might be employed for the recognition of the peculiar sounds described by Meltzer. Finally, a chemical examination was made of the gastric contents. In the treatment of affections of the digestive tract, diet, of course, played the most important part. In hyperchlorhydria and achylia gastrica, dietetic measures now formed, in most cases, the exclusive treatment. As soon as the causes of the anomalies of gastric secretion should have become more generally understood, the palmy days of the manufacturers of pepsin, pancreatin and other similar preparations would be over. The contention had now gained ground that the replacement of deficient gastric juice by the artificial article cannot constitute a scientific therapeusis. The new knowledge of the relation of mechanical conditions, such as relaxation of the abdominal muscles (atonia gastrica), to gastric secretion was also a most important advance. One of the functions of these muscles was to preserve the physiological position of the abdominal viscera. They also exerted a significant influence on abdominal innervation, and controlled the distribution of the fluids in the abdomen, both in the viscera and in the tissues. When they became atonic, ptosis of the viscera would occur, and the relaxation of the muscles might be the cause of many nervous disorders, which again produced gastric symptoms. In any scientific treatment of gastric affections, this cause, if present, should therefore be removed first of all. Dr. Rose contended that atony meant nothing but relaxation, pure and simple, and that atony and dilatation were identical, a relaxed muscle fiber being at the same time enlarged. The error was frequently made, he said, of considering motor insufficiency as identical with atony. Dr. Kemp, in his clinic at the Manhattan State Hospital, had made exact observations showing how the support of the relaxed abdominal muscles improved the position of the stomach and favorally affected its secretion.

The last paper of the evening was by DR. FRANZ TOREK, on

MODERN METHODS IN THE SURGICAL TREATMENT OF DISEASES OF THE STOMACH.

The technic of gastric surgery, he said, had come more prominently forward since physicians had begun to appreciate that many cases, diagnosticated as chronic gastritis, were in reality cases of malignant tumor or of congestion due to mechanical obstruction by an open ulcer or its resulting cicatrix. Of the operations upon the stomach, the most important were gastro-enterostomy and resection; the former for ulcer and for pyloric obstruction from whatever cause, the latter occasionally for ulcer, but more particularly for the removal of operable cancer. In gastro-enterostomy, the communication with the intestine might be established either at the anterior or the posterior wall of the stomach. Posterior gastro-enterostomy was the operation which he and most other surgeons preferred, since it enabled one to reach better a deep portion of the stomach, and the possibility of pressure of the jejunum and the transverse colon on each other was avoided. It might, however, be impossible to perform this operation owing to extensive infiltration of the posterior wall of the stomach. Again, the procedure might be very difficult if the stomach were small, so that its posterior surface could not be thoroughly brought forward. Dr. Torek gave elaborate descriptions of the technic of gastro-enterostomy and of resection, and referred briefly to other operations on the stomach; after which he said, in conclusion: When we look over the progress that has been made in the surgery of the stomach during the last few years, we find that it consists mainly in an elaboration of certain details in technic, including improvement in the construction of certain instruments. Improved technic helps us to guard our asepsis still more strictly, and also enables us to employ the suture much more frequently, where formerly we preferred mechanical appliances like the button. It is, therefore, in this branch of surgery, as in all others, the attention to minute details which is responsible for a great part of the progress made in the art and for the improvement in the results achieved.

DISCUSSION.

DR. WILLY MEYER thought it would be a long time before it would be possible to secure surgical interference in the great majority of cases of suspected cancer, at a period early enough to be of the greatest service to the patient. Yet, the earlier an exploratory incision was made in these cases, the better. Dr. Meyer then referred to the puzzling class of cases in which neuroses closely simulated the symptoms of gastric ulcer. In his hospital service, he recalled four such cases which, after prolonged medical treatment without benefit, had been transferred to the surgical wards. In instances of this kind, a gastro-enterostomy only sealed the patient's doom. The surgeon should be content with a simple exploratory incision, and it was a fact that this was often curative. It should be generally recognized that neurosis of the stomach was a distinct disease.

DR. ROBERT T. MORRIS agreed with Dr. Meyer, as to gastric neuroses. In this class of cases there might be, first, a neurotic inheritance, or second, the neurosis might be precipitated by some peripheral irritation. In making a diagnosis, it was necessary to eliminate these outside causes. There was another class of cases also, in which the characteristic signs of ulcer, pain, vomiting and hemorrhage were present, and yet were due entirely to abdominal adhesions pressing upon the stomach. Only a few days ago, he had operated on such a case, and the separation of the constricting bands had given complete relief of all the symptoms, which medical means had proved totally inadequate to remove. Referring to the technic described by Dr. Torek, Dr. Morris said that, personally, he preferred suture, and he was accustomed to use a single suture and a large needle. He did not suture the mucosa at all, unless hemorrhage was present. By this simple method of procedure, we could save much time, and it was all-important to conserve the powers of the patient. He had consequently thrown away all the elaborate devices employed by some surgeons. The surgeons had all been afraid of sepsis, but he would like to know if any one present had ever seen peritonitis resulting in these operative cases. It was only to the disadvantage of the patient that the extra precautions against sepsis, which were taken by many surgeons, acted.

DR. RICHARD WARD WESTBROOK agreed with Dr. Torek as to the great practical utility of gastro-enterostomy, and particularly posterior gastro-enterostomy. At the same time, he believed that there was a distinct place for resection, although its field was limited. He cited a case of resection in a patient with trouble at the pylorus which it was difficult to decide whether due to carcinoma or ulcer. After the operation, the patient was lost sight of for two years, but he had recently reappeared in good health, and it was gratifying to learn that the result showed ulcer and not cancer. His own feeling, he said, was against operating for acute hemorrhage in cases of ulcer.

Dr. Jonathan G. Wells said that Dr. Kaufmann had taken up a subject about which there was to be found practically nothing in the books. In certain cases of ulcer, he had noticed that when the patient was commencing to get well, a small amount of mucus began to appear in the gastric juice. As to the mortality from gastric ulcer, it would seem to be much smaller than the surgeons would have us believe to-day. Klein had shown that out of 30,000 deaths, in which the diagnosis was well authenticated, only 135 were due to this cause. The cases for operation, he believed, were those in which a mass could be detected, due either to induration, adhesions, or, possibly, a collection of pus.

Dr. Robert Coleman Kemp thought that physicians were apt to turn their cases over to the surgeon too late. In cases where operative interference was required, the chances for a favorable outcome were generally greatly enhanced by making this at as early a period as possible. In his own practice, he was accustomed, when, after a fair course of treatment, he found that his cases of ulcer did not improve, to hand them over to the surgeon. Especially was this the case when stenosis was probably present. In cases of gastric dilatation, he had secured excellent results by the use of Dr. Rose's abdominal plaster belt.

Dr. Max Einhorn said that the cases for surgical interference were principally those in which the lesion was in the vicinity of the pylorus. It was not right to say simply that after a course of treatment a case of ulcer which appeared refractory should be turned over to the surgeon. Much depended on the nature of the case and also on the character of the treatment employed.

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Book Reviews.

Makers of Modern Medicine. By James A. Walsh, M.D., Ph.D., LL.D., Acting Dean and Professor of the History of Medicine and of Nervous Diseases, Fordham University Medical School, etc. Pp. 362. New York: Fordham University Press. 1907.

Under the appropriate title, "Makers of Modern Medicine," Walsh describes in historical detail, the lives of such men as Morgagni, Auenbrugger, Jenner, Galvani, Laennec, Müller, Schwann, Claude Bernard and Pasteur. There is also a chapter of considerable length on the Irish School of Medicine. We commend the book to physicians and laymen alike. The life history and work of the pioneers in a great profession cannot be too often read and pondered by those who come after.

A Textbook of Practical Gynecology. For Practitioners and Students. By D. Tod Gilliam, M.D., Emeritus Professor of Gynecology in Starling-Ohio Medical College, and sometime Professor of Gynecology, Starling Medical College; Gynecologist to St. Anthony and St. Francis Hospitals, etc. Second revised edition. Illustrated with 350 engravings, a colored frontispiece, and 13 full-page half-tone plates. 642 royal octavo pages. Philadelphia: F. A. Davis Company, Publishers. 1907.

This textbook has the merit of being not too large to handle comfortably; few authorities are cited, the volume representing the results of the author's reading of the literature and of his clinical experience. There are many short chapters, and at the end an index of regional symptoms, a summary of the differential diagnosis of uterine diseases, according to the symptoms. There are many admirable sections, as for instance, those on the pelvic floor and its lacerations, lacerations of the cervix, the more modern operation for the reduction of chronic inversion of the uterus, and Gilliam's operation for intra-abdominal shortening of the round ligaments. The medicinal treatment advocated is, on the whole, conservative and abreast with modern ideas. Parts of the operative treatment might be improved. In the treatment of vaginismus, we should like to see a plastic operation substituted for deep incisions, followed by the wearing of the Sims' vaginal plug. We doubt the advisability of advocating the Kellogg operation for shortening the round ligaments, externally at the internal abdominal rings instead of the usual Alexander operation; besides, the illustrations for this operation are poor, as they are in the chapter on ovariotomy. We have been led to expect so much in the way of illustration in these days, that there is a tendency to be hypercritical. It is hard to find an excuse, however, for printing the full page plates, I, II, III and IV, as they are. Plate I is labelled, "Bimanual Examination from the Side," and represents a nude female figure lying at length on her back on an adjustable office table. It is a side view. Tension and rigidity are in every line; the left thigh is extended in line with the body, and the right thigh, on the farther side, is only slightly flexed. Two modest hands coming from holes in the opposite wall are presumably making an accurate bimanual examination, something that cannot be done with a patient in the attitude figured. Under the label of "Dorsal Position," Plate II shows the lithotomy position with the feet high in stirrups. Plate III exhibits the model in an absolutely wrong Sims' position in the middle of the length of the same long table, and Plate IV gives a correct knee-breast position, but with the model placed so far from the end of the table that any local treatment would be an impossibility. If nude figures are to be shown in plates, at least, let the positions be correct, and not as if posed by a lay photographer. Why is nudity thought desirable? Are not the needs of instruction best served by pictures of patients prepared for examination in the usual gynecological routine? Aside from these matters, the book is a good one.

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THE TREATMENT OF NON-TUBERCULOUS ABSCESS OF THE PROSTATE.

AT the meeting of the French Urological Association in October last, the treatment of non-tuberculous abscess of the prostate was very thoroughly considered. The usual starting point of prostatic abscesses is the urethra, and all bacteria may come in play. An acute or chronic urethritis, or an intra-urethral surgical maneuver are usually the positive factors, but the infection may also arise in other ways, as was pointed out by Oraison, inasmuch as the intestine, an external wound, or an infectious disease may be the etiological factor. The glandular structures of the prostate are usually involved in the first place; occasionally it is the interacinous tissue; but whatever may be the origin, the suppurative process usually attains the periprostatic cellular tissue and may extend for some distance.

The treatment should be preventive, by attacking the initial disease, such as the urethritis or the intestinal or vesical lesions. As soon as suppuration becomes established, treatment becomes curative, and three routes are offered to the surgeon, *viz.*, the urethra, rectum, or perineum.

The pus may be evacuated via the urethra by massage or irrigations, and it will easily make its exit without danger to the patient. Urethrorectal fistulæ are infrequent, and a cure may be obtained even if they should arise; consequently this method may be utilized in cases of medium intensity.

If the symptomatic storm is more violent, the abscess must be opened. In these cases the collection of pus points towards the rectum and incision is an easy matter. Nevertheless, certain complications have supervened and, in order to avoid them, Oraison advises incision under the guidance of the eye, after introducing a large retractor into the rectum. It would appear that the contact of the feces does not produce infection, while hemorrhage, should it occur, is easily controlled. Urethrorectal fistulæ are rather the exception on account of the easy drainage which may be maintained.

The perineal route appears to be resorted to generally by French surgeons, and the prerectal incision, such as employed in prostatectomy, is the one advocated. However, many inconveniences appear to be attached to this method. Fistulæ are frequent; the incision is a delicate one and the cure is slow. The ejaculatory ducts may be involved. Other than in certain long-standing cases requiring a complex operation, this particular technic should be rejected and replaced by the rectal incision.

In the discussion following Oraison's report Hartmann and Lavenant stated that the two most frequent causes of suppurating prostatitis were acute gonorrhea and septic catheterism. Simple medical treatment brought about a cure in about 33% of the cases, while the remaining were treated by transverse perineotomy.

The majority of surgeons appear to be in favor of the perineal route, but it should be added that, in many cases, these prostatic abscesses open of themselves, and Noguès is of the opinion that the surgeon should not be in a hurry to operate. A spontaneous evacuation into the urethra or rectum is frequent and a cure follows. Le Fur is of the same opinion, and is not a partisan of a too hasty surgical interference; out of eighty-five cases under his care he only operated five times, these being three perineal incisions and two prostatectomies, with only one fatal outcome. All the other cases recovered by a conservative treatment, such as irrigations, massage and dilatation of the urethra.

Desnos pointed out that this was a happy series and that complications of purulent infection are to be feared in these cases, so that a very free operation is indicated. The perineal route alone allows one to reach the bottom of the collection and to secure good drainage. From this discussion, which presents so many divergent opinions, it would seem well to counsel hot irrigations in the beginning of the process, with careful massage, and, if suppuration continues, an incision should be made at the most prominent point of the abscess, that is to say, in the rectum, because the more simple procedures are usually those which are most successful in their results.

MORALITY AND DISEASE.

An alienist, happening inadvertently one day upon a service conducted in a prison chapel, found opportunity for some interesting observations in his own field. This man, he reflected, was unjustly suffering confinement, being pronouncedly microcephalic; as was also that one, being scaphocephalic; the same observation applied to others, who showed various pronounced malformations. Whatever institution such men should have been in, a prison should not have been the place; for they were so born that the moral sense must surely have become blunted or perverted. They were thus unable to feel responsibility for whatever acts they had committed — such responsibility at least as the law should take into account before incarcerating any one.

The situation here implied is certainly a hard one of which to judge. One cannot always see clearly the line separating depravity and responsible wickedness from immoral acts having their origin in anatomical stigmata or mental disease. Many humanitarians now hold extreme views as to irresponsibility for criminal acts, which if generally concurred in would surely imperil the modern social fabric. It has, indeed, come to be very difficult to convict evil-doers who have committed the most heinous crimes. A somewhat disgusted lay writer represents this extreme tendency as tending to turn all prisons into hospitals, for the substitution of trepanning for hanging, of optometry for trial by jury; such depravity as may not be eradicated by the dentist, or by the adjustment of proper spectacles, may yield to deep breathing, or the rest cure, or whatever the latest treatment happens to be.

Still there is a class of cases concerning which the distinction is measurably clear. For example, a boy was recently sentenced to a long term in Sing Sing prison — the worst boy, the judge declared, that ever came before him. Certainly he had a bad enough record, and was not at all a pleasing youth. He had served nine terms in various reformatory institutions for boys. Among his long list of offenses was a savage attack upon his mother, and the throwing of a lighted lamp at his father. Yet there may have been mitigating circumstances — the law is supposed always to make allowances for such — of a physical nature. We do not know in this particular case if there were. Yet an hereditary and perverting anatomical or functional stigma may have been present, blunting completely the moral sense. The first incarceration in these cases means almost always life-long imprisonment, with intermittent periods of freedom, which are punctuated by fresh crimes. In such a boy, marked refractive errors may have made study a torture instead of a pleasure, and the acquirement of knowledge a sheer impossibility; he may seem inattentive, when in reality his hearing is hopelessly defective or when adenoids are inducing oxygen starvation and abnormal metabolism; there may have been cerebral pressure from depressed fracture; in this phase of life such is not a rare happening.

Society should recognize a duty toward cases of this kind; its own welfare requires that it should; and the duty is not difficult to fulfil. By eradicating palpable and manifest defects it may enlist the unblamably vicious among its most useful and grateful members. This course were surely better than making enemies of them by unjust imprisonments, during which they will brood upon the world's injustices, and invent fresh ways of "getting square."

Quite apart from criminal tendencies, physical defects in children are amazingly and most disconcertingly frequent, as we must conclude from the many investigations which have been published recently. We have at hand those of the New York Board of Health, which represent the conditions generally obtaining: among nearly 200,000 children from five to fifteen years of age, 60% were undernourished, 66% needed medical and surgical care, 40% had bad teeth, 38% enlarged cervical glands, 31% defective vision, 18% enlarged tonsils, and 10% post-nasal growths.

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EXPERT TESTIMONY: A SUGGESTION.

It is to be hoped that the agitation regarding expert medical testimony, which is now active, will not be dropped until some definite action looking toward the bettering of conditions be taken. In the meantime suggestions as to possible improved relations between the courts and the medical profession are welcome. We take pleasure, therefore, in calling attention to a paper in this issue by Dr. Francis W. Anthony, of Haverhill, Mass., entitled "The Problem of Expert Testimony." A careful reading of this communication will indicate that Dr. Anthony is convinced that he has found a solution for the problem in a development of the "medical consultation" as a preliminary to appearance in court. Dr. Anthony believes that if physicians called to examine a case insist upon their right to consult freely and openly about that case, as they would were there no legal complication involved, the ends of justice would ultimately be better subserved than by the present partisan attitude, which physicians, called either for the defence or for the prosecution, are forced to assume. He maintains that if this system were adopted by the leading expert witnesses there would be much less contradictory evidence and a fairer presentation of the exact condition of the patient under consideration. The lawyers would be powerless to object and the dignity of the medical profession would be maintained.

As a theoretical proposition, and also to a considerable degree in its practical application, we believe this suggestion should be given due consideration. Dr. Anthony says he has tried it, and that in his hands it has succeeded. Like any other reform, however, to be effective it must be somewhat universally adopted, and herein lies the difficulty. It is perfectly evident that many lawyers, and we think with considerable justice under the present system of legal procedure, would strongly object to the preliminary discussion of a case by the doctors and to the reaching of a conclusion among themselves as to the degree of injury before the case has been tried. Under the present system, bad as we believe it to be, an expert's opinion must be regarded as the property of the person or corporation by whom he is employed. This at least would naturally be the lawyers' attitude. Unless, therefore, all reputable physicians banded together and made a statement that hereafter their examinations of plaintiffs would be conducted after the manner of an ordinary medical consultation, the lawyers would have a certain just cause of complaint. We believe that the ultimate solution of the problem lies in a distinct understanding between the legal and the medical professions, and that more radical means must be taken than those suggested by Dr. Anthony if results of real significance are to be attained. In the meantime we find much that is suggestive in the plan laid down by Dr. Anthony, and must certainly regard it as a step toward the proper recognition of the medical profession in its dealings with the courts. Other steps are necessary, however, before such a plan can be generally adopted, and these we trust the present agitation will accomplish.

MEDICAL NOTES.

The Ohio Association of Medical College Teachers. — The third annual meeting of the Ohio Association of Medical College Teachers was held in the afternoon and evening of Dec. 27, and was the most successful in the history of the organization. About seventy-five members were present, besides a number of visitors, among them the presidents of several literary colleges of the state. The entire program was carried out with two exceptions. Interest in the organization has increased and its members feel that much good has been accomplished.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Jan. 8, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 35, typhoid fever 5, measles 74, tuberculosis 41, smallpox 0.

The death-rate of the reported deaths for the week ending Jan. 8, 1908, was 19.59.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Jan. 11, 1908, was 229, against 266 the corresponding week of last year, showing a decrease of 37 deaths and making the death-rate for the week 19.50. Of this number 117 were males and 112 were females; 227 were white and 2 colored; 148 were born in the United States, 72 in foreign countries and 9 unknown; 57 were of American parentage, 147 of foreign parentage and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 60 cases and 3 deaths; scarlatina, 28 cases and 1 death; typhoid fever, 3 cases and 0 deaths; measles, 69 cases and 3 deaths; tuberculosis, 41 cases and 28 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 35, whooping cough 0, heart disease 32, bronchitis 11, and marasmus 5. There were 10 deaths from violent causes. The number of children who died under one year was 39; the number under five years 53. The number of persons who died over sixty years of age was 61. The deaths in public institutions were 70.

There were 2 cases and 1 death reported from cerebrospinal meningitis during the week.

There were also 12 deaths from la grippe reported for the same period.

"Human Gait" as Illustrated in the Shaw Monument. — Dr. E. H. Bradford delivered a lecture, Jan. 5, in the course of the free public lectures at the Harvard Medical School, on "Human Gait." During the lecture Dr. Bradford referred to the gait of the negro soldiers as exhibited in the Shaw Memorial statue, by St. Gaudens, in front of the Boston State House, as physiologically incorrect, although possibly artistically serviceable as indicating the zeal and haste of those troops to get to the front. We think the expert and the unprejudiced who look at the statue with reference to this feature will doubtless agree with Dr. Bradford; and Mr. Darius Cobb, a well-known sculptor, comes to his support. On the other hand, Messrs. William Lloyd Garrison and Thomas Wentworth Higginson, as friends of the negro, seem inclined to prefer the artistic effect of the statue to the claims of physiology.

NEW YORK.

Free Lectures on Digestion. — A series of twelve free lectures on digestion, metabolism and selection of foods is being given weekly under the auspices of Teachers' College, Columbia University, by Dr. William J. Gies, professor of biological chemistry in the medical department of the university, and others.

Croton Filtration Plant. — In his annual address to the board of aldermen, Mayor McClellan recommended that as soon as the money could be spared for the purpose, the city should undertake the construction of a great filtration plant for the Croton water supply. The estimated cost of this work is about $8,500,000.

Dr. George H. Fox Resigns. — At the monthly meeting of the trustees of Columbia University held Jan. 6, it was announced that Dr. George H. Fox had resigned his position as professor of dermatology, and that Dr. George T. Jackson, chief of clinic and instructor in dermatology, had been promoted to this chair.

Lack of Financial Support for Work against Tuberculosis. — It is announced that the committee on the prevention of tuberculosis of the Charity Organization Society has been obliged to discontinue its work on account of the lack of adequate financial support. Last year this work, which was undertaken as an experiment, was made possible by a fund of $20,000, which was contributed by eight citizens.

Sale of Patent Medicines. — It is in contemplation by a number of druggists to start in the near future a concerted movement to check and discourage the sale of patent and semi-patent medicines and bring about a wider use of the official drugs and preparations of the Pharmacopeia. This will be inaugurated with a mass meeting of the members of five of the largest pharmacists' societies in the city, the plans for which are being arranged by Charles F. Schleussner, secretary of the German Apothecaries' Society, who is the prime mover in the proposed campaign against secret remedies.

New Buildings on Blackwell's Island. — Commissioner Hebberd, of the Department of Public Charities, has had filed with the Building Department the plans for a group of new buildings on Blackwell's Island, consisting of a four-story pavilion for tuberculosis patients, with a roof garden, solarium and exterior verandas, to cost $180,000; a capacious building for the accommodation of the resident medical staff of the City Hospital and other island institutions, to cost $80,000; a hospital pavilion for the City Home for the Aged and Infirm, to cost $75,000; and a pathological laboratory for the last-named institution, to cost $40,000. This laboratory will be operated especially in connection with the medical institute recently endowed by Mrs. Russell Sage.

Obituaries.

ALBERT J. HOFFA, M.D.

On New Year's Day, Albert J. Hoffa, Professor of Orthopedic Surgery in the University of Berlin, died very suddenly.

The career of a famous and, in many ways, a really great man is thus ended. He had led a life of prodigious energy, marked by great accomplishments which fortunately had been recognized and had brought professional and personal success. Seldom has a man been able to attract to himself so many earnest workers, whose zeal he inspired and whose labors he directed, as has Hoffa. Admired by his colleagues, whom he never offended, his name has been for many years at the head of nearly every undertaking for the advancement of his specialty in Germany. Even a slight acquaintance with Professor Hoffa left the impression of more than a passing professional meeting and suggested the possibility of a friendship which so many men in Europe and not a few in America have enjoyed.

He was born at Richmond, Cape of Good Hope, South Africa, on March 31, 1859. After professional studies at Marburg and Freiburg he became active as assistant of Maas and Schoenborn in the surgical clinic of the Royal Julius Hospital in Würzburg. From 1886 to 1902 he conducted at Würzburg a private sanatorium for the practice of orthopedic surgery, medical gymnastics and massage, and after being an instructor gained the professorship in the University at Würtzburg, in 1897.

His early surgical investigations were in chemistry and bacteriology, but later almost entirely confined to orthopedic problems. His "Lehrbuch der orthopädische Chirurgie," translated into many languages, has run through five editions and is still an authoritative and valuable book. In addition to this his text-books on fractures, bandaging and massage are in general use in Europe. He was first to advise and demonstrate the possibility of the bloody operation for the replacement of congenital dislocation of the hip, later, however, inclining to the bloodless method.

Lateral curvature of the spine was a subject which absorbed much of his thought, and he was perhaps, next to Hessing, the most successful designer of apparatus for the correction of deformities and the restoration of function.

In orthopedic literature Hoffa's influence has been most far reaching. Since 1892 he had been editor in chief of the *Zeitschrift für orthopädische Chirurgie*, and in recent years has been the leading spirit in the collaboration of a complete list of the orthopedic literature of the world and in the establishment of a *Zentralblatt für Chirurgische und mechanische Orthopädie.* His monographs number over seventy. In 1903 he was called to the professorship of Orthopedic Surgery in Berlin, and was made Geh. Medizinalrath, which ranked him at once as the head of the orthopedic profession in Germany. Here he has been surrounded by many enthusiastic assistants, and an extremely large private clinic has come to him from all parts of the world. At our present writing the details of his death are unknown, but the sad fact remains that the medical world has lost one of its most energetic and able leaders.

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F. GORDON MORRILL, M.D.

In the death of Dr. F. Gordon Morrill the medical profession of Boston has lost one of its most valued members. Dr. Morrill was born sixty-six years ago, of good medical stock, for his father was in his day one of the most esteemed physicians of this city. The son, after his student days at Harvard College, received a commission in the United States navy, leaving Cambridge before the completion of his college course. He served as an ensign during the last six months of the Civil War on a blockading gunboat off the southern coast. Later he cruised with his vessel in the Mediterranean, and on the return of the squadron he resigned from the navy and took up his studies at the Harvard Medical School. After his graduation and his service as an interne at the Massachusetts General Hospital he studied for a short time in England and on the Continent, and on returning to America began the practice of his profession, where he won a ready and substantial success. He was soon appointed physician to the Out-Patient Department of the Massachusetts General Hospital and served for several years, but he resigned later, devoting his energies especially to the work as visiting physician at the Boston Children's Hospital, becoming a most influential member of the staff.

As an observer and diagnostician and therapeutist he displayed acumen, unusual intelligence and good judgment. A modest rather than a copious writer, his contributions to medical literature were characterized by great good sense trained by a wide experience.

His most noticeable service to the Children's Hospital was the early introduction of the diphtheria antitoxin in the treatment of diphtheria, and in establishing rules for the preventive use of antitoxin which have guarded the institution from the evils of frequent visitations of that hospital scourge. Since his efforts the hospital has been free from diphtheria, though formerly that infection was a constant visitor in the wards.

Endowed to an unusual degree with the many qualifications needed by a successful practitioner of medicine, Dr. Morrill in addition gave to his patients and friends the pleasure which comes from a pleasant, kindly spirit, flavored with a keen sense of humor and a warm human sympathy.

Many of our readers will recall Dr. Morrill's interesting letters to this journal from Egypt, where he had spent the winters for a number of years. He died Dec. 25 last at Assouan, Upper Egypt, shortly after his arrival there. He leaves a widow and two sons, one of whom follows his father's profession.

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ROBERT W. TAYLOR, M.D.

Dr. Robert W. Taylor, of New York, long recognized as an authority on genito-urinary and cutaneous diseases, died from Bright's disease on Jan. 5. He had not been confined to the house at all, and his death at this time was entirely unexpected. Dr. Taylor was sixty-five years of age, and a native of England. He was graduated from the College of Physicians and Surgeons in 1868, and early devoted himself to the special branches in which he became eminent. He held a number of hospital and dispensary appointments, and at the time of his death was consulting surgeon to the genito-urinary divisions of Bellevue Hospital and the City Hospital on Blackwell's Island, and consulting surgeon to the French Hospital. He attained pronounced success as a teacher, and for a number of years was Professor of Genito-Urinary Diseases in the College of Physicians and Surgeons, as well as Professor of Venereal and Skin Diseases in the University of Vermont. He was also a writer of prominence, making many noteworthy contributions to periodical medical literature. After the death of Prof. Freeman J. Bumstead he edited several editions of the latter's very popular work on the Pathology and Treatment of Venereal Diseases, and later the book, rewritten, was issued under Dr. Taylor's own name. He was a faithful worker in the various societies to which he belonged, and served as president of both the New York Dermatological Society and the American Dermatological Association. He took a prominent part in the Sixth International Dermatological Congress which was held in New York in September last, presenting valuable papers entitled, "The Dangers of Syphilitic Infection in Massage" and "A Contribution to Heredo-Syphilology." Another recent contribution of his was a very elaborate paper on the rôle of the gonococcus, which he read before the Medical Association of the Greater City of New York in May, 1907.

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Current Literature.

Medical Record.

Dec. 14, 1907.

1. *Abrams, A. *The Heart Reflex and the Mechanism of Angina Pectoris.*
2. Levin, I. *The Reactive Power of the White Rat to Tissue Implantation. A Preliminary Report.*
3. King, H. M. *Notes on Early Diagnosis of Pulmonary Tuberculosis.*
4. Chance, B. *On Coma and the Value of the Ocular Signs Observed Therein.*
5. Frank, P. *Experimental Arterial Degeneration.*
6. Richter, G. *The Art of Gargling.*
7. Roberts, D. *Gradual Anal Dilatation by a New Method.*

1. The heart reflex is a contraction of the myocardium of varying duration, brought on by reflex irritation. Irritation of the skin in the precordial region brings out this reflex, but it is also elicited by irritation of more remote regions, *e. g.*, of the nasal, esophageal, gastric and rectal mucosæ, by percussion of the muscles, vertebral concussion and by psychic irritations. That it is a true reflex is shown by the fact that it does not appear when the mucous membrane becomes anesthetic by cocain. This reflex is best observed by the x-ray. It is more manifest in the left than in the right ventricle. In some individuals it may be scarcely perceptible, while in others the heart's outlines may recede more than 2 cm. In persons with dilated hearts the reflex is especially evident and much more prolonged. As a rule the duration is over two minutes. When the reflex is in evidence, the heart is practically inhibited. Inasmuch as the factors precipitating a paroxysm of angina are equally operative in inducing the heart reflex, *viz.*, emotion, muscular exertion, etc., the writer is led to the ingenious conclusion of the connection between the two conditions. The coronary arteries in his theory are passive agents. The heart is inhibited and contracted; hence a claudication ensues which explains the symptoms.

[R. I. L.]

New York Medical Journal.

Dec. 14, 1907.

1. Atwood, C. E. *The Favorable Influence of Occupation in Certain Nervous Disorders.*
2. Pooley, T. R. *The Operations for the Artificial Maturation of the Immature Senile Cataract.*
3. Claiborne, J. H. *A New Procedure and Instrument for the Artificial Maturation of Cataract.*
4. Gordon, A. *The Third Anatomical Proof of the Value of the Paradoxical Reflex.*
5. Morrow, P. A. *Results of the Work Accomplished by the Society of Sanitary and Moral Prophylaxis.*
6. Uhle, A. A., and Mackinney, W. H. *The Technic and Diagnostic Value of Cystoscopy.*
7. Wallace, C. *Correction of the Deformity of Pott's Disease.*
8. Getty, S. E. *Ectopic Gestation, Diagnosis, and Indications for Treatment Previous to Fourth Month. History of Twenty-one Cases.*
9. Stimson, G. W. *Primary Nasal Diphtheria, with a Report of Several Cases, One in an Infant Ten Days Old.*

The Journal of the American Medical Association.

Dec. 14, 1907.

1. Herter, G. A. *Influence of Food and of Epithelial Atrophy on Manifestations of Saccharo-Butyrin Intestinal Putrefaction.* (Continued article.)
2. *Baldwin, E. R. *The Ophthalmo-Tuberculin Diagnostic Test. Some Clinical Observations.*
3. *Abt, I. A. *Urinary Infection in Children.*
4. Fairbanks, A. W. *Essential Insufficiency of the Heart in Childhood.*
5. Kelley, S. W. *Malformations of the Rectum and Imperforate Anus.*
6. Noble, C. P. *Cystocele.*
7. Gilliam, T. D. *A Simplified Cystocele Operation.*
8. *Proescher, F., and White, C. W. *The Staining Method for Spirochetes in Section.*
9. *White, C. W., and Proescher, F. *Experimental Lymphatic Spirillosis in Guinea Pigs.*
10. Shambaugh, G. E. *Some Important Surgical Relations of the Temporal Bone.*
11. Cullen, T. S. *Parasitic Uterine Myomata.*

2. Baldwin reports observations on the ophthalmo-tuberculin test in 137 cases. Of 54 cases known to be tuberculous, past or recent, only 2 were negative. One of these negative cases had miliary tuberculosis and was very sick, while the other was being treated with tuberculin. About one fourth of the cases suspected of tuberculosis and the same proportion of apparently healthy persons gave a positive reaction. Baldwin used a filtered sterile normal saline solution of tuberculin in two strengths, 0.5% and 1%. (He now advises 0.33% and 0.5% for his particular preparation.) By the use of a throttle pipette he placed a measured drop (0.025 cc.) of the weaker solution in one eye. If no reaction, forty-eight hours later a drop of the stronger solution was put into the same eye.

3. Abt considers infection of the bladder and renal pelvis as common in young infants, and frequently overlooked. The colon bacillus is nearly always the causal micro-organism. The writer believes that the infection in the majority of cases is an ascending one, the infective material being introduced into the bladder through the urethra. The fact that by far the largest number of infections occur in female children and that so many infants lie in soiled napkins, makes this manner of infection a most probable one. The symptoms are those of an infection. Pain in the region of kidneys or bladder is uncertain. The diagnosis is made from the urine. The duration is irregular. Urotropin seems to act very favorably.

8. Proescher and White report a new stain for spirochetes in sections, which they claim gives more rapid, clearer and more constant results than the silver-impregnation method. The tissue is hardened in alcohol or formalin, and either imbedded in paraffin and cut, or cut in frozen sections. The sections are stained for ten minutes in a 1% solution of saturated aqueous acid fuchsin in saturated aqueous picric acid, then differentiated in a 20% solution of picric acid in 96% alcohol for five to ten minutes, and then dried and mounted in the usual way. The spirochetes are stained red. The reticulum and fibrous tissue are also stained red, but can easily be differentiated. They controlled their results with the silver-impregnation method of Levaditi, and ruled out the possibility of elastic tissue by specific elastic tissue stains.

9. White and Proescher found spirochetes in enormous numbers in the glands of acute lymphatic leukemia, chronic lymphatic leukemia, pseudoleukemia or Hodgkins' disease, chronic benign lymphomatosis and lymphosarcomatosis (chloroma and myeloma). Consequently they suggest a new nomenclature based on etiology. These conditions would all be grouped under the general head of lymphatic spirillosis. They were able to demonstrate spirochetes in the enlarged glands of a guinea pig inoculated subcutaneously with portions of a gland from a case of lymphosarcomatosis. They transferred the infection from this guinea pig to others with production of an ulcer at the site of inoculation and enlarged glands. The writers promise further reports. Some rather poor illustrations accompany the article.

[R. I. L.]

Bulletin of the Johns Hopkins Hospital.
December, 1907.

1. Geraghty, J. T., and Others. *Comparative Surgery. Third Series of Reports.*
2. Churchman, J. W. *The Physician in the Paintings of Jan Steen.*
3. Hill, E. C. *Camp Life: Its Sphere of Usefulness and Its Beneficial Effects on Growing Boys.*

Annals of Surgery.
January, 1908.

1. *Mayo, W. J. *The Relation of the Mesocolic Band to Gastro-enterostomy.*
2. *Gurd, F. B., and Nelles, T. B. *Intracranial Abscess Due to the Typhoid Bacillus.*
3. Taylor, H. L. *Isolated Fracture of the Greater Tuberosity of the Humerus.*
4. Campbell, R. P. *A Contribution to the Diagnosis of Renal Tuberculosis.*
5. Torrance, G. *Excision of the Whole Left Lobe of the Liver for Sarcoma.*
6. *Bogart, A. H. *Splenectomy for Lacerated Spleen, after Blood Transfusion.*
7. *Fiske, E. H. *Splenectomy for Gunshot Wound of the Spleen.*
8. *Torrance, G. *Splenectomy in Banti's Disease, with Report of a Case.*
9. *Smith, M. A. *Splenectomy for Carcinoma.*
10. Dixon, C. H. *Gangrene of Appendix in a Three Weeks' Old Infant.*
11. Powers, C. A. *Primary Sarcoma of the Prostate.*
12. *Lydston, G. F. *A Systematic Operation for Penile Hypospadias and Other Defects of the Urethral Floor.*
13. *Downes, W. A. *Simple Fracture of the Carpal Scaphoid.*
14. Walker, J. B. *Observations on the Treatment of Fracture of the Neck of the Femur in One Hundred and Twelve Cases.*
15. *Heath, H. H., and Selby, C. D. *The Open Method in the Treatment of Pott's Fracture of the Leg.*
16. *Ross, G. G. *Punctured Fracture of the Skull.*

1. Emphasizing the advantage of posterior over anterior gastro-enterostomy, Mayo points out that sometimes the peritoneal reflection over the ligament of Treitz may extend down along the jejunum beyond the point where the latter has made its first turn to the right. In such cases, this reflection should be snipped back to the mesocolon before applying the gut to the posterior stomach wall; otherwise the anastomosis will be made, not with "no loop," as is desired, but with a sharp and short loop, which is even more liable to produce regurgitation of bile than the long loop of the anterior method.

2. Cerebral abscess, giving a pure typhoid culture, though rare, has been reported. The present case of hematogenous infection of a traumatic extradural blood clot, in a patient ill with typhoid fever, is believed to be unique. The abscess thus formed was opened by trephining, and found to contain typhoid bacilli identical with those from blood culture.

6, 7, 8, 9. The report of four new cases of splenectomy, two for trauma, one for Banti's disease, one for cancer, presents several points of interest. The immediate operative mortality of this series is 25%, the same as that shown in the table of previously reported splenectomies for Banti's disease. Apparently the operation itself is not serious, death being generally due to other and inevitable causes. It may be directly curative. There are likely to be postoperative disturbances of the blood, which, however, ultimately regains its cellular equilibrium. Extract of spleen and of red bone marrow are beneficial medications, and the patient may with advantage be fed on fresh spleens of the cow and sheep during convalescence. The splenectomy for carcinoma seems to be the fourth recorded in the literature. The cancer in this case was metastatic.

12. Lydston describes a method of operation for hypospadias essentially the reverse of Beck's. It is done in two steps. First the corpus spongiosum is dissected free, the liberated urethra allowed to slip back, an artificial meatus made at the peno-scrotal angle and the dissection wound closed. Three months later a new penile urethra is constructed with scrotal flaps, and connected with the original urethra at the artificial meatus. Lydston reports good results from this operation.

13. Downes calls attention to the relative frequency of unrecognized fracture of the carpal scaphoid. Usually due to a fall on the outstretched, extended hand, the injury is often mistaken for Colles's fracture or sprain of the wrist, which latter condition it closely simulates. The typical signs by which it ought to be diagnosed are: localized swelling on the radial and dorsal surfaces of the wrist; localized tenderness just below and dorsal to the radial styloid in the region of the "anatomical snuff-box"; extreme pain on extension of the hand; rarely crepitus. If possible, an x-ray of both hands should always be taken for confirmation and comparison. The treatment is reduction, if displacement exists, and immobilization. If accurate reduction is impossible, one or both fragments may be excised.

15. Heath and Selby affirm, but do not prove, that Pott's fracture is best treated by incision, with wiring of the internal malleolus; if fractured, replacement of the dislocated tibialis posticus tendon, and suture of the lacerated internal lateral ligament. They recommend such operation, however, only under the most favorable aseptic surroundings.

16. Reporting a punctured fracture of the great wing of the sphenoid, Ross emphasizes the importance of rhinoscopy in all cases of obscure injury about the face.

[R. M. G.]

British Medical Journal.
Dec. 21, 1907.

1. *McCaw, J. *On Tuberculosis in Childhood and Its Relation to Milk.*
2. *Watson, C. *Has a Purin-free Dietary Any Special Therapeutic Value?*
3. Thomson, H. C. *Clinical Lecture on a Case of Cerebral Tumor Associated with Subjective Sensations of Smell.*
4. Fowler, T. *Address on Medical Practitioners and Public Health.*
5. Jones, J. A. *A Plea for the Study of Bacteriology by the General Practitioner.*
6. Riley, J. W. *An Address on Cremation.*
7. Thompson, J. A. *Protection of India from Invasion by Plague.*
8. Carwardine, T. *Primary Sarcoma of the Vermiform Appendix.*
9. Fothergill, C. F. *Case of Septicemia with Interesting Reactions to Treatment, and Recovery.*
10. Miller, J. *Post-mortem Statistics of Middle-Ear Disease in Young Children.*
11. Porter, F. *Observations on Blood Films, with Special Reference to the Presence of Hemoconia.*

1. McCaw's article is an argument endeavoring to prove that bovine and human tuberculosis are distinct, and that a great majority of the localized tuberculosis conditions characteristic of that disease in childhood are due to the bovine variety. He quotes many figures from English hospitals. To protect children from this form of the disease he advises the notification of all births within twenty-four hours, complete control of the milk supply by the state, medical inspection of school children and school premises, housing reform, segregation of advanced cases and notification of the disease. On the whole, his article presents very little that is new.

2. Watson concludes from the results of dietary experiments on various patients suffering from so-called chronic rheumatism that there is no special therapeutic advantage to be gained in the purin-free diet. The benefit that is derived from such a régime in certain cases would be equally attained by the use of a carefully-planned system of feeding, framed without special reference to purin contents. In some cases the restriction in amount of animal protein food is of value, in others the diminution of the carbohydrates, and especially the sugars, is equally efficacious, and in still others the restriction of alcoholic liquors will suffice. Often complete relief from gouty and rheumatic symptoms is attained by measures directed to increase the functional activity of the liver, kidneys, skin, or thyroid gland. He believes that gout is not so much

a disturbance of purin metabolism as a perverted function of one or more organs of the body. [J. B. H.]

The Lancet.

Dec. 21, 1907.

1. **Ballance, C. A.** *Address on Some Experiences of Intracranial Surgery.*
2. **Hort, E. C.** *Note on Gastric Ecchymosis, Gastrostaxis, and Simple Gastric Ulcer. Their Possible Relations to Hemorrhagins and Mucolysins.*
3. **Mothersole, R. D.** *Three Cases of Intestinal Obstruction.*
4. *__Moynihan, B. G. A., and Moore, F. C.__ *Case of Complete Gastrectomy. Pathological Report.*
5. *__Eyre, J. W. H., Wedd, B. H., and Hertz, A. F.__ *The Tuberculin "Ophthalmo-Reaction" of Calmette.*
6. **Bushnell, F. G.** *Note of a Case of Bone Abscess Caused by an "Intermediate" Bacillus Allied to Bacillus Paratyphosus.*
7. **Irving, H.** *After-Treatment of Cases of Suprapubic Cystotomy; a New and Economical Method.*
8. **Gossage, A. M., and Bernstein, J. M.** *Case of Poisoning by Potassium Bichromate.*

4. Moynihan reports in detail a case of complete gastrectomy. The stomach held a little over 4 oz. of fluid. The diagnosis was made of hour-glass stomach with a very small cardiac complement. He gives the details of the operation and pathological findings, with photographs and skiagraphs of the stomach filled with bismuth. There was found to be an extensive fibrous hyperplasia commencing in and limited to the submucous coat and involving it almost exclusively in its proximal two thirds. Although in many ways resembling a chronic inflammatory condition, the presence of scanty proliferating epithelial elements showed that it was essentially of neoplastic origin, analogous to the so-called atrophic scirrhous type met with in the mammary gland.

5. Eyre and others report their experiences with the tuberculin ophthalmo-reaction. They tested 138 individuals, of which 63 gave a positive reaction. The majority of these were unquestionably tuberculous. They have not noted a definite reaction in any case in which the absence of tuberculosis has been conclusively proved. Two cases almost certainly tuberculous failed to give a reaction; one was a case of tuberculous periostitis of the orbit and the other a case of probable tuberculosis of the kidney. Of the 75 negative cases, 17 were adults apparently healthy, 12 were cases of a doubtful nature in which tuberculosis was a possibility, and 46 suffered from diseases other than tuberculosis. They describe Von Pirquet's original work on tuberculin vaccination, and then speak of the work in the eye, started by Calmette and others. They believe that in suspicious cases which at first fail to react, it is necessary to repeat the dose before definitely excluding tuberculosis. They present a table giving their results, with a very complete bibliography of the subject. On the whole, if this test is carefully carried out by experienced observers, they believe it is valuable in diagnosing tuberculosis. [J. B. H.]

The Edinburgh Medical Journal.

December, 1907.

1. *__Philip, R. W.__ *Certain Adaptations of Percussion in the Diagnosis and Prognosis of Respiratory Disease.*
2. **Turner, A. L.** *Mucocele of the Accessory Nasal Sinuses.*
3. **Haig, A.** *"Physiological Economy in Nutrition." Is Not a Different Explanation Possible?*
4. **Sutherland, H. G.** *A Case of Ropid Phthisis with Pulmonary Hypertrophic Osteo-Arthropathy in a Child of Six.*
5. **Miles, A.** *Résumé of Some Recent Foreign Literature on the Surgery of the Prostate.*

1. Philip presents an article on certain adaptations of percussion in the diagnosis and prognosis of respiratory disease. He first briefly describes the history of the art of percussion. He believes that it is a grave misconception to consider percussion as of slight importance in the early diagnosis of lung disease. Poor results are due in his opinion to want of refinement in the percussion method, and to lack of practice. The fact that during percussion of the lung the size of the organ can be changed and its boundaries altered is an important consideration which renders percussion of the lung more valuable than that of any other organ. Because of this, percussion serves not only to determine the size of the lung and the consistency of a given area, but it affords a most valuable physiological test of the functional activity of this organ. His method he calls "tidal percussion," to distinguish it from the ordinary procedure. It consists essentially in percussing alternately during expiration and full inspiration. This in the early diagnosis of tuberculosis is of value, not to determine the limits of areas of consolidation, because such areas are not present, but to determine the movements of a lung on a given side. He thinks that an area 1½ to 2 inches above the clavicle should be carefully outlined by percussion on each side and the boundaries of the two areas compared. His article presents in a somewhat different way the same idea which has been already emphasized by Krönig and other German writers, who show the value of outlining the apical boundaries and the so-called apical isthmus. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 45.

Nov. 7, 1907.

1. **Brentano, A.** *The Treatment of Hernia.* (Continued article.)
2. *__Martens, M.__ *The Operative Technic of Perforated Gastric Ulcer.*
3. **Wirsing.** *Ocular Affections from Lead Poisoning.*
4. **Alexander, A.** *Traumatic Liver Cirrhosis.*
5. **Haecker, R.** *Bilateral Rupture of the Quadriceps Muscle Near the Upper Margin of the Patella.*
6. **Alsberg, P.** *Hyperesthesia of the Skin in Gynecological Affections.*
7. **Frickenhaus, G.** *Are Modern Silver Preparations Free from Caustic Action?*
8. *__Buttersack, P.__ *Acute Poisoning with Oil Enemas.*

2. Martens states that statistics show that at the Berlin Charité Hospital, between the years 1857 and 1885, there were 25 cases of gastric ulcer perforation, and of these none were saved. Mikulicz, in 1880, was the first to attempt operative treatment. Martens' own cases consist of 10, of which 6 recovered. All these 10 cases entered the hospital with a diagnosis of appendicitis or peritonitis. The white counts varied from 30,000 four hours after perforation, to 3,400 forty hours afterwards. The longer the interval after perforation the lower the white count. In the operation Martens prefers not to excise the ulcer, but simply to suture over the perforation, covering the spot with a piece of omentum. A gastro-enterostomy or jejunostomy was not indicated in any of these cases. He flushes the abdomen copiously, using 20 to 30 liters of saline solution. As an important prophylactic measure he warns patients with gastric ulcer of the possibilities of a perforation, and advises them of the necesssity of promptly seeking hospital treatment on the first suspicion of this complication. He further suggests that the public be educated to pay more attention to abdominal pain, and to refrain from using castor oil, enemas and opium, which aggravate or mask acute abdominal conditions.

8. Buttersack reports a case of serious poisoning, accompanied by methemoglobinemia, occurring in a woman of thirty-three years, who was given an enema of 250 cc. of sesame oil for an attack of gallstone colic. This remedy had frequently been used before without any untoward consequences, but on the occasion in question the injection of the oil was promptly followed by symptoms of collapse, which were most grave at about the seventh hour and gradually subsided. The blood was chocolate-colored and gave the characteristic methemoglobin spectrum. The surface of the body was cyanotic and cold, especially the extremities. Urine passed ten hours after the enema contained blood cells and traces of albumin, but no hemoglobin was present. The treatment consisted of cardiac stimulants and oxygen. Examination of the oil showed that it was not oil of sesame, but a yellow paraffin oil. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 46.
Nov. 12, 1907.

1. *Bab, H. *The Bacteriology of Congenital Syphilis.*
2. *Mandelbaum, M. *A New Method of Staining the Spirocheta Pallida.*
3. *Schenk, E. *The Diagnostic Value of the Ophthalmo-Reaction in Tuberculosis.*
4. Francke, K. *Dilated Venules in the Skin (Gefässstreifen), a Diagnostic Sign of Beginning Tuberculosis.*
5. Lewandowsky, F. *A Case of Ulceration of the Skin Due to the B. Pyocyaneus.*
6. Hoffmann, R. *The Use of Pancreatin in Carcinoma.*
7. Van Oordt, M. *Habitual Subluxation and Rotation of the Fourth Cervical Vertebra.*
8. Vörner, H. *Early and Late Forms of Syphilitic Roseola.*
9. Hilgermann. *Pseudodysentery.*
10. Seiffert, G. *Quantitative and Qualitative Gas Estimations in Gas-forming Anaërobes.*
11. *Emmerich, R. *Pyocyanase in the Prophylaxis and Cure of Certain Infectious Diseases.* (Concluded.)
12. Grassmann. *Obituary on Josef Gossmann.*

1. Bab reports the clinical history, pathological and bacteriological findings in 5 cases of congenital lues. In all the spirocheta pallida was demonstrable. In one case it was not found in the organs, but in the ascitic fluid, which also contained syphilitic antibodies. In the other 4 cases the antigens were demonstrable in the organ extracts (liver and spleen), where the spirochetes were most numerous. He then reviews the observations made by himself in 50 cases of congenital syphilis. In 17 cases the antigen and spirochete contents agreed; in one the antigen was present, the spirochetes not demonstrable; in another case the reverse was true. Out of 25 other cases of undoubted syphilis the spirochetes were found in 20. In 5 none was found, nor was it possible to demonstrate the presence of an antigen in these 5 cases. It is practically certain that the spirocheta pallida and not its toxin is the active cause of congenital lues.

2. Mandelbaum has devised the following new method for staining the spirocheta pallida *in vivo*. A few drops of serum, from a moist papule, or chancre, or other moist specific lesion, is collected on a cover glass, and a hanging drop preparation is made. Then a drop of Loeffler's methylene blue is added to the serum, and then a very little $\frac{N}{10}$ sodium hydrate solution. When this preparation is examined with the oil immersion, the spirochetes are seen about the edge of the drop, as delicate light blue spirals with pointed ends; all other spirochetes stain very darkly by this method. The spiral form can be beautifully demonstrated. The author recommends this method of staining as having the following advantages: (1) It is much more rapid and simple than the Giemsa method; (2) the original form of the organism is retained; and (3) the movements of the organism are easily demonstrable.

3. Schenk has tried the ophthalmo-reaction in a considerable number of cases, divided into three series: (1) cases in which no doubt as to the diagnosis of tuberculosis was entertained; in this series of 28 cases the per cent of positive reactions was 79; (2) cases in which there was a suspicion of tuberculosis, 20 cases in all, with positive reactions in 30%; (3) cases in which the diagnosis of tuberculosis was clinically improbable, in all 52 cases, with a positive reaction in 6%. This last was somewhat larger than that of other observers on cases clinically not tuberculosis. The author describes his technic and the conjunctival reaction in some detail. He concludes that the ophthalmo-reaction is a great aid in early diagnosis, on account of its simplicity and harmlessness.

11. Pyocyanase is a bacteriolytic enzyme, which is developed in cultures of the B. pyocyaneus. It is obtained by filtering three-weeks-old bouillon cultures of this organism. It has been known for a long time that this substance killed cultures of many other bacteria rapidly and surely. The author first found that 1 cc. of pyocyanase solution would kill from 395,000,000 to 1,140,000,000 diphtheria bacilli in culture in from three to eight hours. Culture media covered with weak solutions of pyocyaneus, though frequently inoculated with diphtheria bacilli, remain sterile. Guinea pigs were injected with large doses of diphtheria bacilli, and then with 1 cc. pyocyanase; the control animals died, the animals treated with pyocyanase recovered. Pyocyanase has also a proteolytic action like trypsin, and digests the membrane of diphtheria readily. The same bacteriolytic action against streptococci and staphylococci has been demonstrated. Emmerich describes at length his method of administering pyocyanase in diphtheria, and his results. The solution is sprayed on to the membrane at frequent intervals. His results have been extremely satisfactory, especially in the "septic cases," in which there is a complication with streptococcus or staphylococcus infection. He appends a careful description of the cases treated by him. He concludes that in conjunction with antitoxin, pyocyanase is most valuable, and believes that the mortality will be further lowered by its use. [R. D.]

Berliner Klinische Wochenschrift. No. 46.
Nov. 18, 1907.

1. v. Dungern and Coca. *Specific Hemolysis of Blood Cells Treated with Osmium.*
2. Eichler, F. *The Adrenalin-like Action of the Serum of Nephrectomized Animals and of Nephritics.*
3. Michael and Beuttenmüller. *The Stokes-Adams Symptom-Complex.*
4. Michaelis, L. *Precipitin Reaction in Syphilis.*
5. *Rautenberg, E. *Auricular Pulsations Visible on the Outer Chest Wall.*
6. Meyer, L. F. *Abnormal Digestion of Cow's Milk by Infants.*
7. *Eltinger, W. *The Value of Cytoscopic Examination of Exudates and Transudates.*
8. Wohlberg. *Researches into the Value of Marmorek's Antituberculosis Serum.*
9. Gittermann. *Goiter and Heart Disease.*

5. Rautenberg reports the case of a fifteen-year-old girl, who had both mitral and aortic insufficiency, in which he was able to make out the pulsations of the auricles to right and left of the sternum. The author has been able to examine several such cases and take curves showing the auricular pulsations. Not only can the systolic expansion of the right side of the chest be demonstrated, but all the phases of the auricular pulse. In young people this may be the first sign of a triscuspid insufficiency, and as such is valuable in diagnosis.

7. Eltinger has examined in all 103 serous fluids (exudates and transudates) cytologically. The author does not agree with the statements of earlier observers, that endothelial cells are always present in the sediment of transudates. He does not believe that the nature of a serous fluid can be diagnosed by the characteristics of the sediment alone.

8. Gittermann reports his observations on 121 cases of goiter associated with myocardial disease. Eleven of these were cases of Basedow's disease, the others were goiters of long standing, in which cardiac symptoms had finally developed, usually a myocarditis, rarely a dilatation. In such cases, digitalis is practically of no value. He is inclined to classify such "thyro-cardiopathies" under the head of Basedow's disease. X-ray and Möbius' serum have had no success in such cases, but extremely good results were obtained by mild Nauheim bath treatment, combined with small doses of sodium iodide and electricity applied every two days to the thyroid. [R. D.]

Die Therapie der Gegenwart. No. 10.
October, 1907.

1. *Casper, L. *The Different Forms of Anuria, their Pathogenesis and Therapy.*
2. Gasis, D. *The Action of X-rays on Experimental Leucocytosis.*
3. Kothe, R. *The Treatment of Diffuse Peritonitis by Means of Permanent Salt Solution Enemata.*
4. v. Bardeleben, H. *The Treatment of the Clinical Forms of Endometritis.*

1. Casper reports 5 cases of anuria of different etiologies. The first was a new-born infant, who passed no urine for two days after birth. A marked phimosis with adhesions existed; after circumcision the bladder was catheterized and found to be empty, but a few hours after the operation the kidneys began to functionate normally. The author considers this case to be one of pure reflex anuria, due to the phimosis. The second was chronic nephritis, with anuria of four days' standing, and decapsulation of the kidneys was performed. After the operation the urinary function was resumed, and soon reached normal, the result of relieving the pressure on the kidneys by the contracted capsule. The operation is not curative, but will give relief in many cases of severe uremia. The third case was one of removal of the right kidney for abscess, and was performed before the days of catheterization of the ureters. Uremic symptoms developed with anuria lasting nine days, when death intervened. The left kidney was found full of miliary tubercles, and showed also a chronic interstitial nephritis. The author remarks that had the ureters been catheterized, no operation would have been performed. Case IV was a patient with great abdominal pain, at first considered as appendicitis, who developed anuria after admission to the hospital. X-ray showed no stone. Catheterization of the ureters revealed an obstruction in the left ureter, near the orifice. The diagnosis of stone in the ureter was made. The urinary function returned without operation, and without the stone being passed. The lesson to be learned from this case is that in anuria due to stone in one ureter, the function of the kidneys will return without operative interference. The fifth case, one of periodic anuria, lasting from five to ten days at a time, and coming on after nervous upsets in an hysterical subject. All other causes of anuria were carefully ruled out before the diagnosis was determined. On catheterization there was found a spasm of the ureters, and presumably of the blood vessels of the kidney, which would account for the anuria. The catheterization of the ureters always caused an immediate flow of urine, which was continuous till the next attack; diuretics and antispasmodics were of no avail.

[R. D.]

Deutsche Zeitschrift für Chirurgie. Bd. 88. Heft 4–6.

1. König, F. *Internal Derangement of the Knee-Joint, with Especial Reference to Dislocated Cartilage.*
2. Martina, A. *The End Results of Operative Treatment of Dislocated Cartilage in the Knee-Joint.*
3. Kothe, R. *Leucocytosis in Appendicitis.*
4. *Fricker, E. *The Results of Serum Therapy in Tetanus.*
5. Deetz, E. *Perforation of an Intestinal Diverticulum, Containing Gastric Mucosa.*
6. Schultz, O. E. *The Statistics of Gastro-enterostomy in Benign Disease of the Stomach.*
7. Mori, M. *Air-Containing Cysts (Pneumatosis Cystoides) in the Human Intestine.*
8. Ebner, A. *Rupture of the Intestine by Bursting.*
9. Kalb, O. *High Rupture of the Brachiol Plexus.*

4. From the results of 40 cases of tetanus, 18 of which were treated without serum, and 22 with serum, Fricker concludes that: (1) besides the length of the incubation period, and the virulence of the infection, the individual susceptibility to a quick and firm union between the toxin and the nervous system plays an important part in the prognosis; (2) early and severe difficulty in swallowing is an unfavorable sign; (3) cases with short incubation often die more slowly than those with a longer incubation; (4) serum injections seem to influence the course and outcome of the disease, but only when the whole of the infectious material has been removed; (5) therefore a thorough local treatment of the point of infection by excision, etc., must never be omitted; (6) serum injections should not replace the usual narcotics, such as chloral hydrate and morphia; (7) apparently, tetanus bacilli not infrequently are transported from the wound by way of the lymphatics to the neighboring glands.

[W. C. Q.]

Correspondence.

"LACK OF MENTAL AND MORAL TONE."

Northampton, Mass., Jan. 11, 1908.

Mr. Editor: "The scholarship man of to-day may be said to represent the student type as it existed some forty or fifty years ago, and is what the average student probably would be at the present time, but for the opportunities he has had for physical improvement.

"The average student of 1850-60 was characterized by a drooping head, with a pale face and dull sunken eyes, a flat chest and rounded shoulders, and with emaciated limbs, soft, flabby muscles and general lack of good physical, mental and moral tone."

I quote the above, as given in your last issue, and said to be part of an address, made at Columbia University by Dr. Sargent, as the head of physical training at Harvard.

My object is to inquire whether Dr. Sargent means that "mental and moral tone" were actually lacking in the "scholarship man" in 1850–60, or whether they appeared to be lacking as measured by external inspection. I could diagnose the "drooping head" and "rounded shoulders," but I have not noticed any marked absence of "mental and moral tone," as I have listened to or conversed with members of our profession, thus physically organized, at the various national conventions, where they have frequently read papers deserving of wide publication, because of their "mental and moral tone."

Very truly yours,
J. B. Learned, M.D.

REPORTS OF RECOVERIES FROM INOPERABLE OR RECURRENT CARCINOMA OF THE BREAST DESIRED.

Boston, Jan. 6, 1908.

Mr. Editor: Will you kindly insert the following in your Journal, giving it as prominent a place as possible?

The writer desires information regarding any alleged recoveries or cures of inoperable or recurrent carcinoma of the mammary gland.

If any case or cases are known to any one who reads this circular and can be authenticated by facts as to the history and condition prior to recovery and the length of time which has elapsed since recovery, such information will be much appreciated and duly acknowledged.

Any well-authenticated reports of recoveries from carcinoma located in other parts than the mammary gland will be welcomed.

Cancer paste cures, x-ray cures, radium cures, or cures as result of surgical operation are not wanted.

Hearsay cures are not wanted, unless accompanied by name and address of person who may give knowledge first hand.

Address,
Horace Packard, M.D.
470 Commonwealth Ave.,
Boston, Mass.

MILK INSPECTION.

Boston, Jan. 10, 1908.

Mr. Editor: In one of the daily papers, in the course of the week, appeared a complaint that some dirty milk is brought into the state from Maine, coupled with a wish that the United States food inspection might be made to cover this matter. Cannot the city or the state prevent the sale of milk coming from farms that are not satisfactorily inspected by its own officers? I believe that is the course taken by New York City at the present time. Our own inspectors would inspect according to our own standards. The principle of extra-territorial inspection may have to be adopted should we begin to import from Canada.

Truly yours,
Edward M. Buckingham, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 4, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	5	2
Chicago	—	—	Waltham	11	0
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	2	1
Baltimore	—	—	Brookline	6	—
Cleveland	—	—	North Adams	12	2
Buffalo	—	—	Chicopee	11	5
Pittsburg	—	—	Northampton	6	1
Cincinnati	—	—	Medford	5	1
Milwaukee	—	—	Beverly	10	—
Washington	—	—	Leominster	5	2
Providence	—	—	Hyde Park	4	0
Boston	228	58	Melrose	2	0
Worcester	60	17	Newburyport	—	—
Fall River	40	17	Woburn	6	—
Cambridge	27	9	Westfield	1	—
Lowell	46	14	Marlboro	8	1
Lynn	24	5	Revere	5	2
New Bedford	43	13	Attleboro	4	1
Springfield	43	4	Peabody	—	—
Lawrence	37	10	Adams	5	—
Somerville	22	4	Clinton	7	3
Brockton	26	5	Gardner	3	1
Holyoke	18	8	Milford	8	1
Malden	12	1	Watertown	5	1
Chelsea	13	1	Plymouth	—	—
Newton	9	1	Weymouth	3	1
Salem	14	—	Framingham	1	—
Haverhill	14	1	Southbridge	4	2
Fitchburg	—	—	Wakefield	—	—
Everett	15	4	Webster	—	—
Taunton	16	3	Arlington	—	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JAN. 1, 1908.

WILLIAMS, L. L., surgeon. Granted leave of absence for 10 days from Jan. 8, 1908. Dec. 30, 1907.

STONER, J. B., surgeon. Leave of absence granted Surgeon Stoner for 10 days from Dec. 13, 1907, amended to read 7 days only. Dec. 27, 1907.

SPRAGUE, E. K., passed assistant surgeon. Granted leave of absence for 7 days from Dec. 31, 1907. Dec. 27, 1907.

LAVINDER, C. H., passed assistant surgeon. Granted leave of absence for 1 month from Jan. 12, 1908. Dec. 27, 1907.

LUMSDEN, L. L., passed assistant surgeon. Granted leave of absence for 6 days from Dec. 24, 1907, under paragraph 191, Service Regulations.

FRANCIS, E., passed assistant surgeon. Granted leave of absence for 5 days from Dec. 31, 1907. Dec. 30, 1907.

ROBERTSON, H. McG., passed assistant surgeon. Granted extension of leave of absence for 10 days from Jan. 4, 1908. Dec. 31, 1907.

FROST, W. H., assistant surgeon. Granted leave of absence for 1 day. Dec. 25, 1907.

BROWNE, R. W., acting assistant surgeon. Granted leave of absence for 2 days from Dec. 23, 1907, under paragraph 210, Service Regulations.

FRICK, JOHN, acting assistant surgeon. Granted leave of absence for 5 days from Jan. 1, 1908. Dec. 30, 1907.

HOLLAND, D. J., acting assistant surgeon. Granted leave of absence for 3 days from Dec. 26, 1907, under paragraph 210, Service Regulations.

NUTE, A. J., acting assistant surgeon. Granted leave of absence for 9 days from Dec. 23, instead of 10 days from Dec. 21, 1907. Dec. 30, 1907.

STANTON, J. G., acting assistant surgeon. Granted leave of absence for 14 days on account of sickness, from Dec. 5, 1907. Dec. 27, 1907.

WATKINS, McD., acting assistant surgeon. Granted leave of absence for 2 days from Dec. 26, 1907.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JAN. 11, 1908.

L. C. JACOBSON, acting assistant surgeon. Appointed acting assistant surgeon from Jan. 3, 1908.

C. F. STOKES, surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to command the "Relief."

R. SPEAR, surgeon. Detached from the navy yard, League Island, Pa., and ordered to the "Relief."

M. W. BAKER, passed assistant surgeon. When discharged from treatment at the Naval Hospital, New York, N. Y., ordered home and granted sick leave for one month.

APPOINTMENT.

DR. H. L. BURRELL has been appointed John Homans Professor of Surgery at the Harvard Medical School.

RESIGNATION.

DR. JAMES U. BARNHILL, after being connected with the *Columbus Medical Journal* for fourteen years, has retired from the editorship.

SOCIETY NOTICES.

BOSTON SOCIETY OF EXAMINING PHYSICIANS AND SURGEONS. — The next meeting of the Boston Society of Examining Physicians and Surgeons will be held at Hotel Somerset, on Jan. 22, 1908, at 6 P.M., followed by a dinner at 7.45 P.M. Augustus S. Knight, M.D., Medical Director of the Metropolitan Life Insurance Company, will address the meeting on "The Duties of the Medical Examiner for Life Insurance." Prominent Medical Directors and Examiners of Boston and vicinity will be present and take part in the discussion.

ANNUAL MEETING OF THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — This meeting will be held at Hotel Nottingham, Thursday, Jan. 16, 1908. Business meeting at 6 P.M. Dinner at 6.30 P.M. Speakers: Dr. Helen C. Putnam, Providence, R. I.; Miss Bertha Hale, Roxbury, Mass.

BLANCHE A. DENIG, M.D., *Secretary.*

RECENT DEATH.

STEPHEN FRANKLIN POMEROY, M.D., M.M.S.S., died in Springfield, Jan. 12, 1908, aged eighty years.

BOOKS AND PAMPHLETS RECEIVED.

The Sleeping Canopy and the Need of Such Means of Ventilation. By Charles Denison, A.M., M.D. Reprint.

Peritoneal Tuberculosis. By Parker Syms, M.D. Reprint.

Cases Illustrating the Educational Treatment of the Psychoneuroses. By Morton Prince, M.D., and Isador Coriat, M.D. Reprint.

The Criminal Responsibility of Insane Persons. By Morton Prince, M.D. Reprint.

National Association for the Study and Prevention of Tuberculosis. Transactions of the Third Annual Meeting, Washington, D. C., May 6 to 8, 1907.

A Very Young Ovum in Situ. By Prof. G. Leopold. Authorized English Translation by W. H. Vogt, M.D. Illustrated. St. Louis: C. V. Mosby Co. 1907.

Light and X-Ray Treatment of Skin Diseases. By Malcolm Morris, F.R.C.S., Edin., and S. Ernest Dore, M.D., Cantab. Illustrated. Chicago: W. T. Keener & Co. 1907.

International Clinics. A Quarterly of Illustrated Clinical Lectures, and Especially Prepared Original Articles. Edited by W. T. Longcope, M.D., and Others. Vol. iv, seventeenth series, 1907. Illustrated. Philadelphia and London: J. B. Lippincott Co. 1907.

Pathology, General and Special. For Students of Medicine. By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H. Second edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1907.

Stasis Hyperemia or the Bier Treatment of Acute Inflammations and Septic Wounds of the Extremities. By W. P. McIntosh, M.D. Reprint.

Traitement de la Tuberculose par la Paratoxine basé sur l'Action Antitoxique du Foie. Par E. Gérard et G. Lemoine. Paris: Vigot Frères. 1907.

The Correction of Featural Imperfections. By Charles C. Miller, M.D. Illustrated. Chicago: Oak Printing Co. 1907.

Vacation Memoirs. 1907. By Flavel B. Tiffany.

Studies from the Bender Hygienic Laboratory, Albany, N. Y. Reprints. Vol. iv. 1907.

Original Articles.

THE SIGNIFICANCE OF POST-OPERATIVE ACETONURIA.

BY ERNEST BOYEN YOUNG, M.D.,
First Assistant Visiting Physician for Diseases of Women, Boston City Hospital; Assistant in Gynecology, Harvard Medical School,
AND
JOHN T. WILLIAMS, M.D., BOSTON,
Formerly House Surgeon for Diseases of Women at the Boston City Hospital.

Considerable literature has appeared during the past few years upon the subject of acetone poisoning, both in connection with surgical procedures and other conditions not associated with operation or injury. It is the purpose of this paper to deal with the latter conditions only in so far as they may have a bearing upon the former.

The following observations were made on adult women, house patients on the gynecological service of the Boston City Hospital.

It had been the custom for several years to examine, for acetone, the urine of those whose convalescence from laparotomy was in any way disturbed. This was found with varying frequency; but, unfortunately, no record had been kept. It was, therefore, decided to institute a systematic examination of the urine before and after operation.

The test used was as follows: To 5 cc. of urine in a test tube, made acid with a few drops of glacial acetic acid, a crystal of sodium nitroprusside was added. A few cubic centimeters of ammonium hydrate were then poured carefully down the side of the tube so that it should not mix with the urine. In the presence of acetone a purple ring formed at the zone between the two solutions.

The urine, drawn by catheter just before ether was started, was examined in each case, and also a second specimen drawn twelve to eighteen hours after operation. When acetone was present, the test was repeated every other day until it disappeared.

These examinations were at first made only in relation to abdominal sections and the patients were, with few exceptions, subjected to a period of from three to seven days of careful preparation. Out of 52 cases only 2, or about 3.8%, had acetonuria before operation; while following laparotomy, acetone was found in the urine of 27 or about 52%. The reaction lasted in different cases from two to eight days.

Of the two cases whose urine contained acetone before operation, one was a colored girl, fifteen years of age, who was operated upon for adhesions following an acute attack of pelvic inflammation. The operation was short and the convalescence excellent. The other was a woman of twenty-seven, who entered the hospital in very poor physical condition. A double salpingectomy was performed for pyo-salpinx. Her convalescence was much prolonged, with rapid pulse, elevation of temperature, vomiting and some mental somnolence, without any abdominal distention or spasm. She ultimately recovered.

Out of the 52 laparotomies 5 died, and of these 4 had acetonuria, as follows:

Case I. Bilateral salpingectomy for salpingitis. Death from pulmonary embolus.

Case II. Hysterectomy for carcinoma. Death on the seventh day from shock and exhaustion.

Case III. Bilateral salpingectomy for salpingitis. Death from shock.

Case IV. Unilateral salpingectomy for salpingitis. Death from general peritonitis.

Of the above cases the only one in which there was any doubt as to the cause of death was the second. This was a woman of thirty-seven, with an early carcinoma of the cervix, upon whom a complete hysterectomy was performed. The patient was in very poor general condition and did not stand operation well. She ran a moderately elevated pulse and temperature and vomited a great deal. There was some improvement on the fourth day, pulse and temperature falling nearly to normal, but on the next day the pulse again started to rise and vomiting increased. The patient's condition steadily failed. Her temperature again became elevated and she died on the seventh day. A complete autopsy showed no anatomical cause for death. It would seem that this death could be accounted for only upon the theory of shock and exhaustion.

A careful record was kept of the amount of vomiting by these patients. It was found that in general there was more vomiting in the series of cases where there was acetonuria. On the other hand, in four cases in which there was practically no vomiting, acetone was found in the urine.

Six patients had considerable and prolonged vomiting. Of these, one had no acetonuria at any period of convalescence. Two had none eighteen hours after operation, but a reaction developed on the third day. The other three had acetonuria from the start: two until the fifth; the third until the seventh day. In these cases the reaction became more pronounced on the third than on the first day.

It was observed that in those cases where the vomiting was most prolonged the acetone reaction was present the greatest length of time, and that in the two cases in which it did not appear until the third day, the vomiting did not become excessive during the first twenty-four hours, but began to give trouble on the second day.

It is of interest that one of the above-mentioned patients, who developed acetonuria on the third day, had been curetted under ether two weeks previously, after which acetone was found in the urine on the first day, but there was no disturbance of convalescence.

The urines of a series of patients who had had some minor operation (curettage, trachelorrhaphy, perineorrhaphy or vaginal section) performed were then examined for acetone. Unfortunately, many of these were emergencies, so that no test was made previous to operation. Out of 54 case , acetonuria was present in 14, or about 26%. No one of these was troubled with vomiting or any other disturbance of convalescence.

It was then decided to test for acetone in the urine of all patients on entrance to the hospital, which was found in 26 out of a series of 70 cases, or in about 37%.

It was present in 1 and absent in 1 case of carcinoma of the uterus; present in 2 cases of eclampsia; in 1 out of 3 of fibroids of the uterus; in a case of gastritis; in 2 cases of hyperemesis gravidarum; in 1 out of 7 admitted for lacerations of the cervix and perineum; in 6 out of 14 miscarriages; in 3 of 4 cases of puerperal septicemia; in 6 of 23 cases of salpingitis; in 1 of 4 entering for retroversion. It was present and absent once each in 2 cases of normal pregnancy and normal puerperium. It was absent in the single case of extra-uterine pregnancy, phlebitis and pyelitis.

The duration of acetonuria varied from forty-eight hours in the majority of the cases to ten days and two weeks in the two cases of hyperemesis gravidarum.

Of these patients, 16 had subsequent laparotomies. In all but 2, previously mentioned, the acetone had disappeared before the time of operation. In 2 others there was acetonuria on entrance and again after operation. In 2 a reaction was present on entrance, but not after laparotomy. In one of these, however, there was considerable vomiting, with rapid pulse and slightly elevated temperature, but terminating in recovery. In 4 there was a reaction after operation, but not on entrance; and in the remaining 6, no acteone was found either on entrance or after operation.

It is seen that acetonuria occurred most frequently in those cases where there was more or less disturbance of metabolism, notably puerperal sepsis, hyperemesis gravidarum, miscarriages (many of which were septic), carcinoma and eclampisa. And in those patients who may be supposed to have suffered from no disturbance of metabolism, namely: those admitted for lacerations of the cervix and perineum, retroversion fibroid of the uterus, and extra-uterine pregnancy, it was found most infrequently.

Acetone was first recognized in the urine of diabetics by Petters in 1857. Soon afterward Kaulisch described the clinical picture of so-called acetonemia.

It may be stated that it is now generally admitted that the toxic agent, if any, is not acetone itself. The researches of v. Jaksch, F. Müller, Kausmaul, Frerichs, Schwarz, Joslin, and Brackett, Stone and Low have shown that acetone may be exhibited in large quantities without harmful effects and may be present in excess in the blood without producing marked symptoms or anatomical lesions.

This leaves only the theory of Naunwyn that the clinical picture of acetonemia so-called, is the result of an acid intoxication with diacetic and β-oxybutyric acids, the supposed antecedents of acetone in the process of metabolic decomposition.

As to the origin of acetone, Schwarz believed it to be derived from the fats and possibly carbohydrates, but Waldvogel claims the fats alone as its antecedents. The most recent views are probably expressed by McLeod, who says, referring to the group of acetone bodies: "At present it is uncertain whether fat is alone their source, or whether they may not be the products of a synthetical process."

Becker, in 1894, reported three cases of coma following operations on diabetics in which there was acetonuria. He then conducted a series of observations on the effects of anesthetics on healthy patients. He found that acetone was usually present in the urine, even of healthy patients, after anesthesia, and found that acetonuria occurred without reference to kind of disease or operation, length of narcosis, sex, or age in the adult. He found, however, that children were much more susceptible.

Brewer, in 1902, reported a case of "Fatal Acetonemia Following an Operation for Acute Appendicitis," in which, after the temperature and pulse had dropped to normal, violent mental symptoms appeared, delirium followed by coma, rapid pulse and elevation of temperature on the third night, terminating in death thirty-two hours later. Acetone was present in the urine. Unfortunately there was no autopsy.

Guthrie reported several cases of "Delayed Chloroform Poisoning" in which the only lesion found at autopsy was a fatty liver. He supposed the symptoms described to be the result of poisoning by products which should have been taken care of by the liver under normal circumstances, but that owing to the inability of the liver to functionate properly, they were retained in the system.

Stiles and McDonald suggested that acetonuria was the result of the decomposition of fats in the process of fatty degeneration resulting from chloroform poisoning, and that the symptoms of chloroform poisoning were those of a toxemia produced by some of the antecedents of acetone in the process of the breaking up of the fats.

Brackett, Stone and Low, in 1904, reported a series of cases of persistent vomiting in children. Associated with this was collapse, weak and rapid pulse, absence of fever until just before death, cyanosis, and, in the fatal cases, extreme dyspnea. There was also apathy and stupor, alternating at first with periods of restlessness, but in the fatal cases gradually deepening into coma and death. The odor of acetone was recognized on the breath and its presence detected in the urine.

These conditions were observed not only after operation, but in several cases before any operative procedure had been attempted. They believed them to be the result of an acid intoxication. Out of 14 cases there were five deaths, in which autopsy showed practically nothing except some fatty changes.

Their cases were largely those of infantile paralysis, and they suggested the possibility of muscular atrophy being a factor. These patients were in a weakened condition from a chronic wasting disease and made more susceptible to slight changes of conditions. The demand for increased energy could be met only by a breaking up of the stored-up fats into nutritive and at the same time toxic products.

Kelly, in 1905, reported observations upon 400 cases, of which acetonuria was present in 46. In 17 of these it was present on entrance and in 12 it was not found on entrance, but developed after anesthesia. In 17 others it was not present at entrance, but developed without anesthesia.

He suggested that increased intracranial pressure might be a factor in the production of the symptom complex of so-called acid intoxication.

Hubbard, the same year, reported observations on 145 patients, of whom 13 had acetonuria. Of these, 3 showed some symptoms of acetone poisoning, chiefly vomiting. Two other cases were fatal, one of appendix abscess, the other of acute osteomyelitis.

Beesly, in a series of observations on 200 children, from four to twelve years of age, found that acetone was always present in the urine after operation, to a greater or less extent.

He classified acetonuria as acute and chronic, and stated that in perfectly healthy children, whose urine before anesthesia contained no acetone, or only a slight trace, that there was no disturbance of convalescence.

Under chronic acetonuria he classified those cases whose urine before anesthesia contained acetone and who suffered from some chronic constitutional disturbance. In these cases he stated there was usually no disturbance of convalescence, or slight disturbance terminating in recovery.

Under acute acetonuria he classed those cases of acetonuria preceding anesthesia in which the patient was suffering from some acute infectious process. In these he claimed that the acetone was, as a rule, excreted and did no harm unless an anesthetic was given, in which case the resulting irritation of the kidney interfered with excretion of the acetone and caused poisoning in this manner.

Longo has lately reported observations on 102 cases, in which he found acetonuria in 11 before and 86 after operation. He states that the acetonuria is transient, and concludes that it is caused by both the anesthesia and the traumatism of operation.

Ladd and Osgood have recently advocated the use of a plain pad of gauze for the administration of ether rather than a cone, claiming a great decrease in the percentage of acetonuria under this method. In their opinion, the patients struggled less, vomited less, and came out of ether more quickly when etherized in this manner.

They give the percentage of acetonuria where the metal cone is used as 88½% as against 26% under the use of the gauze method. In a smaller number of cases we have obtained somewhat similar results; our figures, for laparotomies only, being, acetonuria in 75% of patients etherized with a cone, and 47¾% of those in which the gauze method was used.

Although our figures are nearly twice theirs for acetonuria following gauze etherization, this is probably accounted for by the fact that our cases were all laparotomies, in whom the depth of anesthesia and digestive disturbance were greater; while their series included operations of every description.

In considering the causes of acetonuria, we shall infer from the presence of acetone in the urine its presence in the blood as well, together with its supposed antecedents, diacetic and β-oxybutyric acids.

It is readily seen that it is usually associated with some disturbance of metabolism of greater or less degree. This is shown in our series of cases, and is borne out by the observations of Beesly. Kelly gives the following list of conditions in which acetonuria has been reported: late stages of diabetes; starvation; malignant growths; digestive disturbances; septic processes, general or local; infectious fevers; pregnancy with dead fetus; in certain psychoses; auto-intoxication; chronic morphinism; phosphorus poisoning, following anesthesia; injuries to cerebrospinal system; shock due to injury; cases associated with fatty liver and uremia. It is observed that in every one of these conditions there is a disturbance of metabolism.

Acetonuria is much more common in children than adults. In children metabolism is much more active. The child has not only to replace the amount of tissue used up each day, but also to provide for growth. It is natural, then, that children should be more susceptible to changes of metabolism, and therefore that acetonuria resulting from disturbed metabolism should be more common in them.

Lorenz, Guinon, Morse and others have called attention to the association of acetonuria with gastro-intestinal disturbances in childhood. It has been stated that the duration of acetonuria in the majority of our cases was forty-eight hours or less after entrance to the hospital. Now the chief change in a patient's condition on entrance to the hospital is the regulation of bowels and diet.

The relation of acetonuria to disturbances of the gastro-intestinal tract is still further established by the high percentage of acetonuria after abdominal operations as contrasted with others, some of which were plastics in which the duration of anesthesia was greater than in many laparotomies. It was also noted that the occurrence and duration of acetonuria usually, although not constantly, bore some relation to the occurrence and duration of the vomiting.

It has already been shown that acetonuria, and by this we infer acetonemia and acidemia also, occurs in a great variety of disturbances of metabolism; yet, excluding diabetes, the reported cases of poisoning, with few exceptions, have been only after the use of anesthetics. Now, if the symptoms described are really the result of acid intoxication, why do they not occur more frequently without the administration of an anesthetic? This question has been answered in part by Beesly, who said the poisoning followed diminished excretion as a result of renal irritation. But his own observations have shown that there is an increased and not a decreased amount of acetone excreted after anesthesia. And how are we to explain those cases in which it has been reported without operation? There has been no evidence introduced of any diminution of excretion in these cases.

The question, then, arises, How are we to explain the symptoms reported,— rapid and feeble pulse, collapse, vomiting, delirium and unconsciousness? If we examine the reported cases we find that Brewer's case was acute appendicitis; that Beesly's fatal cases were all of acute appendicitis; that of Hubbard's two fatal cases, one was of acute appendicitis, the other acute osteomyelitis, all of which are septic conditions. We have also shown that acetonuria is a frequent accompaniment of sepsis. Cannot all the symptoms be explained by a general septicemia or a septic absorption?

When we open and drain any abscess, we invariably get some bleeding. This means that an avenue has been opened for micro-organisms to pass directly into the blood stream through the openings in the wounded vessels; or, if not micro-organisms themselves, it gives opportunity for increased absorption of their toxins. The wall of leucocytes about the abscess cavity is broken down for a time, and there is renewed bacterial activity in the walls of the abscess with increased formation and absorption of toxins. As a result of this, a disturbance of metabolism is produced, which causes the symptoms described and at the same time results in an increased production of acetone, and therefore an increased excretion.

The diminished amount of vomiting and the decreased frequency of acetonuria under "gauze ether," as compared with administration by a cone, is to be explained by the decreased disturbance of metabolism under this method. Under the gauze method the patient gets a greater supply of oxygen and his metabolism is disturbed by the anesthetic only. Asphyxia is no longer a factor.

CONCLUSIONS.

1. That acetonuria is a common accompaniment of a large number of pathological conditions.
2. That in these conditions it is the result of disturbances of metabolism.
3. That the occurrence of acetonuria seems to bear especial relation to disturbances of the gastro-enteric tract.
4. That possibly many of the cases of reported acetonemia following operation were the results of other diseases, especially sepsis.
5. That the formation and excretion of acetone, and probably also of its supposed antecedents, diacetic acid, β-oxybutyric acid, etc., following operation, is the result of altered metabolism and, in the adult at least, not the cause of any constitutional disturbance.

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EXTRACTS FROM DR. ALEXANDER HAMILTON'S ITINERARIUM OF 1744.

COMMUNICATED BY A. JACOBI, M.D., LL.D., NEW YORK.

Mr. William K. Bixby, of St. Louis, has for a number of years performed meritorious tasks in unearthing old manuscripts and printing them for private distribution. They are all of great historical interest. Of that one which is extracted below, he reports: "It was purchased by the present owner from Messrs. B. F. Stevens & Brown, of 4 Trafalgar Square, London. They purchased it from Frank T. Sabin, of 116 Shaftesbury Avenue, London, who states: 'The manuscript remained in the possession of the family of the Italian gentleman to whom it was dedicated and to whom it was originally given, until within a few years. It then passed into the hands of an Italian book-seller, from whom I purchased it.'"

Mr. Bixby adds in his brief and modest preface: "The present owner of the manuscript prints it for private distribution, believing that an unpublished manuscript of this period will be of interest to the parties to whom he sends it."

The titlepage of the book reads as follows:

Hamilton's
Itinerarium
being a
Narrative of a Journey
From Annapolis, Maryland
Through Delaware, Pennsylvania, New York
New Jersey, Connecticut, Rhode Island,
Massachusetts and New Hampshire
From May to September, 1744
by
Doctor Alexander Hamilton
Edited by
Albert Bushnell Hart, LL.D.
Professor of History in Harvard University
printed only for private distribution
By William K. Bixby
Saint Louis, Missouri, MCMVII

Another page contains a dedication:

> "Amico suo honorando, divinitissimo domino Onorio Razolini, manuscriptum hocce Itenerarium, observantiæ et amoris sui qualecumque symbolum, dat consecratque
> "Alexander Hamilton."

An introduction, crisp and brilliant, is furnished by Albert Bushnell Hart, professor of history in Harvard University. Pages xiv and xv contain the following remarks:

"Hamilton is always interested in science, or what was then taken for science. He talks with a 'virtuoso in botany'; he looks in vain for the ginseng plant; he criticises a *Treatise on Microscopes*, and shows some knowledge of mathematics; he talks philosophy and disputes on the theory of the tides at Todd's Tavern in New York. Like other scientific men he has a low opinion of the science which he hears in a Boston sermon; but he greatly appreciates a 'sun microscope.' On all such subjects his point of view is that of an intelligent, well-read, and thoughtful man.

"Throughout the journey Hamilton found himself at home among the doctors, and the 'Itinerarium' throws an interesting light upon the conditions of the art of healing nearly two centuries ago. Besides his previous acquaintances in the profession, he started out with letters of introduction to several distinguished physicians, and was by them recommended to others. Among them was the eminent Dr. Phineas Bond, of Philadelphia, who showed him 'some pretty good anatomical preparations'; Dr. Colquhoun, of New York; Dr. Moffatt, of Newport; Dr. William Douglass and Dr. Clark, of Boston; Dr. Goddard, of New London. Much conversation is recorded on the controversy between the 'empirical' and the 'clinical' schools, including hot discussions of the authority of Boerhaave and his works. He notes several doctors who combined with the medical profession that of the ministry.

"The allusions to the theory of medicine are, however, few. People catch ague from being out late nights, and the appropriate remedy is 'the force of a vomit.' On the whole, Hamilton finds his profession in a low state. 'The doctors in Albany are mostly Dutch, all Empirics, having no knowledge or learning but what they have acquired by their experience — a great many of them take the care of a family for the value of a Dutch dollar a year, which makes the practice of physick a mean thing, and unworthy of the application of a gentleman. The doctors here are all barbers.' Many of the doctors whom he meets, especially in New York, are drunken roisterers; and many others are palpable quacks, such as the 'greasy thumbed fellow,' whom he saw pull out a housemaid's tooth with a 'great clumsy pair of blacksmith's forceps.' Hamilton follows a safe middle course and anticipates modern surgery by saying: 'For my part I know of no way of curing cancer but by extirpation or cutting it out.'

"Although a doctor among doctors, Hamilton was more interested in men and manners than in medicine; and a special merit of the 'Itinerarium' is the light shed upon the social life of the time by an intelligent observer admitted to the best society of the places that he visited, and at the same time taking note of the life of the plain people among whom he passed."

Pages xxv, xxvi and xxvii.

In the original minutes of the proceedings, now in the possession of the Maryland Historical Society, Baltimore, Md., of the Tuesday Club, which was founded by Dr. Hamilton and died with him, there are the following entries:

"Dr. Alexander Hamilton was born in Scotland in 1712. He came to America and settled in Annapolis, Province of Maryland. He was a cousin of Dr. R. Hamilton, Professor of Anatomy and Botany in the University of Glasgow.

"He organized in 1745, with Jonas Green, Esq., the editor of the *Maryland Gazette*, the Tuesday Club, of Annapolis, Md., of which he was the secretary and orator, as well as the 'life and soul,' during its ten years of existence.

"He was the preceptor of Dr. Thomas Bond, of Calvert County, Md., who projected, incorporated and organized the Pennsylvania Hospital, Philadelphia, which was opened in 1752. He died May 11, 1755, forty-four years old."

The *Maryland Gazette*, Annapolis, Thursday, May 13, 1756, contains a brief eulogy.

EXTRACTS.

Pages 124, 125. *Newport:*

"I went with Dr. Moffatt[1] in the evening to Dr. Keith's, countryman and acquaintance, where we spent the evening very agreeably in the company of one Dr. Brett,[2] a very facetious old man. I soon found that Keith passed for a man of great gallantry here, being frequently visited by the young ladies in town, who are generally very airy and frolicsome. He showed me a drawer full of the trophies, which he called his cabinet of curiosities. They consisted of torn fans, fragments of gloves, whims, snuffboxes, girdles, apron-strings, laced shoes and shoe-heels, pin-cushions, hussifs, and a good deal of other such trumpery. I lay this night at Dr. Moffatt's lodging.

"*Tuesday, July 17.* — I breakfasted with Dr. Moffatt, and had recommendatory letters of him to some of the fraternity in Boston. I went with the Doctor about ten o'clock to see a house about half a mile out of town, built lately by one Captain Mallbone,[3] a substantial trader there. It is the largest and most magnificent dwelling-house I have seen in America. It is built entirely of hewn stone of a reddish color, the sides of the windows and corner-stones of the house being painted like white marble. It is three stories high, and the rooms are spacious and magnificent. There is a large lanthern or cupola on the roof, which is covered with sheet lead. The whole staircase, which is very spacious and large, is done with mahogany wood. The house makes a grand show at a distance, but it is not extraordinary for the architecture, being a clumsy Dutch model. Round it are pretty gardens and terraces, with canals and basins for water, from whence you have a delightful view of the town and harbour of Newport, with the shipping lying there."

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[1] Probably the Dr. Thomas Moffatt whose property was attacked by rioters at Newport in 1765.

[2] Dr. John Brett came from Leyden to Newport in 1740.

[3] N. B. Captain Godfrey Malbone, partner with Hopkins in the ownership of a number of vessels.

Page 132. *Boston.*

"I encountered Captain Wendall, who pointed out Dr. Douglass[4] and Mr. Arbuthnot[5] to me, to whom I delivered letters."

Pages 132, 133.

"I was invited to dine with Captain Irvin upon salt codfish, which here is a common Saturday dinner, being elegantly dressed with a sauce of butter and eggs. In our company here was one Captain Petty, a very hard-favored man, a Scotsman by birth, humpbacked, and the tallest humpy ever I saw, being six feet high at least. There was one Perkins, a little round-faced man, a trader, in the place. The discourse turned chiefly upon commerce and trade, and thro the whole of it I could discover a vein of that subtlety and acuteness so peculiar to a New England genius. Mr. Arbuthnot and I had some disputes concerning some particular High Church maxims, but as I looked upon the promoters and favorers of these doctrines to be every whit as absurd and silly as the doctrines themselves, and adapted only for weak people, so I thought all argumentation was thrown away upon them, and therefore I dropped the dispute, for, as I was a stranger, I cared not for the sake of such damned trifles, to procure the odium or ill-will of any person in the place. After dinner I went home and slept till the evening, the weather being pretty hot, and I having drunk too much wine, it made me heavy."

Page 134.

"After dinner I went to the English chapel with Mr. Lechmere, and heard a small organ played by an indifferent organist. A certain pedantic Irishman preached to us, who had much of the brogue. He gave us rather a philosophical lecture than a sermon, and seemed to be one of those conceited prigs who are fond of spreading out to its full extent all that superficial physical knowledge which they have acquired more by hearsay than by application or study; but of all places the pulpit is the most improper for the ostentatious of this sort; the language and phraseology of which sacred *rostrum* ought to be as plain to the ploughman as the scholar. We had a load of impertinence from him about the specific gravity of air and water, the exhalation of vapours, the expansion and condensation of clouds, the operation of distillation, and the chemistry of nature. In fine it was but a very puerile physical lecture, and not sermon at all.

"There sat some Indians in a pew near me who stank so that they had almost made me turn up my dinner. They made a profound reverence to the parson when he finished; the men bowed, and the squaws curtsied."

FANEUIL HALL.

Page 135:

"We next viewed the new market-house,[6] an elegant building of brick, with a cupola on the top, in length about 130 feet, in breadth betwixt 40 and 50. This was built at the proper expense of one Funell,[7] a substantial merchant of this place, lately dead, and presented by him to the public. It is called by the name of Funell Hall, and stands near a little inlet of water, called the Town dock,[8] over which, a little below the market-house, is a wooden drawbridge that turns upon hinges that small vessels may pass and lie above it. In low tides this inlet is a very stinking puddle."

Page 140:

"THURSDAY, July 26th. This day at Withered's I met with Dr. Clerk,[9] to whom I delivered a letter. He invited me to the Physical Club at the Sun Tavern upon Friday evening."

Page 142:

"At night I went to the Physical Club, at the Sun Tavern, according to appointment, where we drank punch, smoaked tobacco, and talked of sundry physical matters.

"Douglass, the physician here, is a man of good learning, but mischievously given to criticism, and the most compleat snarler ever I knew. He is loath to allow learning, merit, or a character to anybody. He is of the clinical class of physicians, and laughs at all theory and practice founded upon it, looking upon empiricism or bare experience as the only firm basis upon which practice ought to be founded. He has got here about him a set of disciples, who greedily draw in his doctrines, and being but half learned themselves have not wit enough to discover the foibles and mistakes of their preceptor. This man I esteem a notorious physical heretic, capable to corrupt and vitiate the practice of the place by spreading his erroneous doctrine among his shallow brethren."

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[4] Dr. William Douglass, born in Scotland, 1691; came to Boston, 1718; opposed inoculation for smallpox; printed an almanac, "Mercurius Novanglicanus," 1743–44, wrote a treatise on smallpox and other medical works; chiefly renowned for his "Summary, Historical and Political, of the British Settlements in North America," in two volumes, published in Boston, 1747–50, republished in London, 1755, a work which, though diffuse and disordered, is one of the standard sources on the period.

(N. B. One of the best writings of William Douglass is not mentioned here. It is "The Practical History of a New Epidemical Eruptive Miliary Fever with an Angina Ulcusculosa which Prevailed in Boston, New England, in the years 1735 and 1736." II, 18 pp., Boston: N. E. Fleet. 1736. This early classical pamphlet on diphtheria is not even mentioned in Charles Evans' American Bibliography, 1639-1820.— A. J.)

[5] Probably Mr. John Arbuthnot, innkeeper in Essex Street; an officer of Trinity Church in 1740.

[6] In 1734 the town had three local markets, situated at North Square, Dock Square, and on the present ground of Boylston market; Faneuil Hall was built in 1742 and was the market-house referred to here.

[7] Peter Faneuil, born 1700, merchant of Boston. He gave Faneuil Hall to the town; died 1743. The spelling bears testimony to the pronunciation of the name still used by some old people.

[8] Town dock, crossed by a drawbridge at Ann (now North) Street. The channel was originally extended across to the Charles River making an island of the North End.

[9] Dr. John Clark, the third of a succession of eight Dr. John Clarks n direct descent.

Pages 160–162:

"I dined this day at Withered's, and spent the evening with Dr. Clerk, a gentleman of a fine natural genius, who, had his education been equivalent, would have outshone all the other physicians in Boston. Dr. Douglass was there and Mr. Lightfoot, and another gentleman, a lawyer, a professed connoisseur.

"Dr. D—— talked very slightly of Boerhaave, and upon all occasions, I find, sets himself up as an enemy to his plan of theory, and laughs at all practice founded upon it. He called him a mere *helluo librorum*, an indefatigable compiler, that dealt more in books than in observation or *ἀυτοψία*. I asked his pardon and told him I thought he was by far the greatest genius that ever appeared in that way since the days of Hippocrates. He said his character was quite eclipsed in England. 'Pardon me, sir,' said I, 'you are mistaken. Many of the English physicians who have studied and understand his system admire him. Such as have not, indeed, never understood him, and in England they have not as yet taught from his books; but till once they embrace his doctrines they will always, like the French, be lagging behind a century or two in the improvement of physick.'

"I could not learn his reasons for so vilifying this great man, and most of the physicians here (the young ones, I mean) seem to be awkward imitators of him in this railing faculty. They are all mighty nice and mighty hard to please, and yet are mighty raw and uninstructed (excepting D—— himself and Clerk) in even the very elements of physick. I must say it raised my spleen to hear the character of such a man as Boerhaave picked at by a parcel of pigmies, mere *homuncios* in physick, who shine nowhere but in the dark corner allotted to them, like a lamp in a monk's cell, obscure and unknown to all the world excepting only their silly hearers and imitators, while the splendour of the great character which they pretend to canvass eclipses all their smaller lights, like the sun, enlightens all equally, is ever admired when looked upon, and is known by every one who has any regard for learning or truth. So that all their censure was like the fable of the dog barking at the moon. I found, however, that Dr. D—— had been a disciple of Pitcairn's, and as some warm disputes had subsisted between Pitcairn and Boerhaave, at his leaving the professional chair of Leyden, when turned out by the interest of King William (for Pitcairn was a strenuous Jacobite) he bore Boerhaave a mortal grudge afterwards, and endeavored all he could to lessen his interest and diminish his character. I left the company at eleven o'clock and went home."

Page 167:

"After a very gay conversation of three hours, we went away and I repaired to Withered's to the Physical Club, where Dr. D—— gave us a physical harangue upon a late book of surgery published by Heister, in which he tore the poor author to all pieces and represented him as entirely ignorant of the affair. Heister is a man of such known learning and such an established character in Europe, as sets him above any criticism from such a man as D——, who is only a cynical mortal, so full of his own learning that any other man's is not current with him. I have not as yet seen Heister's book of surgery, but D——'s criticism, instead of depreciating it in my opinion, adds rather to its character. I saw it recommended in the *Physical News* from Edinburgh, and the judgment of the *literati* in physick of that place preponderates with me all that D—— can say against it. D—— is of the clinical class of physicians, cries up empiricism, and practices upon grounds which neither he himself nor anybody for him can reduce to so much as a semblance of reason. He brags often of his having called Boerhaave a *helluo librorum* in a thesis which he published at Leyden, and takes care to inform us how much Boerhaave was nettled at it; just as much, I believe, as a mastiff is at the snarling of a little lapdog. There are in this town a set of half-learned physical prigs, to whom he is an oracle (Dr. Clerk only excepted, who thinks for himself). Leaving this company, quite sick of criticism, I went home at eleven o'clock."

Pages, 173, 174:

CAMBRIDGE.

"When we came to Cambridge we waited upon Mr. Hollyhoak, the president, who sent the librarian to show us the college and the library. Cambridge is a scattered town about the largeness of Annapolis, and is delightfully situated upon a pleasant plain near a pretty river of the same name, over which is a wooden bridge. The college is a square building or quadrangle about 150 ft. every way. The building upon the left hand as you enter the court is the largest and handsomest and most ancient, being about 100 years old; but the middle or front building is indifferent and of no taste. That upon the right hand has a little clock upon it, which has a very good bell. In the library are three or four thousand volumes with some curious editions of the classics, presented to the college by Dean Barklay. There are some curiosities, the best of which is the cut of a tree about ten inches thick and eight long, entirely petrified and turned into stone."

Pages 179, 180:

"Dr. Douglass has writ a compleat treatise upon all the different kinds of paper currency in America, which I was at the pains to read. It was the expense of the Canada expedition that first brought this Province in debt and put them upon the project of issuing bills of credit. Their money is chiefly founded upon land security, but the reason of its falling so much in value is their issuing from time to time such large sums of it, and their taking no care to make payments at the expiration of the stated terms. They are notoriously guilty of this in Rhode Island Colony, so that now it is dangerous to pass their new moneys in the other parts of New England, it being a high penalty to be found so doing. This fraud must light heavily upon posterity. This is the only part ever I knew where gold and silver coin is not commonly current."

Pages 219, 220:

"I dined with Bourdillon and Dr. Colchoun. The doctor and I smoked a pipe after dinner and chopped politics. I went to Waghorn's at night to inquire the state of my horses, and after having sat some time in a mixed company, Major Spratt came in, and he and I retired into a room by ourselves. He showed me a picture of a hermit in his cell, contemplating upon mortality with a death's-head in his hand. It was done in oil colors upon wood, and according to my judgment, it was a very nice piece of painting.

"About ten o'clock there came to us a drunken doctor, who was so intoxicated with liquor that he could scarce speak one connected sentence. He was much chagrined with some people for calling him a quack. 'But God damn 'em,' says he, 'I have a case of pistols and sword; I'll make every blood of them own before long what it is to abuse a man of liberal education.' I asked him what university he had studied at, Cambridge or Oxford. 'Damn me, neither,' said he. 'Did you study at Leyden, under Boerhaave, sir?' said I. 'Boerhaave may go to hell for a fool and blockhead as he was,' said he, 'that fellow was admired by all the world, and, damn his soul, I know not for what. For my part I always had a mean opinion of him, only because he was one of them rascally Dutchmen, damn their souls.' He went on at this rate for about half an hour. I, being tired of this kind of eloquence, left him to himself and went home."

CHYLURIA DUE TO FILARIASIS. WITH THE REPORT OF A CASE.*

BY RICHARD F. O'NEIL, M.D., BOSTON,

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THE occurrence of filarial disease is sufficiently uncommon in this latitude to justify the report of the following case which was met with recently in the dispensary clinic of the writer.

The patient, a negro, a native of Barbados, is fifty-three years old and gives the following history. He has lived in Barbados until three years ago. By occupation, a carriage painter. No venereal or other history of importance. He has been married twice and has eight children.

With regard to the present condition: For thirty years has had trouble with his urine. At times it would be filled with large clots or coagula; at others he says it would be white, but varied considerably from time to time. On several occasions his bladder has become filled with these coagula causing a retention, which had to be relieved by breaking them up with a catheter.

He complains of attacks of severe cramp-like pains in his feet, legs and pelvis, which are sometimes so severe as to prevent him from doing any work. Otherwise he has been well until lately, when his appetite has been poor, and he thinks he has lost some weight.

Examination shows a well-developed and well-nourished man. Chest negative. Abdomen negative except for an indistinct, non-tender and non-movable mass in each iliac fossa. The skin of the scrotum is somewhat thickened and the right side is enlarged to about the size of an orange. There is evidently fluid present, but it does not transmit light. The skin of the thigh and abdomen feels somewhat thickened. There is no enlargement of the legs and there are no glands to be felt. Rectal examination is negative.

The urine was opalescent and contained some very large pinkish white gelatinous coagula floating in it. They occupied from one third to one half of the bulk. There was a large amount of albumen. Sediment: a small amount of fresh blood and a few leucocytes.

Cystoscopic examination showed a normal bladder and ureteral orifices after the bladder had been emptied of coagula with a litholapaxy pump. A diagnosis of probable filariasis was made. I asked the patient to come to my office at nine o'clock P.M. to have his blood examined. After a considerable search, living filarial embryos were found, thus confirming the diagnosis.

He passed at my office about 6 oz. of milk-white urine containing some of the same pinkish white clots seen in the other specimen. This specimen coagulated in the glass. On shaking up some of the urine with ether and allowing it to stand, the presence of fat was demonstrated by a yellow zone floating on top. I supposed the scrotal tumor to be a chylous hydrocele, but on tapping at a later visit it proved to contain 5 oz. of slightly

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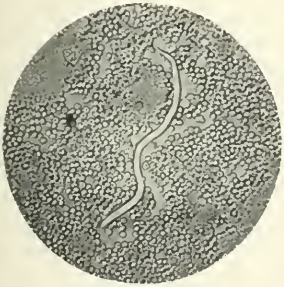
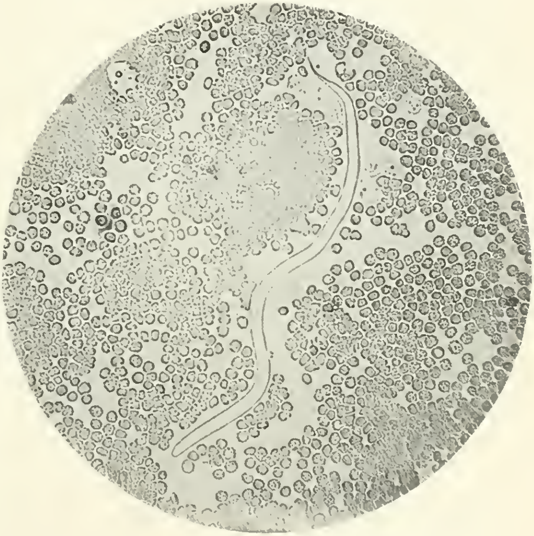
* Read before the American Urological Association, Atlantic City, June, 1907.



No. 1, x 150.



No. 2, x 300.

Blood specimen taken at 9.30 P.M., showing filarial embryo (nocturna).

turbid albuminous fluid with many active spermatozoa.

The differential blood count of 312 cells by Dr. Larrabee was as follows: Polymorphonuclears, 78.9%; lymphocytes, 10.5%; large mononuclears and transitional, 6%; eosinophiles, 4.4%.

The increase in eosinophiles being the rule in this and other parasitic diseases, I take the masses in the pelvis to be lymphatic varices. With the exception that the cramp-like pains are more frequent than formerly, the patient is apparently no worse than he has been for years.

The literature of this condition is voluminous, and many very interesting articles may be found in the books,[3] [4] [5] [16] and journals devoted to tropical medicine by writers who have ample opportunities to observe such cases in large numbers. It would be, therefore, presumptuous in the writer to attempt to do more than to mention briefly some of the most important facts observed in connection with this interesting affection.

Filariasis may be described as a group of seemingly different diseases or conditions which are due to the presence in the lymphatic system of a parasite, the filaria sanguinis hominis, or more properly, the filaria bancrofti, so called by Manson, after Bancroft, of Australia, who was the first to discover the adult worm in 1876, in a patient with a lymphatic abscess on his arm. These different conditions include chyluria, lymph scrotum, elephantiasis and various other lesions now known as filarial diseases. Several observers had previously noted the presence of the embryos in the blood, urine and hydrocele fluid of patients, but to Lewis belongs the credit of pointing out that the afore-mentioned lesions were related and due to the presence of this parasite.

Filarial disease is endemic in the tropical and sub-tropical countries. Its distribution is very extensive,[2] and it has been found in nearly all such countries. In India, Ceylon, and the Malay Archipelago, Southern China and Japan, the disease is particularly prevalent, also in Egypt and the eastern and central western coast of Africa, the various islands in the Pacific, as the Fiji, Samoan, Friendly, the Philippines * and Australia. It is common in the West Indies, and is found in our own southern states.

Manson, who has been pre-eminent in the study of this condition, has described several different species of filaria in the circulation, only one of which, the nocturna, the embryo form of the filaria bancrofti, concerns us. He also pointed out the periodicity of the filaria in the blood, giving the name nocturna because of the habits of the parasite.

The adult filaria is a slender, thread-like worm, about three or four inches long, the female being longer than the male. It is white and about the diameter of a human hair. For their full description the reader is referred to the works on parasites.[1] The adult worms are not often found clinically in cases of filariasis, but when they have been, they are generally in connection with some part of the generative system.

As a rule they occupy the dilated spaces in the lymphatics, the lymph glands themselves or the trunks between them, or even the lymphatic duct. They are found intimately coiled, sometimes several pairs together.

The embryos found in the peripheral circulation are small, white, transparent worms, about 1-80 of an inch long. When examined with the low power in a fresh specimen they appear as structureless, snakelike worms, with a blunt, rounded, cephalic extremity and a delicately tapering, pointed tail. Although they are continuously in motion, their power of progression is slight, but they keep up a constant agitation of the neighboring corpuscles. They coil and uncoil with great rapidity and also have a writhing, snakelike motion.

One of the most interesting features of this condition was discovered by Manson [3] and called by him "filarial periodicity."[10] During the day the embryos are rarely found in the blood. Toward evening they begin to make their appearance, and their numbers increase till midnight, after which they decline, and by morning have disappeared. This is well illustrated by a chart kept by Lothrop and Pratt,[7] frequent examinations being made during the night.

The number of embryos varies tremendously in some cases, as many as 300 to 600 may be found in a single drop of blood, which if they were evenly distributed, would mean from 40,000,000 to 50,000,000 in the circulation at one time.

Curiously enough, as shown by MacKenzie,[9] should the patient's hours be reversed, the filarial periodicity will also be reversed. No reasonable explanation of this phenomenon has yet been given. Manson demonstrated by a post-mortem made six hours after death upon a man who had committed suicide in the morning that the filarial embryos occupied to a great extent the lungs and large blood vessels when absent from the peripheral circulation.

The disease is carried by means of the mosquito,[3] the female of the culex fatigans, which species is very common in tropical countries, being the principal one to take up the infection. The mosquito sucks up some of the blood of an infected person and with it a number of the embryos. It has been shown by several observers that these undergo a certain metamorphosis which requires from sixteen to twenty days,[3] at the end of which time they are ready for implantation into some warm-blooded animal, which occurs when their host next feeds upon such. As the embryo can live for a few days in water, it is possible that some of them could escape into water when the mosquito dies or lays her eggs, and infection occur through drinking. Thus it is seen that infection cannot take place from patient to patient, but that an intermediate host is necessary. The mosquito is the temporary host and man the permanent host.

The embryos, having entered the body, find

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* Ashburn and Craigh have described a filaria found in the Philippines. Its significance is not yet determined. It resembles the filaria nocturna.

their way to the lymphatic system where they develop, and in time a new generation of embryos is found in the circulation.

In a large number of instances filarial infection produces no untoward results. This is extremely fortunate, as in some sections as many as 50% or more of the inhabitants carry the parasite.[3] However, a number of cases present pathological changes and clinical phenomena, due to the obstruction of the lymphatic system by the adult worm. The embryos in the circulation apparently produce no symptoms whatever.

Very briefly, the pathology of the condition is as follows: When any part of the lymphatic apparatus becomes blocked by a worm or several of them, or by an inflammatory process secondary to their presence, the area drained by those vessels of course becomes cut off from the general lymph circulation. Varicosities or edema develop as a result of the back pressure. These varicosities vary in size and position with the lymphatic involved. When the main duct is itself the seat of obstruction, the varix formed by the abdominal and pelvic lymphatics may reach an enormous size.

The involvement of the different parts of the lymphatic tract and the rupture of the dilated lymph vessels give rise to the various lesions observed in filariasis.

They consist of (1) lymphatic varix and varicose glands due to dilatation of the vessels and glands respectively; (2) elephantiasis, lymph scrotum and lymph vulva, these being an edema due to involvement of the skin lymphatics; and (3) chyluria, chylous hydrocele, chylous ascites or chylous diarrhea, according to the system or cavity into which the dilated lymphatic may rupture. These are known as filarial diseases; they may occur singly or in combination, and their course is particularly liable to modification by secondary septic infection, lymphangitis and abscess being quite common. To consider these conditions a little more in detail:

Varicose or dilated lymph glands. — The glands of the inguinal and femoral regions are most always the ones affected. Their onset is slow and they do not usually give trouble. They must be differentiated from hernia and bubo. They have a soft doughy feel and decrease in size when the patient lies down. They are not tender, and the skin is movable over them unless they are or have been acutely inflamed. Should they become troublesome because of their size, or by repeated attacks of inflammation, they should be excised, otherwise they are best left alone. Elephantiasis of the leg has followed their removal.

Lymphatic varices of the deeper vessels generally accompany dilated glands; at times, however, they are found independently of them. Small varices occur on various parts of the skin, particularly in lymph scrotum. The lymphatics of the vas deferens may be affected alone, in which case the lesion simulates varicocele. Should operation on a varix be attempted, the removal should be thorough and both ends of the vessel ligated.

Lymph scrotum and lymph vulva are due to the blocking of the cutaneous lymphatics. There is at first swelling, later vesicles and blebs of different size form on the skin, these rupture and discharge. Such attacks occur at first at intervals; later, however, the discharge of fluid is continuous, and the scrotum or labia becomes permanently thickened, cellulitis and abscess being common complications. The fluid discharged may be clear or cloudy and contains embryos. The amount in twenty-four hours may be very great. The treatment in the earlier stages consists of keeping the parts clean and dry and supported. In the later stages removal is indicated. The condition predisposes to elephantiasis.

Elephantiasis is an hypertrophy of the skin and subcutaneous tissue induced by repeated attacks of lymphangitis. It nearly always affects the lower extremities and the external genitals. There has been a difference of opinion as to whether elephantiasis was or was not a filarial disease. Manson has, however, shown pretty conclusively that it is. The affected parts may become enormously enlarged. The genital swellings are removed by operation with considerable success.

Chyluria, or when associated with hemorrhage, *hematochyluria*, is one of the commonest and most striking features of filariasis. It is due to the rupture of a dilated lymphatic into some part of the urinary system, which allows the lymph and the urine to become mixed.† The onset is very apt to be sudden and often is the first intimation of any trouble. Bodily or mental exercise may precipitate an attack. More or less pain in the abdomen, back, pelvis, groins or thighs may precede or accompany an attack of chyluria, being due to the dilatation of the abdominal or pelvic lymphatics. These dilatations may be very extreme. In my patient the pelvic and leg pain was very marked.

The physical properties of chylous urine are characteristic. The amount of chyle varies from day to day, and at different times in the same day. There is more chyle present during digestion and later in the day than in the night and morning urine. The urine varies in appearance from a slightly opalescent to a thick cream-like fluid. It may have a red or pinkish tinge, according to the amount of blood present. A characteristic specimen has the appearance of milk.

Often a moderately turbid urine will have floating in it large gelatinous, pinkish white coagula. Sometimes the urine may clot entirely, taking the shape of the glass. This occurs when there is a good deal of lymph present. At times this coagulation may take place in the bladder, causing a retention. The patient will in time pass the clots with a good deal of pain. They are better broken up with a catheter. The urine reaction is slightly acid. Albumen is present and the sediment shows red corpuscles, leucocytes, and at times filarial embryos. When the urine is shaken up with ether and allowed to stand, a zone of fat will be seen on top. The condition may be intermittent or constant, and may persist for a very long time without causing any particular change in the patient. As in my case, where it has been practically constant for thirty years, excessive loss of chyle may cause emaciation, debility and mental symptoms. Chyluria may be caused by rupture of a lymph vessel during parturition or violent exercise.

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† The bladder in this case seemed to be perfectly normal, so that I infer the connection was in the upper urinary tract.

Chyluria may temporarily disappear, but is almost sure to recur. The varix in these conditions is inaccessible and probably extensive, so that surgical interference is contra-indicated. The pain is best relieved by rest; the fat in the diet should be restricted and the bowels kept free; otherwise there is little to do.

Chylous hydrocele. — This condition is brought about by an obstruction in the lymphatics causing an outflow of chyle into the tunica vaginalis.

The physical signs do not differ from those of ordinary hydrocele except the fluid may be more opaque. Besides fat, the fluid will show filarial embryos. In these cases of "chylocele" the adult worm is not infrequently found in the testicle or epididymis, so that complete ablation of that side of the scrotum will give excellent results. Such was the case reported by Lothrop and Pratt.[7]

The terms *chylous ascites* and *chylous diarrhea* are sufficiently self-explanatory. They will not be further considered.

There is little more to say with regard to the various septic complications. The adult worm on dying may be absorbed, become encysted, or give rise to an abscess. A number of cases are on record of finding worms, or fragments of them, in abscesses. These septic processes may be the first intimation of the disease. They are to be treated under the general rules for such conditions. After recovery the local conditions may be entirely cured, but embryos are nearly always found in the blood, showing the presence of other parent worms.

The diagnosis has already been considered somewhat under the description of the clinical conditions. It should not be difficult in a typical case; however, many cases show few symptoms and are doubtless overlooked.

Hernia, bubo, varicocele, and perhaps severe eczema of the scrotum, are some of the conditions to be considered in the differential diagnosis. With regard to prognosis, filarial disease may run a very long course, as in the reported case of over thirty years' duration. Some of the cases are also mild, and death is very apt to be due to an intercurrent affection. The prognosis is, therefore, not unfavorable.

Reinfection undoubtedly occurs with great frequency in filarial districts. The length of life of the adult worm is unknown. My patient has been three years away from the source of infection and still shows the living embryo in his blood. They have not been very numerous, however, on many occasions a large number of slides having been found negative.

Many drugs have been tried, but so far none have been found to have any effect on the parent worm. Methylene blue has been highly spoken of by some,[15] but found useless by others.

The writer used hypodermic injections of 1 cc. of a 15% solution of atoxyl (contains 37.69% of arsenic and is much less toxic than Fowler's solution), which has been employed recently more or less successfully in the treatment of trypanosomiasis [13] [14] (sleeping sickness). The treatment was carried on fairly regularly for about six weeks. Not the least effect was noticed.

In many cases the damage done to the lymphatics is irreparable, as in chyluria, so that the killing of the parasite will not help matters much. Manson believes that "the well-being of the parasite is of advantage to its host," as the worm on dying may give rise to an abscess, which among the deeper structures would be a serious matter. Be this as it may, the medical treatment, except in a palliative way, has been very unsatisfactory.

Should the site of the parent filaria be accessible to the surgeon, a cure will follow its removal. A comparatively small number of cases have been operated on; the results, however, have been very good. In some cases the adult filariæ have been found in the tissues removed and the filarial embryos have disappeared from the blood. Others have been markedly benefited, even when the embryos have not disappeared. So that at times local conditions may be cured, even if there are other parent worms in the body.

Cunningham [17] has recently reported the cases operated on, including a successful one of his own. Unfortunately, however, in many cases surgery is unavailing because of the deep seat of the obstruction.

Prophylaxis should consist in the destruction of the breeding place of mosquitoes, the use of mosquito nets, the protection of wells and cisterns, and the use of filtered or boiled water for drinking and bathing purposes.

The micro-photograph was made for me by Mr. H. L. Brown, of the laboratory of the Massachusetts General Hospital, fourteen hours after the specimen was taken. All motion had then ceased.

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[1] Looss: Handbuch der Tropenkrankheiten, Dr. C. Mense, vol. i.
[2] Clemmow: The Geography of Disease.
[3] Manson: Tropical Disease.
[4] Scheube: Diseases of Warm Countries.
[5] Jackson: Tropical Medicine.
[6] Fauntleroy: U. S. Nav. Med. Bull., vol. i, No. 1.
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Dr. W. W. Keen has been elected president of the American Philosophical Society, Philadelphia, succeeding Dr. Edgar F. Smith, who declined re-election. — *Science.*

THE ROENTGEN RAY DIAGNOSIS OF URINARY CALCULI.*

BY E. W. CALDWELL, M.D., NEW YORK.

ALTHOUGH the x-rays have been in use for more than ten years in the diagnosis of urinary calculi, and the literature of the subject is now very large, there still exists in the minds of many considerable uncertainty as to the practical value of this application of Roentgen's discovery.

Most surgeons are interested not in details of laboratory technic, nor in the different varieties or brands of rays exploited by some writers, but in how much help they may reasonably expect from a competent x-ray examination. In this brief paper I shall therefore avoid as nearly as possible all discussion of what may be termed the shop practice of the work, but shall present a few observations and illustrations which are intended to help the clinician to form a fair and accurate estimate of what he may expect from a competent x-ray examination of the urinary tract.

In the Roentgen ray diagnosis of urinary calculi the proportion of errors given by different authorities varies between zero and 50%, according to the efficiency of the technic employed, the number of cases examined, and the honesty of the author. All statistics of this kind must necessarily be incomplete and unreliable because in a very large number of cases no positive demonstration is made of the accuracy of the indications given by the x-ray. In those cases in which no calculus is shown, the diagnosis is often not confirmed by operation or by other means. In those cases in which a positive diagnosis of calculus is made, and no stone is found upon operation, the blame usually falls upon the x-ray, although in many of these cases the calculi have been removed by subsequent operation.

It is, of course, unfair to expect that the x-ray examination, or any other method of diagnosis, will be reliable unless it is performed in a careful and competent manner. The amount of skill and attention to detail necessary to obtain a really good set of plates covering the urinary tract is seldom appreciated. It is admitted by many surgeons, who have done such work, that the x-ray examination may in some cases be more difficult than the operation which it suggests.

Nor must it be supposed that such an examination consists in mere picture making, for the correct interpretation of the plates is quite as important, and sometimes quite as difficult a task as making them. The better the plate, the more accurate and definite will be the information that can be obtained from it, and the more it must be studied in order to obtain all the information that it may give us.

The mistake of supposing that the x-ray gives us photographs of the kidneys is a common one even among surgeons who are accustomed to examining x-ray plates. It should be remembered that the skiagraph or Roentgen ray projection is a shadow picture and not an image; that it differs not only from all other pictures, but from all other shadows in the essential fact that it is a record of density of the various substances through which the x-rays have passed. In order to correctly interpret it, therefore, one must learn to regard it from an entirely new point of view.

For the reason that different subjects vary greatly in size and in the opacity of their soft tissues, there is great difference in the difficulty of making Roentgen ray examinations of them, and a corresponding difference in the amount of detail that it is possible to obtain in the skiagraph. With young and thin subjects it is possible to obtain brilliant plates showing a great amount of detail, and to demonstrate the presence of any calculus large enough to cause symptoms, whatever its composition may be.

Old subjects are usually larger, and their soft tissues are not so readily penetrated by the rays. Plates of old people are, therefore, not so easy to make, and they will not show so much detail as those of young people. It may be impossible to demonstrate in an old subject, especially one affected with arterial sclerosis, or with enteroptosis, the presence of a good-sized calculus composed of pure uric acid, or sodium urate. Fortunately, however, the uric acid and urate calculi almost invariably contain some calcium oxalate or phosphate which makes them demonstrable by the x-ray.

When the plate shows a large dense shadow over the kidney, the diagnosis of calculus is easy, but it is the plates that show no such shadows, which present difficulties. Most Roentgen ray specialists report that calculi are shown in only about one out of 4 or 5 of the cases referred to them for examination of the urinary tract. From this it will be seen that in about four fifths of the cases the expert must take upon himself the responsibility of determining whether his plates are good enough to warrant him in saying that no stone is present, or that shadows that simulate calculi are due to other causes. It will be evident that he must be ready to interpret the necessarily inferior plates of difficult subjects, as well as the brilliant plates which so plainly show the calculi in the easier subjects.

Much has been said about the points which distinguish the plate that is good enough from those which are not good enough to be safely used as a basis for the negative diagnosis of calculus. The essentials usually given are that the plate shall show the twelfth rib to its tip, the transverse processes of the lumbar vertebræ and the border of the psoas. I believe that a plate may show all of these details and fail to show a small calculus of pure uric acid. The development of the psoas varies enormously in different individuals, and its shadow may be only faintly shown in a good plate, or it may be shown plainly in one that is not good enough to be useful. The appearance of the psoas shadow is, therefore, in my opinion, of very small consequence. Obviously, a plate which fails to show the twelfth rib and the transverse proc-

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* Read at a meeting of the American Urological Association, New England Section, Boston, Nov. 5, 1907.

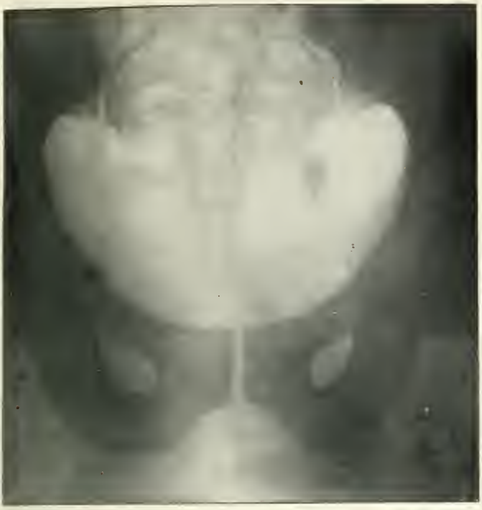

FIG. 1. Calculus in the ureter about an inch from the bladder.

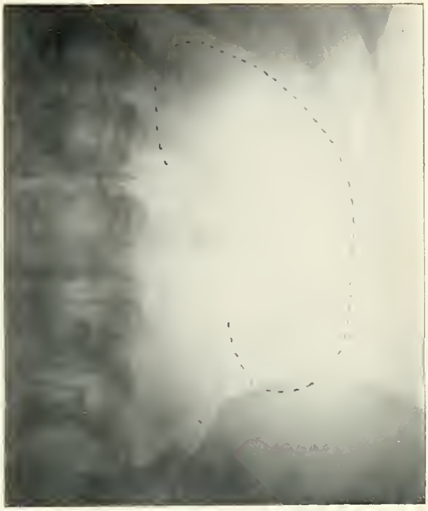

FIG. 3. Calculus in pelvis of ureter. The kidney shadow is shown, but with insufficient strength for reproduction by half-tone. It is, therefore, indicated by dotted line in ink. The length of the kidney shadow is 5¼ inches, and its position is somewhat lower than normal. There is probably hydronephrosis.

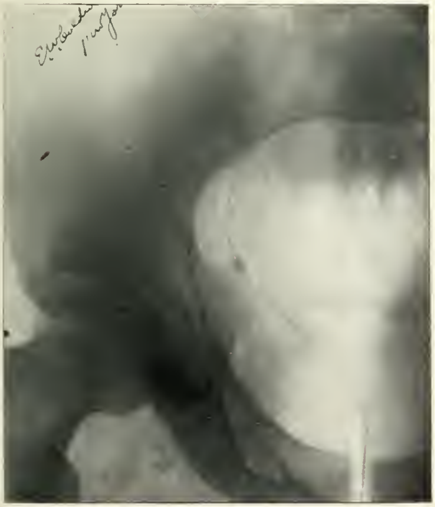

FIG. 2. Case referred by Dr. F. Tilden Brown and Dr. Alfred T. Osgood. Small calculus in left ureter. The course of ureter is shown by ureteral catheter containing a copper wire. This is one of a stereoscopic pair of skiagraphs. The stereoscope demonstrated that the calculus was in contact with the catheter, and that its shadow was not the shadow of a phlebolith or other extra urinary body superimposed upon that of catheter and stylet.

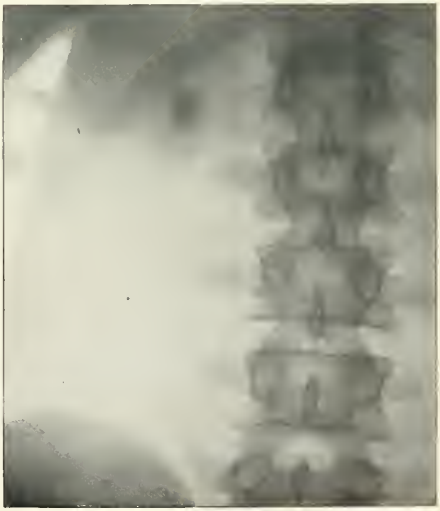

FIG. 4. Case referred by Dr. J. F. Erdmann. Calculus in pelvis of ureter. Size, outline and position of kidney are shown by its shadow which is accentuated at the outer border by gas in the colon. The transverse bands are folds of the colon forming sacculations. The psoas shadow is scarcely discernible owing to lack of development of the muscle in this subject.

esses of the lumbar vertebrae cannot be relied upon to make a negative diagnosis of calculus. The shadows of the kidneys are often shown, and give us useful information as to their size, outline and position. The kidney shadows show best in subjects having a considerable amount of perirenal fat.

Aside from the suitability of the subject and the perfection of laboratory technic there are other factors which affect the reliability of the Roentgen ray diagnosis. It is very important that the intestinal tract be emptied as thoroughly as possible. For this purpose I prefer to use liberal doses of castor oil in the evening, followed by high enemata in the morning before the examination is made. Castor oil is preferred to other cathartics, chiefly because it leaves less gas in the tract.

The ease and certainty with which a calculus may be shown depends much upon its density and the atomic weights of the elements entering into its composition. The uric acid and urate calculi give the faintest shadows, and those of calcium oxalate the strongest.

It is necessary, and sometimes it may be difficult, to distinguish between the shadow of a calculus and that of another substance which casts a similar shadow. Among these extra urinary bodies may be mentioned buttons in clothing, undissolved pills or capsules in the intestine, phleboliths, calcified lymph nodes, intestinal concretions, etc. While it is usually easy enough to determine that such shadows are not due to calculi, some of them, especially those in the pelvis, may closely resemble in position and appearance the shadows of small calculi in the lower part of the ureter. Occasionally it may be advisable to pass a styletted ureteral catheter in order to determine whether such bodies are within or without the ureter. I shall show some stereoscopic pictures of these cases, which have been made for the purpose of such differentiation, but they have proven of little assistance, unless the course of the ureter is outlined by the shadow of the ureteral catheter.

In the foregoing remarks I have considered briefly only a few of the more important points covering the use of x-ray examinations of the urinary tract. The subject is so large that it is impossible to treat it comprehensively in a paper short enough to be suitable for presentation at this meeting. For this reason many links are omitted from the chain of evidence upon which I base the following conclusions:

1. The Roentgen ray furnishes the most accurate single means we have for the diagnosis of urinary calculi.

2. It has the advantage over other methods that it not only indicates the presence or absence of calculi, but their size, position and number as well.

3. When a small calculus is shown in the ureter, the size and shape of its shadow will sometimes enable us to predict that it will be passed, and that operation for its removal will be unnecessary.

4. Occasionally, conditions other than lithiasis may be indicated, such as tuberculosis, abscess, and diseases causing a change in the size, position or outline of the kidney, or a fibrous thickening of the lower part of the ureter.

5. The x-ray is not infallible, and in incompetent hands it may be very misleading, but under the best conditions it is exceedingly accurate.

6. The indications given by it often decide the important question of operation.

7. Such examinations should therefore not be undertaken lightly, nor intrusted to careless and incompetent persons, nor to those who have not a proper appreciation of the responsibility involved in deciding a question upon which may depend the health or even the life of a fellow being.

I should like to show a few slides illustrating some of the statements that have been made. It must be remembered that it is impossible to obtain in a lantern slide all the detail of the original plate, and some of the most interesting results are, therefore, imperfectly shown upon the screen.

Dr. Caldwell demonstrated a number of lantern slides on the screen. The first three slides illustrated the development during the last ten years in the use of the x-ray for the diagnosis of urinary calculi. The first plate made ten years ago with an exposure of fifteen minutes showed two calculi and very little detail in the bony or soft structures. The second made five years later, with an exposure of five seconds (or 1-180 of the length of time of the former one), showed a renal calculus in right kidney of a subject who had been subjected to appendectomy which did not relieve his symptoms. The third plate, a recent one, made with an exposure of fifteen seconds (during suspended respiration), showed, in addition to two calculi, the outlines of the kidneys and other soft tissues, as well as considerable detail in the bones.

Slides of about twenty other illustrative cases were shown. From some of these it was possible to determine not only the presence and position of calculus, but the size, outline and position of the kidney. Two slides showing the shadow of the lower portion of the ureters which had been thickened by chronic inflammatory process (tuberculosis). Other slides illustrated the difficulty of making a diagnosis from good plates because of the superposition of the calculus shadows upon bony structures, and the presence of extra urinary bodies, such as calcified lymph nodes, phleboliths, etc., whose shadows were superimposed upon some part of the urinary tract. Other slides showed atheromatous gluteal arteries, bismuth given for internal medication, etc.

TRYPSIN IN THE TREATMENT OF MALIGNANT TUMORS.*

BY W. P. GRAVES, M.D., BOSTON.

The use of trypsin as a therapeutic agent in the treatment of cancer is a development of one of the most recent and ingenious theories of cancergenesis. It is called the germ-cell theory, and was orginated by Dr. James Beard, Lecturer in Embryology in the University of Edinburgh. Dr. Beard believes that the mysterious secret of the origin of cancer is to be solved by embryology, and has evolved an explanation of the genesis of malignant tumors, at once so fascinating and to a certain extent so plausible that it has commanded world-wide attention.

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* Read before the Suffolk Division Medical Society, Nov. 13, 1907.

Although a full understanding of Dr. Beard's reasoning involves a somewhat expert knowledge of biological processes, I shall attempt to outline his theory in simple terms, as upon it depends the *rationale* of the trypsin treatment.

The germ-cell theory of cancer is founded, of course, on the familiar germ-cell theory of heredity, which postulates a twofold generation of cells in the body; one, the germ-cells represented normally by the spermatozoa or ova, and the other the body-cells or somatic cells which make up the rest of the tissues of the individual. The germ-cells, if impregnated, are continuous, never lose their vitality, and have the potential of immortality, while the somatic cells, namely, the mortal body, constitute merely a lateral or terminal offshoot of the germ-cells. They decay and are cast off like the leaves of a deciduous plant.

Starting then with the normal female germ-cell or egg, this cell, after union with the male germ-cell or spermatozoön, begins to develop by mitotic division into a new-formed body. The first stage of this development in mammals is the chorion, which corresponds to the larva in lower orders, and is in general termed by Beard the trophoblastic or pre-embryonic stage. In this stage, the embryo has not yet been born.

The cell division then continues and a number of spores are born from the chorion, destined to become true embryos. In long past ages, many or all of these might have developed into embryos and become complete individuals. In the higher mammals, man, for example, usually only one becomes an embryo. The other spores, originally destined to become embryos, are as it were aborted and remain as retrogressive cells included in the complete embryo. One or more of them may, however, develop normally, and there results then the phenomenon of identical twins or triplets. Or one of them may make an *incomplete* attempt to repeat the life cycle, and there results a double monster; or if the attempt is still less successful, a teratoma, and so on, down through mixed tumors, etc., to pure carcinoma or sarcoma.

It will thus be seen that according to Beard a carcinoma or sarcoma represents the abortive attempt to repeat the life cycle of one of these germ-cell spores, originally destined to become a fetus. It will be seen, too, that the carcinoma and sarcoma represent only the lowest stage in development of a germ-cell, the more successful ones, if growing, attaining the distinction of producing a higher tumor, *i. e.*, one more nearly approximating the complete individual, teratoma, double monster, or identical twin. Recalling now that the earliest stage of development in the normal germ-cell or fertilized egg is the chorionic stage (or, as it was termed, the pre-embryonic or trophoblastic stage), it follows that a cancer cell, being an abnormal germ-cell in its lowest stage of development, corresponds to a chorionic or trophoblastic cell. Hence, Dr. Beard's first and often repeated postulate that the cancer cell is an "irresponsible trophoblast."

If this process of reasoning is true, a malignant growth of the normal chorion or trophoblast, namely, a chorio-epithelioma, should be the prototype of all malignant tumors, and so Dr. Beard regards it. Therefore, all malignant growths correspond in reality to chorio-epitheliomata. According to Dr. Beard, there is no essential distinction between sarcoma and carcinoma, and there is no such thing as primary cancer of any particular organ, *e. g.*, breast, liver or uterus, in the sense that the cancer is made up of mammary, liver or uterine cells. The abnormal germ-cell happens to make its attempt at repeating the life cycle in a certain organ or tissue, and by "unconscious imitation" reproduces the form of tissue in which it happens to lie when it begins its growth.

If this theory is right it would be rational to suppose that the prototype of malignant growths, namely, chorio-epithelioma, growing from the normal trophoblastic cell, and lying in no embryonic tissue which it could imitate, should have the character of both sarcoma and carcinoma. It is interesting to remember, in this connection, that for several years pathologists debated whether chorio-epithelioma was a carcinoma or sarcoma; in fact it was first called deciduoma, which would correspond to a sarcoma, whereas now it is regarded as a carcinoma.

It was at this point that the relation of trypsin to cancer was suggested to Dr. Beard.

It is a fact that the chorion begins to degenerate at the time that the pancreas of the embryo begins to functionate, in the seventh week. Dr. Beard reasoned that the pancreatic ferment having no digestive duties to perform in the intestine is probably employed to destroy further activity of the chorion, and that when the embryo is absent or incomplete, the chorion having no ferment to check it, is liable to develop into a malignant tumor or chorio-epithelioma. He found by experiment that the trypsin of the pancreatic secretion actually has a specific destructive effect on chorionic cells, and that it also neutralizes an acid intracellular ferment secreted by the chorion. In order, then, to confirm Dr. Beard's analogy of cancer cells to chorionic cells, it would be necessary to show that trypsin exerts a like effect on cancer cells. And in fact this has been shown.

At the cancer congress held at Berlin on March 8, 1905, among the conclusions of a series of investigations by Blumenthal, Neuberg and others on the chemical properties of cancer cells, were the following:

Trypsin quickly dissolves cancer cells, while pepsin attacks them with difficulty.

Cancer cells produce an intracellular acid ferment which is capable of dissolving all the tissues of the body, and is termed malignic acid. This ferment is neutralized by trypsin.†

In additon to this scientific evidence of the action of trypsin are the well-known facts that trypsin is normally found in nearly every tissue of the body, but is absent in cancer tissue; that hydrochloric acid, and consequently pancreatic secretion, is diminished in subjects suffering from cancer; that primary cancer of the pancreas is extremely rare; and that cancer of the small intestine is very uncommon, and increases in rarity toward the duodenum.

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† S. P. Beebe has recently thrown some doubt on the value of these conclusions. See the BOST. MED. AND SURG. JOUR., Dec. 26, 1907, p. 855.

My own investigations of the treatment of cancer by trypsin were begun in September, 1906. Although I have used the ferment in a considerable number of cases, most of my observations and conclusions are based on the treatment of six cases of recurrent cancer, where whatever evidence I could get would be as authentic as possible. These cases represented five cases of recurrent breast carcinoma, and one of recurrent squamous cell carcinoma of the cervix uteri. In all of the cases, I had personally done all that was possible in the way of surgical operations, and had also made careful microscopical examinations of tissues removed at operation. All of the cases were observed for at least six months, and most of them longer, up to fourteen months. The treatments were given in the usual way, beginning with from 3 to 5 mm. injections of trypsin, and increasing the dosage to from 40 to 60 or even 80 mm. each time.

Considering, first, trypsin as a curative agent for cancer, I am obliged to state that in every one of the six cases there was a gradual inevitable progress of the disease. Four of the patients have died, and of the two still living, it may be said that they undoubtedly will die within a few months. Such a record appears at first entirely discouraging. Should, therefore, the use of trypsin be completely condemned and cast aside with the numerous other cancer remedies that for a short time have roused the hope of mankind only to disappointment?

Notwithstanding the apparently complete failure which has ultimately followed all my efforts with trypsin, there have been certain encouraging features which have induced me to persist in its use. In cases of recurrent breast carcinoma, it has been possible to keep well under control the nodules which make their appearance. A few injections of trypsin into one of these circumscribed nodules will cause it either to disappear or to shrink greatly, *and that particular nodule will not grow again.* This has been the most striking result of the treatment. In the two cases now living, supraclavicular masses in both and an axillary mass in one, interfering with the motions of the arm, were greatly reduced in size, and after seven or eight months show no signs of growth. A section of such a shrunken nodule after several treatments will show under the microscope the remains of destroyed cancer cells, while the somatic cells of the connective tissue remain intact and healthy. These observations which were made by me correspond in every particular to those made by Dr. Beard in his experiments in the treatment of Jensen's mouse tumor. In two of my cases there was a period of a few weeks when, after treatment of several of the recurrent nodules, the patient had no external manifestation of cancer whatever, and might have caused over-enthusiastic belief in the efficacy of the remedy. I am inclined to believe that some of the cures which have been reported are similar cases. Later, however, other nodules or masses would appear, and though I am convinced that at least the external manifestation of the disease was checked by my treatment, the ultimate progress was apparently inevitable, and the patients would finally reach a state where they were unable to report for treatment. In all the cases where treatment was stopped for such a reason, the progress of the disease externally went on with great rapidity to ulceration, the change for the worse being so marked as to convince me that the treatment had been efficacious in delaying the final outcome.

In only one instance did I observe any of the serious results which have been reported by some. A little local redness and tenderness frequently appeared for a few days after injection, but in no case developed into sepsis or gave the patient much more than slight discomfort.

In one instance, the patient became sleepy and hard to rouse for a few hours, a suggestion of the alarming coma reported by other observers. The pulse, however, remained good, and the patient when roused was perfectly conscious. In one instance, not included in my series, the first small injection of a few minims into a carcinoma of the cervix caused a serious collapse and high fever. In this case I believe it was a result of forcing into the circulation some of the toxic products of the carcinoma, rather than the introduction of the trypsin ferment itself.

The case where the palliative effects of the trypsin ferment was most apparent was one of carcinoma of the cervix. This patient had had before I saw her an operation performed, consisting of a curetting and cauterization of the cervix. When I first saw her she was suffering great pain in the back and was bleeding profusely. A large carcinomatous mass filled the entire vagina almost down to the outlet. The fetor from this mass was characteristically nauseating. On account of the profuse hemorrhage an immediate palliative operation was performed, consisting of curetting the cancerous mass and cauterizing deeply into the uterine tissue. The patient remained in the hospital for about three weeks, and when discharged, there was a slight recurrence in the granulating cauterized area. The fetor had begun to return and there was some pain.

The trypsin treatment was then begun, and consisted of injections of trypsin averaging 20 mm. directly into the infected area, and in addition, several drams of pancreatic lotion were injected into the uterus. Twice daily the vagina was douched with bi-chloride, and 1 or 2 oz. of pancreatic lotion diluted, 1 in 3, was left in the vagina the outlet being plugged with cotton and the patient kept in bed with her hips elevated for one or two hours. This treatment was kept up for about six months. During this time there was extremely small local progress of the disease in the vagina.

There was practically no pain, and there was *absolutely no odor* from the cancerous cervix. The patient was able to be up a number of hours each day and was comfortable and happy. There was, however, a gradually increasing loss of weight and cachectic appearance, so that though the disease was being checked locally and symptomatically, it was constitutionally making progress. The patient finally died from inanition on account of a sudden occlusion of the pyloric end of the stomach. Operative measures were out of the question. As the patient became weaker during the last days, it was necessary to stop the trypsin treatment. Pain and the foul odor immediately appeared.

In this case it must be admitted that the use of trypsin was an inestimable comfort in the last days of a patient suffering from a disease usually most terrible in its symptoms.

My experience in the use of trypsin apparently corresponds closely to that of others. Von Leyden, after numerous experiments, concludes that though trypsin has a "curative influence" on cancer, the method of successfully applying it has not yet been discovered.

It has been suggested as a result of Hedin's experiments, that trypsin has been administered in insufficient quantity. Hedin has shown that when trypsin is introduced into the blood, an antibody is produced capable of neutralizing the trypsin up to a certain quantity, beyond which the trypsin is no longer interfered with. This antibody can be destroyed by previous contact with a 2% solution of acetic acid.

To meet the interference of this antibody, larger doses are recommended. Pancreatic extract is given by the mouth in addition to the injections, and hydrochloric acid is administered to increase the normal flow of pancreatic secretion.

All these things I have tried, but I must confess that the only apparent effects that I have been able to produce is by the injection of trypsin directly into the cancerous mass.

This experience is confirmed by the experiments of Von Leyden. Shaw-Mackenzie, on the other hand, advises the administration of the drug only through the circulation and at a distance from the tumor.

When all is said, therefore, it cannot be claimed that any great advance has been made in the actual cure of cancer by the use of trypsin. Nevertheless, the scientifically established fact that trypsin has a specific destructive action on the cancer cell and on the deadly ferment which it secretes, gives at least a gleam of hope that an effective method of applying it may be discovered.

The germ-cell theory of cancer-genesis cannot but command the most serious attention. This theory has received astonishing confirmation in the discovery by Farmer, Moore and Walker that cancer cells, in their process of multiplying, possess the same heterotype mitosis that the normal reproductive germ-cell of the testicle or ovary exhibits.

This term, "heterotype mitosis," is applied to the mitotic figures which reproductive germ-cells show in the process of division in contrast to those shown in somatic cells. In germ-cells, the number of chromosomes which make up the mitotic figures is just one half of that seen in somatic cells, and besides that, they have various different characteristics of form. Farmer, Moore and Walker have shown that malignant cells closely resemble normal reproductive germ-cells, both in the limited number of chromosomes and in their characteristic figuration. Thus a close relationship between cancer cells and the true germ-cells has been conclusively established, if the observations of these investigators prove to be correct.

It has occurred to me that the specific action which the x-rays have on cancer cells, taken in conjunction with their well-known effect on the spermatozoic cells of the testicle, offers further suggestive evidence of a relationship between cancer cells and germ-cells. In accordance with this idea, I have recently inaugurated some experiments on the action of trypsin on living spermatozoic cells in animals, on the supposition that if the germ-cell theory is correct, trypsin should have an effect on spermatozoa similar to that on cancer cells. The results of these experiments will be reported at a later date.

In conclusion, it may be remarked that the last word concerning the trypsin treatment and the germ-cell theory of cancer has not yet been said, and that the study of this interesting subject inclines one to believe that "the sign post of further investigation into the cause of cancer points along the road of embryological and cytological inquiry."

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Reports of Societies.

AMERICAN UROLOGICAL ASSOCIATION.

Fall Meeting of the New England Section,
Boston, Medical Library, Nov. 5, 1907.
President, Dr. O. C. Smith, Hartford.
Secretary, Dr. R. F. O'Neil, Boston.

INSTRUMENTS, SPECIMENS AND CASES.

Dr. Edgar Garceau presented a new direct view catheterizing cystoscope for use in women.

Dr. A. L. Chute presented the Wossidlo indirect view catheterizing cystoscope for use in either sex.

Dr. O. C. Smith: I have here Mr. E. Hurry Fenwick's caisson and morcellation forceps for suprapubic operating. You see the caisson resembles somewhat a rectal speculum, being a tube five or six inches long and about an inch and a half in diameter; one end is equipped with a flange and the other is beveled to fit the bladder wall.

I wish to show also this oxalate of lime calculus removed from a case of carcinoma of the prostate.

Dr. McKnight: I wish to refer very briefly to a case of a very large hypernephroma, which I removed two years ago. I saw the patient two days ago. There has been no recurrence to date.

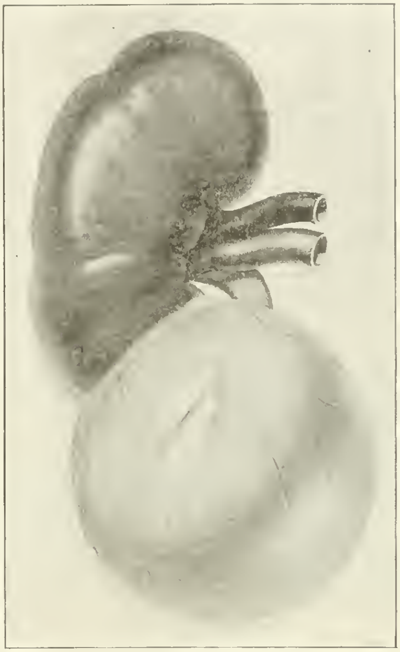
Dr. J. B. Blake reported a case of

SIMPLE CYST OF THE KIDNEY.

L. W., a domestic, thirty-two years old, unmarried, was referred to me by Dr. Henry Jackson. She complained of a movable tumor in the abdomen, which she had discovered by accident three years ago; her previous history was negative, except that she had fallen on the ice about a year before she noticed the tumor, and was sore and lame for a short time. She had been severely constipated for years and had lost somewhat both in strength and color during the past six months. She presented a rounded movable tumor in the abdomen below the liver; it was not tender, and resembled a large grape fruit in shape and consistency. The urine contained a slight trace of albumin and a few hyaline and granular casts; pulse rate and temperature curve were normal. Dr. Arthur Chute cystoscoped the bladder and skillfully catheterized the ureters, though the case presented unusual anatomical difficulties; normal urine in normal quantity came from the right side, while from the left side the quantity was diminished. Operation was recommended and accepted, malignant disease being feared, though no positive diagnosis was made.

Through the usual lumbar incision the kidney was easily delivered upon the back; its lower third was occupied by a translucent, yellowish, thin-walled single cyst about the size of an orange. Otherwise the kidney was normal; the cyst was emptied of about 8 oz. of straw-colored liquid, and was then excised, leaving a smooth kidney surface, the edges of which were overcast with catgut where necessary to control oozing. The kidney was replaced in its normal position, a wick packed down to its lower pole, and the wound closed in layers; convalescence was uneventful. At present, two months after the operation, the patient is in good health, having recovered color and strength. The pathological diagnosis (Dr. Leary) is: simple cyst of the kidney, probably due either to malformation with dilatation above the point of constriction, or to constriction of tubules by scar tissue.

These cysts are very rare, less than fifty have been reported; but little is known of their etiology; they are benign; the cavity almost never connects with the pelvis of the kidney, and did not in this case; the content is rarely hemorrhagic; they are usually single and at times grow to a large size; the treatment is excision; drainage of cyst, or nephrectomy should be avoided.



Cyst represented about one-fifth too large.

Dr. E. A. Codman (by invitation) showed an

X-RAY OF STONES IN THE URETER.

Dr. O'Neil thought it might be interesting to you to see this x-ray photograph of twenty-seven stones, which I removed from the left ureter. The patient was a young man otherwise in a healthy condition and the only symptoms which he presented were frequency of urination, of not a great degree, and an occasional sudden stoppage in urination in much the same manner as the check in urination sometimes caused by a stone in the bladder. The urine was rather turbid and opalescent, due to a sediment of finely divided pus. When I first saw him I thought he had a very mild cystitis. He was put on urotropin, and I lost sight of him for a year. At the end of that time he returned, and said that his symptoms continued. The urine was practically the same as before. Cystoscopy showed a cyst in the region of the left ureter, which projected into the bladder. It was about the size of a large marble. The bladder was otherwise normal and contained no stones. It then occurred to me that there might be a stone in the ureter, and I had him x-rayed by Mr. Dodd. This x-ray shows a collection of stones in the left ureter, and another negative, which Mr. Dodd took after an interval of a few days, showed the same stones in a reversed relation, that is, with the small ones at the top. It also showed in the left kidney two or three other small shadows.

Arguing, then, from the fact that the cystoscope showed a cyst in the bladder, and the x-ray showed these stones which were able to change their positions in as free a manner as that, I made the diagnosis of the left ureter being very much dilated from a stricture at the bladder end, so that the lower part of it projected into the bladder like a cyst. Drs. Davis, Chute and O'Neil, who saw the case with me, agreed in the diagnosis.

I did a suprapubic cystotomy on the case. On opening the bladder the cyst was found to be round and almost pedunculated. When I dilated the pinhole opening into the ureter the stones were not at first felt, and were not encountered until I had gone an inch and a half or so up the ureter. I put in a long pair of forceps, similar to those used for removing stones from the gall bladder, and in this manner I picked out from the ureter 27 stones of various sizes. Since the plate showed a shadow in the left kidney, I opened it also at the pelvis. It was rather dilated so that I had no difficulty in putting my forefinger into it. But I could not find any stones there at all, although the x-ray had showed pretty clearly two or three. The reason for this must have been that the ureter being greatly dilated, the stones could easily move down and I no doubt took them out through the bladder. The patient did well, and the wounds closed, and just as he was about to leave the hospital, he passed one more stone; this made 28 in all.

Several weeks later Mr. Dodd took some beautiful plates, which showed no stones at all. There were a few little granular bodies in the bladder — little grains of sand — which I was able to wash out with a Bigelow evacuator. The patient is at present well — eighteen months after the operation.

I shall later report this case more at length to place it on record.

Dr. A. L. Chute showed a

KIDNEY SPECIMEN.

The patient, a man thirty-four years old, from whom this kidney was removed on Oct. 9, presented several points of interest. I am indebted to Dr. W. A. Rolfe for his previous history.

This man had a gonorrhea eight or nine years ago, and after a three-months attack went home to Italy. Here his right testis began to swell and was acutely painful for some time. At the same time he began to pass urine frequently and painfully. His testis remained somewhat swollen after his acute attack and his frequent micturition persisted.

In the past year his frequency had increased and had been so great that at times he had to urinate as often as every half hour, day and night. His bladder was washed with various substances and he was put upon urinary antiseptics without relief. A culture from his urine, taken last spring, showed the bacillus pyocyaneus in pure culture. He was treated for a time with a pyocyaneus vaccine, but without result as regards his pain or frequency. He said after his injections of vaccine he had some dull aching in his left loin.

He presented suprapubic tenderness. There was a mass in the tail of his left epididymis very suggestive of tuberculosis, also a question of a little change in his prostate, but on the other side from his diseased testis.

He was in rather more than good flesh, slightly fat, and neither kidney could be felt, nor was there tenderness in either loin. Cystoscopic examination showed a rather intense cystitis fairly well localized to the left side of his bladder. The left ureter was gaping and just to one side of it there was a loss of the superficial bladder epithelium. A catheter passed into his right ureter easily, and gave an abundance of transparent urine. On his left a catheter would enter the ureter and go about four inches. At two sittings I introduced four different styles and sizes of catheters into the left ureter, but was unable to pass further than about four inches. I did not get a drop of urine from his left side. No tubercle bacilli could be found in his urinary sediment. In spite of the negative bacterial findings the picture was so typical of tuberculosis that I felt sure his cystitis was secondary and advised exploration of his left kidney.

The kidney was found high up, bound down everywhere and much enlarged. It was freed with difficulty, but could not be delivered, so the pedicle was clamped and the kidney cut away. The tension on the pedicle was so great that the artery slipped from the clamp and spurted furiously, but was fortunately easily secured. He made a good recovery.

Histological examination showed giant cells in the walls of the abscesses, thus confirming the clinical diagnosis. The inoculated guinea pigs have since proved to be positive.

The points to which I call attention are these:

This man was quite stout, a condition sometimes mentioned as being against the probability and almost the possibility of tuberculosis. I have seen within the last few months two other stout patients with demonstrated urinary tuberculosis.

This man's pain was practically all referred to his bladder, and it is my experience that in renal tuberculosis, renal pain is more often absent than present. Even when it is present, the patient usually complains less of it than of the bladder pain.

This patient had no lumbar mass that I was able to feel. Others who examined him also failed to find a mass. Likewise no tenderness could be elicited on lumbar pressure. The idea often held is that a tuberculous kidney must be tender and painful, and usually enlarged. Renal pain is often absent in renal tuberculosis and not infrequently tenderness and a palpable kidney as well.

The secondary invasion by the pyocyaneus dominated the bacteriological picture in this case, and yet was not the important infection. While the finding of large amounts of pus without organisms is suggestive of tuberculosis, it must be borne in mind that the presence of large numbers of organisms other than the tubercle bacillus does not mean that these organisms may not have been implanted on a tuberculous base. This case illustrates the importance of giving due weight to clinical appearances, even when they do not agree with the bacteriological findings.

The blocking of a ureter by tuberculous infiltration of its walls, to such a degree that a catheter cannot be passed, is not uncommon in renal tuberculosis. I have encountered it in another case within a week. The ureter is changed in these cases from a thin-walled distensible duct to a thick-walled rigid tube, in which the lumen and walls bear much the same proportion to each as is seen in the ordinary clay-pipe stem.

Dr. C A. Porter (by invitation) showed an

X-RAY PLATE OF A CYSTINE STONE.

I have here an x-ray plate which shows, though rather indistinctly, a cystine stone, which was removed three years ago, through an incision into the renal pelvis. Convalescence was rapid and uneventful. Three weeks ago, with an interim of perfect health, there recurred the old symptoms: nausea, vomiting, constipation, pain in the right lumbar region, shooting towards the groin, and three times blood was found in the urine. Urinary examination showed pus in clumps, rare blood globules, no albumin and no cystine; x-rayed by Mr. Walter Dodd, showed no signs of any calculus. The case is still under observation; diagnosis uncertain.

My second case is, I think, a more interesting one. For the past five years, a man over eighty has been passing his urine every two hours during the night and about once an hour during the day; two years ago, he suffered from an acute retention which, after cocainization of the anterior urethra, was relieved by the passage of a small brown stone; occasionally minute calculi were passed, until two months ago when a second retention occurred. In the meantime, the urine had become foul, the frequency of micturition had increased during the day to once an hour or even half an hour, and not rarely was so imperative that a urinal had to be worn constantly. At the time of the second retention, the catheter withdrew 5 oz. of urine, but at subsequent visits I was much perplexed at finding the residual urine always less than one ounce. The patient finally consented to an examination for stone, when it could be easily demonstrated that the prostatic urethra contained a number of calculi which could be distinctly felt, before the searcher entered the bladder. At a subsequent examination, with a sound in the urethra and a finger in the rectum, the stones could be distinctly felt to impinge upon each other and upon the steel instrument, and could be definitely placed in the prostatic urethra. The x-ray by Dr. Percy Brown shows numerous calculi in two lateral pouches in the prostatic urethra; though some are superimposed, in all probability, 26 can be counted. It must be remembered that none of the classical symptoms of stone in the bladder were present, and that the small amount of residual urine eliminated ordinary prostatic hypertrophy as a cause of the symptoms. At operation, a median perineal section, two cavities with rather small openings were found on either side of the prostatic urethra, filled with irregular, often faceted stones. These were removed with the scoop and a bent curette, and numbered 48 stones, varying in size from that of a small black-headed pin to a pea. No stones were found in the bladder.

A medium-sized rubber tube was placed in the bladder, to which constant drainage apparatus was attached. Subsequent examination of the stones showed that their chief component was phosphate of lime, with a trace of oxalate of lime, colored by blood pigment. At the end of a week, the perineal tube was replaced by an urethral catheter, and at the end of the month the perineal wound was almost closed, the greater part of the urine being voided by the penis, with a small amount of leakage. The bladder holds 2 oz. of urine at times, with a definite sensation of urination, but at others, the passage of water is involuntary. The urine has cleared remarkably.

President: I would like to ask if the symptoms of this patient were relieved by the operation.

Dr. Porter: The patient has had practically no pain since the operation, and since the removal of the catheter, no difficulty in urination. I should think it probable, however, that the frequency of urination would only slowly become less, as the contracted bladder gradually distends.

Dr. E. W. Caldwell, New York, read a paper on

THE ROENTGEN RAY DIAGNOSIS OF URINARY CALCULI.

DISCUSSION.

Dr. Percy Brown: I am very glad to be able to say that it is my privilege, as a Bostonian, to assist in welcoming Dr. Caldwell, in order that he may show you what he has done, and what röntgenologists are trying to do to help you in your professional work. It is also my privilege, as a röntgenologist, as well as your guest this evening, to say what little I can in the way of substantiation to the remarks of one whom all röntgenologists are honored in considering as one of the pillars of their specialty.

In considering one or two of the points which Dr. Caldwell has made, it possibly occurs to one who has listened to them that the most important problems which we have before us now are not so much the problems of whether or not a calculus exists, the possibility of which I think has become more or less verified, but as to where the calculus is. What is its relation to the surrounding tissues and structures? The value of this is, I think, especially brought forward in connection with the use of the stereoscope. There is only one difficulty with the stereoscope, and that is in the examination of the plate. In order properly to demonstrate stereoscopic plates, we are obliged to ask the consultant to come to our offices to view them, unless they can be reduced and looked at by a means similar to the old parlor stereoscopes that we used to have at home. It must be said, however, that the addition of the stereoscopic method to such difficult work as this is a distinct step in advance.

And when I speak of steps in advance it leads me into the realms of pathological conditions of the kidney in general. Although we are not always able to determine the pathology of the kidney as a viscus, nevertheless, I think that the time is coming when this will be done to a great extent, and in the future our efforts as röntgenologists should be directed toward developing some line of technic by which the kidney as an organ can be more or less accurately demonstrated in its various pathological conditions.

In connection with this matter I have been very much interested of late months in the application of xeroform to the diagnosis of pathological conditions of the kidney. Xeroform, which is one of those drugs similar to the subgallate of bismuth, can be suspended in oil and injected into the calices of the kidney, and when a plate is then made it will show the outline of the internal structure of the kidney and any changes which may have taken place to alter its size or shape. I wish then to show you a plate which I made the other day of a kidney after injecting some of this "xeroform oil." This is simply a suspension of xeroform in olive or sweet oil. The plate shows small shadows, which are very marked in character. This is what I wish to show you,— the possibility of producing sharp shadows, much more strong than those of some stones, in the kidney itself. I will pass this plate about for your inspection.

Mr. Walter Dodd: I wish to thank the society for the privilege of being here, and wish also to express my appreciation of the excellent points brought out in Dr. Caldwell's paper. One or two things which he has dwelt on I should like to further emphasize. The first is in regard to the preparation of the patient. This seems to me a matter of very great importance, and one not ordinarily given sufficient attention. We repeatedly see this in cases sent down from the wards, and among patients who have not been long enough in the hospital to be submitted to the regular routine preparation. Often the plates taken of such patients will show shadows of fecal matter. In order to better avoid the danger of error from such sources, we have adopted the routine of taking two or more plates of patients at intervals of at least twenty-four hours, and not considering conclusive any evidence short of this, either positive or negative. It seems to me that this is of great importance. In the routine of preparing the patient it is of course essential not to have very much in the stomach when the plate is made.

I should like to ask Dr. Caldwell as to the value of the x-ray as a means of diagnosis in a question of tubercular kidney. A number of cases have been x-rayed quite recently in the hospital and presented quite a peculiar appearance, and I believe by means of the cystoscopic examination the diagnosis was made of tuberculosis. In several of the plates the outline of the kidney was very obscure and blotchy and very peculiar in appearance.

Dr. Benjamin Tenney: I think it may be of interest to show here some phleboliths which I took from a subject fifty-eight years of age. They were in that column of veins just external to the seminal vesicle, and represent the sort of thing that was shown in one of the plates on the screen.

Here are two ureteral calculi. One of them I removed seven years ago. The larger one was never radiographed, and the smaller one showed no shadow in the radiograph plate.

Dr. Hugh Cabot: I have two recent cases that bear somewhat on the subject at issue. One was a man whom I saw last summer with symptoms suggestive of a recurrent appendicitis; but the fact that he had had attacks of pain frequently higher up in the region of the right kidney suggested that there might be an involvement there. While under observation his urine, which had previously been clear, became suddenly clouded. He was x-rayed by Dr. Brown, and showed a sharp shadow outside the line of the ureter, which Dr. Brown believed to be a calcified body, possibly a gland. The cystoscope showed some redness of the ureteral orifice on that side, but repeated x-rays showed no other shadows. An operation was performed and a calcified gland removed, which was very hard and lay to the outer side of the ureter. The appendix showed evidences of inflammation, and probably accounted for his condition. The cause of the right-sided pyelitis is still doubtful.

I have a plate here of Mr. Dodd's, which is interesting as showing the possible errors in diagnosis in x-ray work. This patient came to the Massachusetts Hospital and was in Dr. Richardson's service. She came to us from another hospital, where her kidney had been explored. She had a history of recurrent attacks of pain in the left side during the past fifteen years. In the past eighteen months the pain stopped on the left side and she began to have pain on the right side. X-ray plates are said to have been puzzling at the other hospital. This we learned, however, only from the patient. There the kidney was explored and no stone found. When she came to us the scar on her back was still red. She had a large palpable mass in the region of the right kidney and a high temperature. This mass rapidly subsided, so that in three or four days you could hardly feel anything abnormal. This x-ray plate shows quite clearly a large stone on the left side and two small shadows on the right. Her left kidney was explored two weeks ago by Dr. Richardson. It was found very much dilated with a thin cortex, practically a bag full of fluid. With a good exposure no stone could be felt and it was a serious question whether some error had not been made in the x-ray. We felt sure, however, that there must be a stone there, and finally in the upper pole of the kidney we found a pocket shut off from the rest of the kidney, which contained a mass of small stones, so grouped as to give the appearance of one large stone in the plate.

At the same time the other kidney was explored and found so much dilated that it was difficult to see on what the woman was living. Yet this kidney was secreting 20 oz. of urine, with a specific gravity of 1,005.

The case is interesting in that it had been through the hands of competent men, and yet there was the mass of stones on the other side, some of which must have been there for many years.

Dr. Heublein: I have very little to say on this matter. I have not been at this work very long and have succeeded in locating very few stones in the kidney. I believe I failed recently on a case that Mr. Dodd x-rayed. He took two plates of this case. Both of them seemed to show the transverse processes of the vertebræ and the psoas muscle and the vertebral column. But I think I failed on account of the lack of preparation of the patient in emptying the intestines. One picture showed a faint shadow which I took to be a stone. The second was a better plate, and it showed no stone.

I would like to ask Dr. Caldwell in regard to the method of compression which he uses.

Dr. Edgar Garceau: I would like to say just a word in regard to the diagnosis of kidney tumors by this method. Some two or three years ago I had a case of this kind, and an x-ray picture of it was taken for me by Dr. Robert Osgood, of Boston. The plate showed some very distinct shadows, which proved to have been cast by hypernephromatous nodules. I have recently looked up the subject of hypernephroma in connection with x-ray diagnosis, and I found very few references. In fact, I found only three cases in which this method of diagnosis had been used successfully. Of course it is impossible to differentiate between stone and tumor nodules.

Dr. Caldwell, answering the question of the President: I can only say that in all probability the x-ray will not enable us to determine whether there will be a recurrence of lithiasis.

I would like, in this connection, to speak of a case recently observed. The plates show very distinctly a calculus in the pelvis of the ureter, and over the lower pole of the kidney three very faint shadows. The case was x-rayed several times to find out what these were. They always showed in the same place, and that led us to believe that they were due to something in the kidney, and not to a coil of intestine overlying the kidney. Dr. Willy Meyer removed the stone from the pelvis of ureter, but palpation failed to disclose anything in the lower pole of kidney. After three months more, symptoms reappeared and another set of plates was made. These plates showed the same three spots much more strongly. We were then sure that they were due to calculi. The three stones were removed by Dr. Meyer. The case illustrates the formation of good-sized calculi in a very few months.

In answer to Mr. Dodd's question as to the use of the x-ray in the diagnosis of tuberculosis of the kidney, I can only give my own opinion, which is, that the x-ray will occasionally enable us to make a shrewd guess that the case is tubercular. I do not mean that it is not useful; but to be any great factor in the diagnosis, the method must enable us to say whether tuberculosis is present or not. The x-ray will probably never enable us to determine that a kidney is *not* tuberculous although occasionally it indicates that such a condition may be present.

Some writers have reported many cases in which the diagnosis of tubercular kidney was made in this way, and subsequent events have indicated the diagnoses to be correct. This, however, does not prove that the diagnosis could be made by x-ray alone.

The calculi shown by Dr. Porter are interesting because they resemble in appearance uric acid calculi. In many of the cases in which it has been reported that uric acid calculi were shown strongly by the x-ray, it is probable that the stones, like these, contained considerable amounts of other salts.

Dr. Garceau's case of hypernephroma is the only case of the kind I have seen.

In regard to the compression: The usual way of compressing these cases is by an appliance known as the Albers-Shönberg compression screen, which is pressed down into the abdomen. It is the one instrument used perhaps more than any other by x-ray workers, and it is found in almost any x-ray shop. However, I prefer to use a method of compression by air bags, which I described in a book on the subject published by Saunders & Co., in 1902.

Dr. Cabot's case illustrates a fact often lost sight of, and that is that the best surgeons often have great difficulty in finding a calculus in the kidney. We can readily see that this may sometimes be very difficult, and I believe that a great many of the errors charged to the x-ray are really due to failure to find the calculus when it is present.

President: I am sure we all highly appreciate Dr. Caldwell's paper. It has been suggested that we take a rising vote of thanks to Dr. Caldwell for coming here.

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SEMI-ANNUAL MEETING OF THE BOSTON SOCIETY OF EXAMINING PHYSICIANS AND SURGEONS.

Charles T. Cutting, M.D., Secretary.

The regular semi-annual meeting of the Boston Society of Examining Physicians and Surgeons took place Wednesday evening, Oct. 30, at the Parker House. The subject under discussion for the evening was

THE MEDICAL WITNESS IN THE COURTS OF MASSACHUSETTS.

At 6.30 o'clock the Board of Government convened, consisting of Drs. Donoghue, Allard, Leary, Ames, Briggs, Cutting and Kepler, and thirty applicants for membership were acted upon.

At 7 o'clock a dinner was served, there being eighty members and guests present. Dr. Francis D. Donoghue, president of the organization, acted as toastmaster. After a few business details had been discussed, the meeting opened with the reading by the secretary of letters received from Hon. Melvin O. Adams and ex-Congressman J. A. Sullivan, expressing regrets that they were unable to be present.

Ex-Attorney-General Parker sent word that he was in sympathy with any move which would dignify the medical expert.

Mr. Sullivan's letter said in part: I think the evils resulting from expert testimony are greatly exaggerated. The medical expert whose testimony indicates bias is easily exposed by a competent attorney on the other side, and such experts acquire a reputation before courts and juries which acts as a check upon the evils resulting from excessive zeal.

Mr. Adams said: We may yet have to have a medical referee, because I cannot see any other way of eliminating the evils of expert testimony.

Dr. Donoghue introduced Mr. E. P. Saltonstall. He said: The trouble, if there is any with medical or other experts, is that there are a few, and I think a very few, who testify dishonestly. These very few bring odium and blame down upon the men who are trying to bring out the exact facts. The law contemplates a certain amount of bias on the part of witnesses, and I agree with Mr. Sullivan that this bias is not a bad thing. I do not believe in experts appointed by the government or judiciary. The judge of a court of law is not familiar with the entire medical profession. No judge could tell whether the man whom he appointed was the best man. If a man was to be appointed in any such manner as is proposed, I believe that the jury would go by him and throw out the other expert testimony. The Revised Laws of Massachusetts provide that the Court shall not charge juries as to matters of fact. I suggest that the very few dishonest experts might be corrected by so amending the rule as stated by providing that the Court shall not charge juries as to matters of fact except in reference to expert testimony.

Henry F. Hurlburt pointed out that, while some people had the idea from recent agitation that the proposition of having experts appointed by the courts was a new one, as a matter of fact it was proposed as long ago as when he first began to practice. He said, "It is hardly conceivable that the court would find three men who would agree, and if it could, the cost of running the courts would be increased enormously under such a plan." He argued that an honest expert in court need not fear cross-examination or abuse from opposing counsel. He declared, however, that some physicians who come into court make exhibitions of themselves because they pretend to be experts along many different lines. He said that the expert is often afraid to say, "I don't know." One reason for the feeling against some testimony, he believed, is that some physicians appear to regard a damage suit as a valuable asset. He said that in such cases the bill of the attending physician frequently runs from $75 to $300, and spoke of one case where the bill was $500, although he felt sure that it should not have been over $50. He said that where, under ordinary circumstances, the family physician might make four or five visits for some slight injury, if the case went into the courts his bill was pretty sure to be $200 or $300.

Samuel M. Child said: One great trouble results largely from the fact that any one who has five cents can gamble for other people's property before a jury. He went on to say that there is something wrong with the legal as well as the medical side of the case, and declared that while it might be hard to compel a plaintiff to furnish a bond for costs, that he personally believed that a rule of that sort, with a provision that a man might be allowed to bring suit without a bond, upon the approval of the Court, would be a good thing. One of the main difficulties, he said, with the present method is that the only man who is really competent to express an opinion, and who is unbiased, is forbidden to express an opinion. I think that the present system is wrong, and that the judge should be allowed to express an opinion on the evidence.

J. Porter Crosby said he thought medical testimony compares favorably with the best of opinion evidence. Probably the least objectionable suggestion is the one which I understand The Massachusetts Medical Society is to bring before the legislature, providing that when medical experts are needed they should be appointed by the Court in about the same way as masters are now. Another suggestion is that there should be an officially appointed list of experts from which the courts must draw. I don't believe any of the suggestions will give any better or more satisfactory service than at present. The testimony of physicians stands as high, if not higher, than any other expert witnesses.

Judge Kennedy, of Newton, agreed with much that had been said, but he remarked that there have been cases not only in New York, but Massachusetts, which have perhaps injured confidence in expert witnesses. He called attention to the fact that judges now appoint physicians in certain criminal cases and in insanity cases. "I am not at all sure," he said, "that the time will not come when this medical society will pass up the name of fifteen or twenty men and suggest that they act as experts for a year."

James P. Magenis said that he thought the solution of the problem rested in large measure with the Boston Society of Examining Physicians and Surgeons; that through this organization the unqualified expert and the man who lies can be weeded out, and he thought that this society had a great mission before it.

EX-SENATOR W. A. MORSE congratulated the committee who met not quite a year ago and formulated the plan for such an organization as the Boston Society of Examining Physicians and Surgeons. He stated that such a gathering as was present showed earnestness of purpose, and that he was much pleased to note the large and enthusiastic gathering. He said that having spent the summer abroad, visiting many of the courts there, he was glad to get back to the Massachusetts laws and courts.

After deciding that the next meeting of the society would be in January, and would be devoted to discussing the problems of "Life Insurance Examinations," the meeting adjourned.

Book Reviews.

The Operations of General Practice. Oxford Medical Publications. By EDRED M. CORNER, M.A., M.C., M.B. (Cantab.), B.Sc., F.R.C.S., Surgeon in charge of Out-Patients at St. Thomas's Hospital, etc., and H. IRVING PINCHES, M.A., M.B., B.C. (Cantab.), M.R.C.S., L.R.C.P., Clinical Assistant to the Children's Hospital, Great Ormond St., etc. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square. 1907.

This book of 296 pages is a somewhat new departure and is addressed to general practitioners. At first thought one would say that its title is a misnomer, for general practitioners in these days should not be concerning themselves as principals in surgical operations. But we find on reading the book that the authors describe admirably a number of minor operations such as must fall to the physician in rural practice. We commend the volume, therefore, to the busy physician. He will find in it careful directions for the numerous minor operations with which frequently he must deal.

The Operations of Surgery. Intended especially for the use of those recently appointed on a hospital staff, and for those preparing for the higher examinations. By W. H. A. JACOBSON, M.Ch. (Oxon.), F.R.C.S., consulting surgeon, Guy's Hospital; and R. P. ROWLANDS, M.S. (London), F.R.C.S., assistant surgeon and surgeon to the Orthopedic Department, Guy's Hospital; joint teacher of operative surgery in the medical school. Fifth edition, with 777 illustrations. Two volumes. Philadelphia: P. Blakiston's Son & Co. 1908.

In his preface to the fifth edition of this valuable work Mr. Jacobson reminds us that he does not write for persons of large surgical experience, but for hospital internes and those working for the higher examinations. He states that Mr. Rowlands is entirely responsible for the sections on abdominal surgery, and he recognizes his further obligations to thirty-four well-known surgeons in England, on the Continent and in America. In this notice of the fifth edition it is needless to undertake a review *in extenso.* The two volumes occupy some two thousand pages and deal in most exhaustive fashion with enormous numbers of operations. The cuts are second rate, and the volumes are inexpensively produced, but this is doubtless intentional, for they should be within the means of medical students. The work is encyclopedic. We commend it cordially and, in spite of its author's modest disclaimer, to practitioners as well as to students of surgery.

Ueber das spezifisch Menschliche in anatomischer, physiologischer und pathogischer Beziehung. Eine kritisch-vergleichende Untersuchung, von DR. LUDWIG HOPF. Illustrated. Stuttgart: Fritz Lehmann, Verlag. 1907.

The author of this comprehensive volume of 469 pages has attempted the somewhat ambitious task of determining, chiefly by comparative studies, what qualities may be regarded as specifically human and what man holds in conjunction with lower animals. The originality of this attempt, as it is worked out by the author, is not to be questioned. He gathers together a vast number of facts, physiological, anatomical, pathological, psychological and anthropological, and with much skill marshals them for the solution of the problem which he has set himself. The book, as might be expected, contains much information of great value and of easy reference on a great variety of subjects relating to the evolution of man and his place in the animal kingdom. The volume is profusely illustrated in a way to elucidate the text. For example, in one of the plates is given pictures of the brains of mammals ranging from man to the gibbon, and in many other instances such comparative plates add to the usefulness of the description. The book, in general, is an example of painstaking investigation from an original standpoint, and may be cordially recommended to the attention of those desiring to look upon medical problems, as well as others of human interest, from a comprehensive viewpoint.

A Manual of the Practice of Medicine. Prepared Especially for Students. By A. A. STEVENS, A.M., M.D., Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania, etc. Eighth edition, revised. Illustrated. Pp. 558. Philadelphia and London: W. B. Saunders Co. 1907.

This comprehensive epitome of medicine, including diseases of the skin, has passed through eight editions, and has been cordially received by the medical profession. Incomplete as such a volume must of necessity be, it undoubtedly fills a place of usefulness, and the author has conscientiously endeavored to keep each edition abreast of medical progress.

Abdominal Hernia, its Diagnosis and Treatment. By W. B. DeGarmo, M.D., New York, Professor of Special Surgery (Hernia), New York Post-Graduate Medical School and Hospital; Fellow of New York Academy of Medicine, etc. Philadelphia and London: J. B. Lippincott Co. 1907.

The author has had a large experience in the class of cases of which he treats. He remarks in his preface: "It is to the physician that this book is especially addressed, and if it fails to furnish him useful suggestions regarding the diagnosis and treatment of abdominal hernia, then certainly it will have fallen far short of its intent." He has labored diligently with the task in hand, and acknowledges his obligations to such well-known surgeons as W. S. Halsted, W. J. Mayo and numerous others, and to sundry manufacturers of trusses, — among others his brother, Mr. G. J. DeGarmo.

The book contains 446 pages with an index, and deals faithfully with the commoner forms of external abdominal hernia. There are numerous admirable plates. One hundred pages of the book are concerned with the non-operative treatment of hernia, and the author's suggestions regarding trusses are excellent. The severe critic may object that a patient, the victim of hernia, should always have the benefit of a surgeon's advice, as much as though the patient were suffering from appendicitis. One cannot but feel that this book may encourage general practitioners too often to neglect surgical treatment for their cases. Nevertheless, the book is suggestive and bristles with information.

A Manual of Orthopedic Surgery. By Augustus Thorndike, M.D. P. Blakiston's Son & Co. 1907.

There has been for some time a demand for a reliable small "handy volume" on orthopedic surgery, presenting to beginners and to busy practitioners the essential facts of this branch.

This need has been met in a most admirable manner by Dr. Thorndike's publication. Works of this class are usually written by beginners who compile from the writings of others, borrow illustrations from larger treatises, and make merely compends. When the medical public is furnished with a condensed book written by a surgeon of experience and excellent mature judgment, who writes after a careful study of all that has been written and taught, revised by a just critical spirit developed from personal experience and investigation, the result cannot fail to be of great value.

The work is one which can be recommended without hesitation to all students, practitioners and specialists.

Immune Sera, Anti-toxins, Agglutinins, Hemolysins, Bacteriolysins, Precipitins, Cyto-toxins and Opsonins. New edition, rewritten by Charles F. Bolduan, M.D. New York, 12mo. viii, 154 pages. Published by John Wiley & Sons. 1907.

This little book, the aim of which is to present to the general scientific reader the present state of knowledge concerning those biological phenomena which are frequently grouped under the head of immunity, admirably fulfils its purpose. Although its object is not to emphasize the value of immunity reactions in diagnosis and treatment of disease, but primarily, to explain concisely the present methods of study and the explanations of these processes which have been offered, it must be noted that practical methods of accepted value, such as the production of diphtheria antitoxin, and the technic of the agglutination test, are specifically and particularly well explained.

Dr. Bolduan has endeavored to approach the Ehrlich hypothesis of immunity, which has dominated not only this book, but scientific opinion on this side of the water for some years, in a critical spirit and to treat it as an hypothesis, but the desire for completeness has led him, as it has many others, to accept this ingenious theory as an ultimate explanation, simply because it explains plausibly things concerning which we have no definite information. The recent work of Arrhenius, Bang and Forsmann, Landsteiner, Bordet, Gay and others, if it has not entirely reduced the Ehrlich theory to a matter of historical interest, has at least left the question much more open to discussion than Dr. Bolduan would lead us to think. The book, however, may confidently be recommended to those who should wish to learn the acquired facts in immunity.

Catholic Churchmen in Science. Sketches of the Lives of Catholic Ecclesiastics who were among the great founders in science. By James A. Walsh, M.D., Ph.D., LL.D., Professor of Medical History, Fordham University Medical School, and Professor of Physiological Psychology in St. Francis Xavier's College, New York. Pp. 221. Philadelphia: American Ecclesiastical Review, The Dolphin Press. 1906.

The author offers us in this small volume of 221 pages an attractive biography of certain distinguished Catholic scholars. The volume constitutes a collection of sketches which have from time to time appeared in various Catholic magazines. Some of the men whose lives are recorded are: Copernicus, Basil Valentine, Linacre, Bishop Stenson and Abbot Mendel. We quote a sentence indicating the spirit in which the papers were written: "They all range themselves naturally around the central idea that the submission of the human reason to Christian belief, and of the mind and heart to the authority of the church, is quite compatible with original thinking of the highest order, and that with absolute freedom of investigation into physical science, which, has only too often been said to be quite impossible to churchmen." Such a statement is interesting in view of certain present day tendencies in this great religious organization.

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REPORT OF THE HEALTH DEPARTMENT OF BOSTON.

THE problems of a large city in relation to health are always matters of more than passing interest, differing as they do in essential respects from similar problems in rural regions. We have before us the fifty-fifth annual report of the Boston Health Department for 1906, containing many matters of interest to the physician, whether he be concerned particularly with problems of sanitation or with the details of practice.

It appears from this report that the mortality of the city for 1906 compares favorably with preceding years, with total deaths numbering 11,411 in an estimated population of 602,526. Calculated on this population, the death-rate was 18.94 per 1,000 inhabitants, slightly greater than that of the preceding year. Of the 2,119 deaths resulting from infectious diseases, including consumption, there was a decrease of only 42, which is of interest in connection with the active work which has of late been undertaken with reference to infectious diseases, particularly tuberculosis. The mortality from diphtheria remains very much lower than before the introduction of antitoxin, and for the year under consideration was 7% of the whole number of cases under observation. Typhoid fever led to 122 deaths during the year, nearly half occurring during the months of August, September and October, and almost two thirds of the entire number between the ages of twenty and forty years. It is of interest to note that there were exactly half as many deaths from measles as from typhoid, again demonstrating the fact that measles is by no means a trivial disease.

Not the least of the functions of the City Board of Health is the abatement of nuisances and the correction of conditions which may in the future become a menace to public health. For example, the abatement of the smoke nuisance, of which the Board of Health now has charge, has progressed in a satisfactory way. In general, there has been a disposition on the part of offending persons or corporations to assist in the betterment of this nuisance. But two cases have been brought to court, and it is stated that in premises covered by the law there has been a diminution of the amount of dark smoke of not less than 75%. It is certainly a satisfaction to have a definite statement of this fact, but it is not to be questioned that much still remains to be done before a really satisfactory condition of affairs is reached. A further work of great importance for the comfort and welfare of the citizens is the correction of nuisances which are almost sure to arise in the various alleys with which the city is so liberally provided, not only in the poorer, but also in the very best parts of the city. The carelessness of abutters on alleys in this respect is notorious, and the Board of Health may and should render valuable public service by insisting on decent cleanliness and care in this regard. The total number of abuses of this and allied character abated during the year number 10,840. There is ample opportunity for vigorous activity in this work.

The report of the Quarantine Department shows that during the year 113 cases were admitted to the quarantine hospital, classified as follows: Scarlet fever, 48; measles, 30; chickenpox, 9; leprosy, 1; observation, 22; variola, 3. The only death was from scarlet fever. The total number of passengers inspected was 89,315, the largest in the history of the department. The report on rabies is also of interest. Since 1904 the disease has been prevalent in various parts of Massachusetts, but no cases occurred in Boston between the years of 1898 and 1906. During the year ending Jan. 31, 1907, a considerable number of cases came under observation. Sixty-three rabid animals were found, the diagnosis being confirmed by recognized methods.

In general, such a report as this demonstrates the great responsibility resting upon a city board of health, the enormous amount of work in diversified fields it is called upon to do, and the protection it should afford, not only to the health, but also to the comfort of the people. It also emphasizes the extreme importance of keeping such a department free from the baneful influence of politics; of governing the appointments made thereto solely by the test of capacity, fitness and character; of administering its expenditures carefully.

The finance commission of the City of Boston has just made a report to the present mayor which shows that the Boston Board of Health in recent years has been far from a model in these respects. To this report we shall refer again later.

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SYPHILITIC PHLEBITIS OF THE LARGE VEINS.

Although quite exceptional in practice, superficial phlebitis due to syphilis has been the object of many comprehensive studies, but the same cannot be said of phlebitis arising in the deep veins in the limbs or viscera. This has recently been the object of a very important thesis upheld in 1907, at Toulouse, by Roques. Phlebitis of the deeply situated veins may involve the femoral, saphenous, popliteal, portal and the cava.

Syphilitic phlebitis of the deep veins may appear at any of the periods of the infection, and indifferently forms an accident of the secondary or tertiary period of the affection. Its etiology can be looked for in the action of the syphilitic virus on the walls of the vein without any other predisposing cause, such as alcoholism, traumatism, etc. In certain cases the diagnosis is an easy matter when one is aware of syphilis in the subject, where the stigmata are distinct and apparent, with a complete absence of any other cause. In such cases a diagnosis may be made without hesitation.

The diagnosis will be far more difficult when one is dealing with an ignored syphilis on the part of the patient, and syphilitic stigmata will consequently be absent. Occasionally, a slight rise in temperature has been noted in certain cases, while in others the fever has been high. In all cases when there is a rise in temperature this occurs at the beginning of the affection and is of not more than two or three days' duration.

In deep-seated phlebitis of the limbs, the beginning is ushered in with severe pain, located over the portion of the vessel involved and occasionally accompanied by nocturnal exacerbations. The limb is early affected by complete functional impotency.

Palpation gives rise to pain, but this is relatively slight; it may vary in intensity, so that it may be merely a very slight sensation of discomfort, or, on the other hand, it may be intense. Palpation will also allow one to recognize a diffuse deep-seated thickening over the thrombosed vein and, with the progress of the thrombosis, edema and collateral circulation appear, forming the classical picture of phlegmasia alba dolens.

In cases of deeply seated syphilitic phlebitis in the visceral cavities, and more particularly when this lesion arises in the portal system, a very rapidly developing and quite intense ascites develops which is likely to be rapidly reproduced after aspiration. The ascites is almost always accompanied by icterus, and these symptoms are forerunners of an early death. Phlebitides involving the vena cava are accompanied by edema of the lower limbs and anasarca.

These visceral phlebitides can be easily diagnosticated as far as phlebitis is concerned, but it is only by an examination of other manifestations of the affection presented by the patient, or by a study of the past history that syphilis may be revealed. Usually, however, they remain, as Fournier says, " lost in the rich symptomatic parade of visceral syphiloses." It is to be pointed out, nevertheless, that, if a very energetic mixed treatment be instituted in time, these syphilitic phlebitides may be cured.

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MEDICAL NOTES.

Commander of the Hospital Ship "Relief." — Surgeon Charles Francis Stokes, of the United States Navy, has been appointed by President Roosevelt to the command of the hospital ship *Relief*, now being overhauled in San Francisco, preparatory to joining the Pacific fleet.

Influenza in Chicago. — Influenza has spread widely in Chicago, and is playing an important part in the mortality of the city. During one week 31 deaths from the disease were reported, and the mortality from this cause and the conditions following it is greater than at any time since the epidemic of 1898 and 1899.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Jan. 15, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 62, scarlatina 46, typhoid fever 3 measles 45, tuberculosis 58, smallpox 0.

The death-rate of the reported deaths for the week ending Jan. 15, 1908, was 20.02.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Jan. 18, 1908, was 248, against 244 the corresponding week of last year, showing an increase of 4 deaths and making the death-rate for the week 21.22. Of this number 141 were males and 107 were females; 243 were white and 5 colored; 151 were born in the United States, 92 in foreign countries and 5 unknown; 53 were of American parentage, 164 of foreign parentage and 31 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 46 cases and 3 deaths; scarlatina, 48 cases and 0 deaths; typhoid fever, 2 cases and 0 deaths; measles, 46 cases and 1 death; tuberculosis, 60 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 46, whooping cough 1, heart disease 17, bronchitis 11, and marasmus 5. There were 10 deaths from violent causes. The number of children who died under one year was 45; the number under five years 60. The number of persons who died over sixty years of age was 52. The deaths in public institutions were 74.

There were 2 cases and 4 deaths reported from cerebrospinal meningitis during the week.

There were also 12 deaths reported from la grippe during the same period.

The Optometry Bill. — The dispensing opticians of Massachusetts, through a committee of seventeen individuals and firms, are promulgating a circular of resolutions stating their position in regard to a so-called optometry law. This circular is in a measure an answer to the vote of The Massachusetts Medical Society, the Boston Homeopathic Society against such legislation.

NEW YORK.

Malicious Animal Magnetism.— There is considerable discussion among the Eddyites of Brooklyn, it is said, as to what caused the recent death of Mrs. Parmelia Leonard, the leader of the sect in that borough. The certificate of death gave the cause as diabetes, but some of the friends of the deceased are now asserting that the real cause was "malicious animal magnetism," which Mrs. Eddy assigned as the cause of the death of one of her husbands.

Verdict for Death of Husband. — On Jan. 10 Mrs. Margaret Mahler was awarded a verdict of the large amount of $16,000 in the Supreme Court of New York for the death of her husband, who was killed by a Lexington Avenue trolley car while driving a bakery wagon. On the same day a verdict for $120,410, the largest ever given against a railway company in connection with an automobile accident, which Mrs. Sarah Read had obtained against the New York Central & Hudson River Railroad for the death of her husband, was reversed by the appellate division of the Supreme Court. Mr. Read was killed in a collision between an automobile in which he was riding and a railroad train at Van Cortlandt Park in June, 1904, and the reversal was based on the ground of contributory negligence.

Medical Quackery. — C. S. Andrews, who resigned the first of the year, after having served for seven years as counsel for the Medical Society of the County of New York, recently made an address at the West Side Branch of the Young Men's Christian Association on "Medical Quackery." In it he criticised severely the daily newspapers for publishing the advertisements of quacks and patent medicines, stating that only two of the New York papers refused to take these. It was the press alone, he said, which enabled quacks to make a living. After devoting some attention to unlicensed practitioners, the speaker warned his hearers against resorting to corporations which advertised medical treatment, pointing out that consulting such institutions was a very different matter from going to an individual physician. The law respected the secrets entrusted to a physician as sacredly as it did the confessional, but a man could not make a corporation his confidant.

Mortality Reports. — The weekly reports of the Health Department show that during the month of December the mortality in the city represented an annual death-rate of 20.57, as against 15.87 in November and 18.32 in December, 1906. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from measles increased from 7.5 in November to 23.75 in December; the weekly average from scarlet fever, from 13 to 21; from diphtheria and croup, from 29 to 33.5; from influenza, from 5.25 to 45.75; from epidemic cerebrospinal meningitis, from 6.75 to 7.75; from pulmonary tuberculosis, from 154.5 to 183.25; from acute bronchitis, from 19.5 to 25; from lobar pneumonia, from 116.25 to 191.75; from bronchopneumonia, from 99 to 139.25; from cancer, from 56.75 to 68; from apoplexy, congestion and softening of the brain, from 45.75 to 65.25; from Bright's disease and acute nephritis, from 99.5 to 117.25; from organic heart diseases, from 140 to 178.5; and from cirrhosis of the liver, from 16.75 to 24.5. Among the few diseases which showed a diminished mortality were the following: The weekly average of deaths from typhoid fever declined from 19 to 17.5; from malarial fever, from 2 to 1; from diarrheal diseases, from 47 to 44.25; and from diarrheals under five years of age, from 40 to 37.5. There was one death from smallpox, the first in many months, during the week ending Dec. 14, and the deaths from influenza increased from 9 in the week ending Dec. 7 to 42 in the week ending Dec. 14. In the following week, ending Dec. 21, they amounted to 68.

Lord Kelvin Memorial Meeting.— A Lord Kelvin memorial meeting was held on Jan. 12, under the auspices of the American Institute of Electrical Engineers, and resolutions were passed by a standing vote in which he was described as "the greatest exponent of contemporary science; a man whose contributions to the advancement of knowledge and whose inventions for ameliorating the conditions of mankind give him place in history as one of the greatest benefactors of the human race." Among those who made addresses were Prof. E. L. Nichols, of Cornell University, Rear-Admiral George W. Melville, and the Rev. W. T. Manning, assistant rector of Trinity Parish. The latter, in the course of his remarks, said that, while the supposed conflict between religion and science was already a thing of the past, it was an encouragement to know that such a man as Lord Kelvin could say: "With the utmost freedom of thought we are bound to realize that science is not opposed to religion, but a help to religion."

Extension of Work of Medical Association of Greater City of New York.— The Medical Association of the Greater City of New York has this year introduced a new feature in its work. The regular monthly meetings of the society are held, as formerly, at the New York Academy of Medicine, in Manhattan, but inasmuch as its membership is composed of physicians residing in all five boroughs of the city, the Executive Council, with a view to increasing the interest in the association in the boroughs outside of Manhattan, and to affording increased facilities to members from them, has inaugurated the plan of having a series of special meetings in the different boroughs. The first of these was held at Tremont, in the Bronx, the second week in January, and proved very successful. The evening's exercises were devoted to diseases of the heart, a subject which was well chosen, considering the marked increase in mortality from this cause which has of late been noted in New York, and the men who took part in the proceedings were especially well qualified to speak on the topics assigned them. The president of the association, Dr. Satterthwaite, led off with a paper showing much research and original observation, on Some of the Newer Aspects of Cardiac Pathology, and the other papers were: "Instruments of Precision in the Management of Diseases of the Heart," by Dr. Louis F. Bishop, "Diagnosis," by Dr. William H. Porter, and "The Use of Drugs," by Dr. Reynolds W. Wilcox; after which there followed an interesting general discussion. One point clearly brought out was the established fact that the hearts of athletes and others who take active exercise for some years and then stop this are almost certain to undergo fibrinous, fatty, or other degeneration, and the necessity of warning young men going into athletics of the danger they incur unless they are willing to keep up a certain amount of exercise indefinitely. The next special borough meeting will be held in Richmond (Staten Island), on Feb. 3, when Dr. Robert Abbe will read a paper on Radium and Dr. Reginald H. Sayre one on the Modern Treatment of Bone Tuberculosis.

At the annual meeting of the association, held on Jan. 20, the following officers were elected: President, Dr. Robert T. Morris; Corresponding and Statistical Secretary, Dr. Frank C. Raynor; Treasurer, Dr. A. Ernest Gallant; Chairman for the Borough of Brooklyn, Dr. J. Scott Wood.

Current Literature.

Medical Record.
Dec. 21, 1907.

1. Haig, A. *The Salicylates in Diagnosis and Treatment.*
2. Cleaves, M. A. *The Ante-mortem Clinical Conditions and the Post-mortem Findings in an Irregular Case, with Presentation of Pathological Specimens.*
3. Munson, J. F. *Epilepsy; General Tuberculosis; Syphilis.*
4. Cook, F. R. *The High-Frequency Metallic Discharge; A New Treatment; Its Possibilities.*
5. Reese, F. DeW. *Fibroid Tumors of the Uterus and Their Treatment.*
6. Talbot, G. H. *The Identity of Visual and Color Sensations.*

New York Medical Journal.
Dec. 21, 1907.

1. *Wright, J. *A Nasal Sporozoön (Rhinosporidium Kinealyi).*
2. Pfahler, G. E. *The Treatment of Sarcoma by Means of the Röntgen Rays.*
3. Chapin, H. D. *Proteid Incapacity in Infants and Children.*
4. Logan, O. T. *The Little Known Atypical (Unfertilized) Egg of Ascaris Lumbricoides.*

5. PRYOR, J. H. *Recurring Pleural Empyema.*
6. LUDLUM, S. D. *Peripheral Spinal Degeneration Revealed only by Longitudinal Sections of the Cord and an Axis Cylinder Stain.*
7. DUNCAN, H. A., AND ILLMAN, G. M. *Etiology and Treatment of Thrombosis.*
8. SHEARER, J. Y. *Quinine Sulphate.*
9. GRANET, A. *Contribution to the Pathology of Icterus Neonatorum.*

1. Wright reports a case of a papillomatous growth in the nose removed in 1903. At that time the only conclusion was that it was a protozoan disease, and that the organism probably belonged to the sporozoa. Since that time four or five similar nasal tumors due to a sporozoön have been reported from Cochin, India. Wright's case had never been out of Tennessee. From the close similarities of the tumors, the sporozoa, and the histories of the cases, Wright believes that the organism is the same. The tumor is a granuloma with cysts, sporules and spore morulæ. There were no metastases.

[R. I. L.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
DEC. 21, 1907.

1. SOLIS-COHEN, S. *The Prophylaxis and General Management of Acute Rheumatic Fever.*
2. DAVIS, N. S. *The Treatment of Rheumatism by Specifics.*
3. *SPILLER, W. G. *Hemicraniosis and Cure of Brain Tumor by Operation.*
4. *HUNNER, G. L. *The Tub-Bath Treatment of Cystitis.*
5. PFAHLER, G. E. *Physiologic and Clinical Observations on the Alimentary Canal by Means of the Rœntgen Rays.*
6. HERTER, G. A. *The Influence of Food and of Epithelial Atrophy on the Manifestations of Saccharo-Butyric Intestinal Putrefaction.*
7. GIBNEY, V. P., AND WALLACE, C. *The Recent Epidemic of Poliomyelitis. A Preliminary Report.*

3. Spiller reports two cases of hemicraniosis (hypertrophy localized exclusively to a half of the cranium including the face) with endothelioma growing from the dura. Both cases were operated. In one case the cranium was so infiltrated with the tumor that death resulted from hemorrhage. The second case, after three operations, is apparently without symptoms at the present time, shortly after the last operation. Both cases gave histories of head injuries.

4. Hunner believes that while the tub bath and continuous irrigation are reserved for the more intractable cases of cystitis, they are valuable accessories. He reports a few selected cases of the worst types. This treatment is especially applicable to patients with suprapubic or vesico-vaginal fistulæ. In all the result was satisfactory. An ordinary portable bath tub, such as is used at the Johns Hopkins Hospital for typhoid baths, is employed. The water is kept at 100° F. and the patient sits in the bath for eight hours daily.

[R. I. L.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.
DECEMBER, 1907.

1. *MUSSER, J. H. *The Medical v. the Surgical Treatment of Gastric Ulcer.*
2. *STOCKTON, C. G. *The Indications for, the Methods of, and the Results to Be Expected from the Medical Treatment of Gastric Ulcer.*
3. *THAYER, W. S., AND FABYAN, M. *Studies on Arteriosclerosis, with Especial Reference to the Radial Artery.*
4. *ROSENBERGER, R. C. *The Significance of Tubercle Bacilli in the Feces.*
5. ROSS, G. G., AND PAGE, H. F. *Acute Intussusception in the Adult.*
6. BROWN, B. H. *Primary Carcinoma of the Urinary Bladder.*
7. PITFIELD, R. L. *Incomplete and Complete Hypothyroidea or Myxedema.*
8. SCHRADIECK, E. C. *A Method of Obtaining Cultures from the Human Blood.*
9. *CAPPS, J. A., AND LEWIS, D. D. *Observation upon Certain Blood-Pressure-Lowering Reflexes that Arise from Irritation of the Inflamed Pleura.*

1. Musser has gathered a large amount of statistical evidence as to the comparative results of medical and of surgical treatment of gastric ulcer, from 1,871 published and 586 unpublished cases communicated to him by members of the Association of American Physicians. The data collected are often inconsistent and confusing from the difference in standards of the many observers quoted. The clinical frequency of gastric ulcer is variously estimated from 0.002% to 2.2% of cases. The mortality, irrespective of treatment, varies from 6% to 26%. Perforation probably occurs in 2% to 3%, grave hemorrhage in 4% and sequels in 60%. Simple ulcer treated surgically in cases in literature resulted in a mortality of 20% and in cure in 68%; in cases privately gathered the mortality was 11% and the percentage of cures 85%. Under medical treatment in published cases the mortality was 12% and the percentage of cures was 73%; in unpublished cases treated medically the mortality was 3% and the percentage of cures 91%. In contrast to the results of surgical treatment in general, it is to be mentioned that in the hands of certain operators of exceptional experience, notably Robson, Moynihan and Mayo, the operative mortality is in the neighborhood of 3%. In acute large hemorrhage the medical mortality is 22% and the surgical 42%. In chronic bleeding ulcer the surgical mortality is 22% and the medical 28%. In perforation the surgical mortality was 34% in published and 69% in private cases; of 53 cases treated medically, 54% died. Results in various late complications are also analyzed. Musser concludes that simple gastric ulcer is a medical disease. If perforation occurs it becomes a surgical affection at once. Hemorrhage is rarely to be treated surgically except when it is repeated and chronic. Pyloric stenosis, if extreme, requires surgical interference. Finally, if surgery is to be undertaken, it is important to select a surgeon who has had considerable experience in gastric surgery.

2. Stockton discusses the treatment of gastric ulcer as far as possible without bias toward medical or toward surgical methods. He first emphasizes the need for accurate diagnosis to exclude cases in which, in spite of close resemblance in clinical appearance, no ulcer exists. Also it must be recognized that ulcer occurs in two more or less distinct types; first, and more frequent, the acutely beginning form met most often in chlorotic young women; and second, the type developing more often in older persons, especially men, with great tendency to persistent chronic course. In the etiology there is reason to suppose that lowered resistance of tissue plays a part. In prophylaxis, nervous and general debility and chlorosis must be guarded against. In the treatment of acute gastric ulcer the great need is, first, early diagnosis, and, second, strict discipline in enforcing proper diet and relief of hyperacidity for a prolonged period. When these requirements are fulfilled, there is as a rule little trouble in bringing about immediate relief of symptoms and ultimate cure. In cases of bleeding, body and mind should be put completely to rest, and the stomach should be kept out of function. Sometimes careful and rapid lavage with ice water or weak adrenalin is of service. Morphine with atropin or hyoscin should be given in amount sufficient to quiet the patient. Bismuth and light magnesium carbonate in gelatin water given frequently will control overacidity. Warm saline solution (30 to 60 cc.) is to be given by rectum at frequent intervals. No food is to be given for several days or a week. Even nutrient enemata are to be withheld at first; after two or three days small injections of milk and glucose should be used. In case of alarming weakness, food should be given in the form of thin gruel of arrowroot or farina, or milk and lime water. In convalescence no one rule for feeding should be adhered to as invariable. Some patients do best on rather full feeding with animal foods; others can stand only bland liquid foods. Hyperacidity is to be controlled by mild alkalies. External heat or cold may give relief. Olive oil may promote gastric calm. Long continuance of treatment and of observation after cessation of symptoms must be emphasized. Surgery is called for in ulcer cases for the following indications: perforation, otherwise uncontrollable bleeding, pyloric stenosis or motor insufficiency due to adhesions, and continued severe pain.

3. Thayer and Fabyan record the results of an extremely careful histological study of the changes found in

the radial artery. They conclude that, whereas in old age a thickened radial artery is normal, an unduly thickened radial artery at an earlier age may mean one of two things: that the vessel has been subjected to unusual or exceptional strain, or that the vessel from inherent weakness or other abnormality has been unable to cope with conditions which might ordinarily be regarded as normal. The artery has thus been obliged to fortify itself by progressive thickening of its walls. As a rule, although there are striking exceptions, when the thickening of a radial artery is unduly marked, similar changes occur in the mesenteric artery and aorta.

4. Rosenberger examined the feces for tubercle bacilli in 612 cases from the wards of the Philadelphia General Hospital, and in 60 cases found tubercle bacilli present. In all of 60 other cases of diagnosticated tuberculosis tubercle bacilli were found. He also injected animals with cultures of the tubercle bacillus, and within a few days found that the bacilli appeared in the feces, even though no intestinal lesions developed. Of the 60 cases out of the series of 612 where tubercle bacilli were found in the feces, almost two thirds came to autopsy, and in practically all the presence of active tuberculosis was established. The feces were simply smeared and examined microscopically, stained by carbol-fuchsin and Pappenheim's solution. None were centrifugalized. It is concluded that the presence of tubercle bacilli in the feces means that active tuberculosis exists somewhere in the body. In acute miliary tuberculosis the bacillus is always present in the feces. In all cases of chronic diarrhea and in cases of glandular enlargement or ascites of unknown cause, and in all cases where an active tuberculous process is suspected, the feces should be examined for tubercle bacilli. The finding of tubercle bacilli in the feces does not mean intestinal ulceration in all cases; many of the cases which showed bacilli in the feces showed tuberculosis only in other parts of the body. [These results are at variance with the usual difficulty experienced in finding tubercle bacilli in the stools, and they need confirmation.]

9. Capps and Lewis, recognizing the occasional occurrence of collapse or sudden death on paracentesis of the thorax, attempt, in the absence of anatomical lesions found post-mortem, to explain such cases as due to reflex influences acting upon the cardio-vascular system. Experimenting with dogs, they have injected the pleural cavities with sterile oil, infected oil, formalin, turpentine and other chemical irritants, and have recorded changes in the blood pressure by means of tracings. Aspiration of oil and irritation of visceral and parietal pleuræ in healthy animals caused no marked lowering of blood pressure. In animals in which pleurisies had been produced, however, irritation with a trocar in 33% caused a marked fall in blood pressure. The fall of blood pressure may have been due to either of two reflex causes. In some cases it was probably cardio-inhibitory, acting through the vagus; these cases never ended fatally. In other cases the fall was probably due to a vasomotor (dilator) reflex, often resulting in death. In these cases the abdominal vessels were found engorged and section of the vagus did not prevent the reflex; adrenalin in two cases apparently saved the animal's life. In eight cases of pleurisy in human beings, where the visceral pleura was irritated by the trocar, a majority showed fall of blood pressure, some with complaint of faintness. In such cases adrenalin intravenously is indicated. As prophylactic measures care should be taken not to insert the trocar too far in aspiration, and in operating for empyema one should avoid swabbing and irritation of the pleural surface.

[F. W. P.]

The Lancet.

Dec. 28, 1907.

1. MacAllister, C. J. *Address on the Personal Factor in Diet.*
2. Warner, F. *Constitutional Development and Social Progress of Boys and Girls from Infancy.*
3. Stephenson, S. *Series of Four Cases of Infantile Gangrene of the Cornea in which the Treponema Pallidum was Found.*
4. *Lecky, H. C., and Horton, W. C. *Revealed Tuberculosis in School Children at School Ages, from Four to Fifteen Years.*
5. *Wilson, W. J. *Observations on Cases of Streptococcal Meningitis.*
6. Stenhouse, J. W. *A Case of Diarrhea, Erythema and Asthma Apparently Due to Nasal Disease.*
7. *Carmalt-Jones, D. W., and Humphreys, J. E. *Note on Treatment of Pyorrhea Alveolaris by Inoculation with a Bacterial Vaccine.*
8. Pottinger, J. A. *Appendicostomy in Chronic Dysentery.*
9. *Rivers, W. C. *Non-Tuberculous Intra-Nasal and Post-Nasal Abnormalities; their Recorded Association with Tuberculosis.*

4. Lecky and Horton present the results of their examination of 806 school children with regard to what they call, "revealed" tuberculosis. Their term "revealed" seems to correspond most closely to the term "open" tuberculosis, which is in more common use. They consider the lungs, abdomen, bones, joints and glands. Out of these 806 children they found only 3 with "open" or "revealed" tuberculosis. They present figures from other series of examinations which agree very closely with their results. They do not believe that schools can be considered as places where much tuberculosis is spread. They do not mention what percentage of these children would correspond to Grancher's first stage in tuberculosis, or to our so-called pre-tubercular stage, nor do they seem to lay sufficient emphasis on this very important condition.

5. Wilson presents five cases of streptococcal meningitis, all of which terminated fatally. He describes the postmortem findings. In three, intestinal ulcers were present, and he believes that the infecting organism came directly from these lesions in the intestinal tract.

7. The writers report five cases of pyorrhea alveolaris which were treated with very satisfactory results by the injection of vaccines obtained from the infecting organism, in every case the streptococcus. They believe that the disease, thus treated, will no longer prove as intractable as it has in the past.

9. Rivers goes over the literature of intra-nasal and post-nasal non-tuberculous abnormalities in association with tuberculosis. He believes that rhinology should play an important part in the prophylaxis and treatment of consumption, and that the simple catarrhal laryngitis so common in consumptives is dependent on intra-nasal conditions, and is not solely due, as is commonly stated, to the exertion of coughing. [J. B. H.]

British Medical Journal.

Dec. 28, 1907.

1. Drummond, D. *Lecture on the Mental Origin of Neurasthenia and its Bearing on Treatment.*
2. *James, A. *Clinical Remarks on Tuberculous Chlorosis.*
3. *Gossage, A. M. *The Automatic Rhythm of the Heart.*
4. Dent, E. A. *Locomotor Ataxia; Its Early Recognition and General Management.*
5. Bailey, F. W. *An Open Method of Ether Administration.*
6. Brownlee, A. *An Open Continuous Drop Method of Administering Ether.*
7. Capes, R. *Malignant Endocarditis Lasting Over Six Months without Bruit.*

2. James states that there is a type of apparent anemia which is often mistaken for real chlorosis, until an examination of the blood shows that the number of red corpuscles and the percentage of hemoglobin is normal. In such cases he thinks that a history of past or present tuberculous disease can always be found. This condition was recognized by Trousseau, and was called by him, "false chlorosis" or "tuberculous anemia." He cites in detail several cases of this condition. In treatment, iron is to be avoided, and open air and hygiene are important.

3. Gossage discusses the various theories in regard to the automatic rhythm of the heart, and the work done by Mackenzie, Wenekebach and others on the auriculoventricular bundle, and concludes that the myogenic theory of the origin of the cardiac impulse is not incom-

patible with any of the known phenomena of the heart beat, while it affords the best explanation of them. His paper is a careful and thorough review of the literature with an excellent bibliography, but presents no original work. [J. B. H.]

The Practitioner.

December, 1907.

1. Battle, W. H. *Remarks on Appendix Abscess.*
2. Howell, C. M. H., and Wilson, H. W. *Movable Kidney.* (Concluded.)
3. Taylor, F. E. *On the Formation of a "Fundal" or "Suspensory" Ligament After Hysteropexy, and its Dangers.*
4. *Howard, R. *Malignant Disease of the Testis.*
5. Fitzwilliams, D. C. L. *Suppuration in the Region of the Pharynx.*
6. Ketchen, A. D., and Thomson, A. E. *Some Remarks on Ascites, Associated with Hepatic Cirrhosis, with Notes of a Case Successfully Treated by the Operation of Omentopexy.*
7. Barlow, W. N. *An Analysis of Eight Hundred and Thirty-two Cases of Scarlet Fever, with Observations on the Diagnosis and Treatment of the Disease.*
8. Myers, B. *On the Necessity of Caution in Diagnosing Hysteria.*

4. Howard presents a clinical study of 57 cases of malignant disease of the testis. There were 7 examples of the fibro-cystic variety of tumor; the remaining 50 were solid growths. The oldest patient was sixty years; the youngest one year old; the average age was thirty-two years. Fifteen per cent occurred in undescended testicles, which is out of all proportion to the frequency of undescended testicle in general. In 8 cases there was a definite history of previous injury to the organ. Venereal disease does not seem to play any part in the etiology. The chief symptom for which the patient came to the hospital was that of pain. A tumor in this region did not seem to worry any of the patients greatly. Apparently none of the growths started in the epididymis. The writer goes into a careful discussion of the differential diagnosis of this condition, especially as regards tuberculous disease. The treatment is removal as soon as the diagnosis is made, even if there is evidence of secondary enlargement of the lumbar glands. Operation is contra-indicated, however, in cases of advanced disease where there is secondary involvement of other organs. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 46.

Nov. 14, 1907.

1. *Koch, R. *Final Report of the German Sleeping Sickness Commission.*
2. Hering, H. E. *Analysis of the Venous Pulse.*
3. *Schlayer. *Substances in the Blood of Nephritics which Increase the Blood Pressure.*
4. Kretschmer, W. *Lymphocytosis in the Cerebrospinal Fluid in Late Hereditary Syphilis.*
5. Brentano, A. *Principles of the Treatment of Hernia.* (Concluded.)
6. *Goldenberg, T. *Paraffin Prothesis as a Means of Avoiding Military Service.*
7. Moll, A. *How Far is the Agitation for the Repeal of the German Law Against Homosexual Acts Justified?*

1. Koch contributes a long final report embodying the results of the work of the expedition investigating sleeping sickness in Eastern Africa. The following measures are recommended for the control of the disease. Permanent camps to be established under the control of a medical director, sufficiently numerous to accommodate all patients, and situated in spots not infested with the glossina palpalis. In addition to receiving patients, active search for infected individuals is necessary, and blood examinations of such persons essential, as the absence of enlarged lymph glands does not preclude the existence of the disease. As an example Koch cites the results of the examination of 52 young boatmen, who were considered perfectly well, and who had just finished a long and exhausting journey. Eleven of these had enlarged lymph glands, 7 had trypanosomes in the blood, 47 had the filaria perstans, 26 had malaria organisms, and 2 had spirillæ of relapsing fever. Patients in camps should be treated for at least four months with atoxyl and must be kept under observation until their blood is free from trypanosomes. The drug is given in doses of 0.5 gm., repeated on the following day, and continued at ten-day intervals for months. Some patients who received a larger dose became permanently blind; other bad effects were transient. With atoxyl treatment, the mortality of the very sick was 22.9%, the total mortality was 8%. Quarantine regulations are necessary to prevent the carrying of infection to non-infected districts. It may be necessary to remove small communities to regions free from the glossina. Attempts to reduce the numbers of glossina, by clearing woodlands and exterminating the crocodiles on whose blood the insects largely subsist, should be undertaken. The filaria perstans was frequently found in the blood of natives, but no symptoms attributable to it could be found, and no cases of elephantiasis were seen. Quinine had little action on the trypanosomes and atoxyl did not affect the malarial parasites. Details concerning the geographical distribution of the disease, etc., are given at length.

3. Schlayer relates the results of a large number of tests and experiments with the blood serum of nephritics, the diagnosis in most of the cases being controlled by autopsy. He obtained results which were constantly negative as to any connection between the hypertension in nephritis, and the functioning of the suprarenals, and he concludes that the reasons so far given for the hypothesis that in chronic nephritis adrenalin collects in the blood, and exerts a constant influence in increasing blood pressure are untenable.

6. Goldenberg reports three cases where, a year and a half before, paraffin had been injected under the skin for the purpose of simulating a malignant tumor, thus causing the applicant's rejection during the conscription for military service. The neck and the scrotum were the situations selected for the injections. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 47.

Nov. 19, 1907.

1. Bumke, O. *Review of the Diagnostic Value of Pupil Symptoms.*
2. v. Dungern and Coca. *Hemolysis and Snake Poison.*
3. Croissant, K. *Permanent Cures of Tuberculosis After Sanatorium Treatment.*
4. Ewald, P. *Flat-Foot and Tuberculosis of the Ankle.*
5. Schanz, F. *Inflammations of the Eye of the New-Born.*
6. Vörner, H. *The Inconstancy of the Spirocheta in Syphilis.*
7. Buttersack, P. *Aortic Aneurysm After Acute Rheumatic Aortitis.*
8. Handwerck, C. *Edema of the Optic Nerve of Short Duration as a Manifestation of Angioneurotic Edema.*
9. Hoffmann, R. *Colored Microphotographs of Blood.*
10. Wahl, K. *A New Instrument for Measuring the Circumference of Rounded Objects.*
11. Schumm, O. *A New Spectroscope.*
12. Polano, O *Further Remarks on the Treatment of Dysmenorrhea by Manipulations of the Breast.*

Deutsche Zeitschrift für Chirurgie. Bd 89.

Heft 1–4.

1. Baum, E. W. *The Etiology of Fractures in Tabes.*
2. Krogius, A. *A Simple Demonstration of the Mechanism of Fracture of the Skull.*
3. *Stierlin, R. *The Recurrent Laryngeal Nerve in Operations for Goiter.*
4. v. Verebély, T. *The Morphology of Intrathoracic Goiter.*
5. *Finsterer, J. *The Late Results of the Operative Treatment of Cancer of the Breast.*
6. Wassiljew, M. A. *The Treatment of Wounds and Fistulæ of the Ureter.*
7. Koerber, E. *A Case of Gangrenous Inguinal Hernia with Torsion and Retrograde Thrombosis of the Mesentery.*
8. Rittershaus, A. *Umbilical Hernia and Faulty Closure of the Abdominal Wall in the New-Born.*

9. *Strauss, M. *The Present Status of Spinal Anesthesia.*
10. *Neuberg, W. *Appendicitis in Infancy and Childhood.*
11. Germer. *A Case of Congenital Dilatation of the Colon Cured by Entero-Anastomosis.*
12. Luxembourg, H. *Separation of the Lower Femoral Epiphysis.*

3. Stierlin calls attention to the fact that if the recurrent laryngeal nerve be wounded during an operation for goiter, this does not occur at the point where the nerve crosses the inferior thyroid artery, but at a point above this, just before it enters the crico-arytenoid muscle. At this latter point, the artery having been tied, the nerve is most apt to be drawn out of position by forward traction on the goiter. For the above reasons, the writer advocates careful exposure of the nerve, by dissection throughout its whole course, before removal of the goiter. Local anesthesia is used in every case where possible, so that the operator may judge of the integrity of the recurrent laryngeal nerve at any point in the operation by asking the patient to speak. A further aid in the dissection and isolation of the nerve is the fact that synchronously with the heart beat, there is seen a pull, or tug, transmitted to the nerve, due to its anatomical position about the great vessels. This tug is more evident on the left than on the right, and also when the nerve is put slightly on the stretch. An examination of all cases of goiter by means of the laryngoscope should always be made, both before and after operation.

5. Finsterer, writing from the clinic of Hoehenegg, gives a very exhaustive analysis of the late results of the operative treatment of cancer of the breast. His material comprises 653 cases, of which 606 were submitted to operation. He draws the following conclusions: (1) The cases operated on from 1877 to 1903 show 12.5% of cures, while those operated upon during the last eight years show 24.6% of cures. (2) The best method of operation is that which strives to prevent recurrence by the most careful and extensive removal of lymphatic glands, as well as by local measures. In this respect the method of Halsted has shown the largest percentage of permanent cures. (3) Especial attention should be paid to the extensive removal of the skin. (4) It is best to dissect clean the supraclavicular space in every instance, regardless of whether the infraclavicular space be found to contain infected glands or not. (5) The question as to whether involvement of the supraclavicular glands is a contra-indication to operation should be carefully considered, for cases are on record which contradict the rule that these glands become simultaneously infected with those of the mediastinum and thorax. In order to form an opinion on this point in any given case, it is necessary to take into consideration the duration of the disease, the size of the tumor, its position (whether in the inner or outer half of the breast) as compared with the size and amount of adhesion of the supraclavicular glands. (6) On account of the frequency of late recurrences, the period after which a case may be considered cured should be advanced to five years.

9. Strauss draws the following conclusions from a series of 22,717 cases of spinal anesthesia. Tropacocain is at present the least dangerous anesthetic, though even it may be followed by complications or even death. The dose should be rather too small than too large, 0.06 gm. (1 gr.) being about an average dose. By elevation of the pelvis and the withdrawal of a copious amount of fluid, one gets the highest-reaching anesthesia with the least danger. The addition of adrenalin appears to be more harmful than beneficial. Most careful attention to all details of technic is necessary in order to avoid danger. The average duration of anesthesia is one hour. The method is indicated in all cases of old, decrepit patients in whom narcosis is unsafe by other methods, as well as in non-tubercular lung disease and in diabetes. It is contra-indicated in all children up to fifteen years of age, in neuro- or psycho-pathic conditions, in disease of the brain or cord, in septic diseases, and in all cases which can be operated on under local anesthesia. Care must be used in cases of tubercular processes, in syphilis, in renal disease, and in marked arteriosclerosis, especially of the cerebral vessels. Though spinal anesthesia offers many advantages in properly selected cases, it is never without danger.

10. Neuberg feels that the fatality of appendicitis occurring in infancy and childhood has been over-estimated. In his series of 82 cases there was a mortality of 12%. Appendicitis in the children of the poorer classes is often confused with digestive disturbances, so that as a rule these cases reach the clinic in an advanced stage of the disease. [W. C. Q.]

Correspondence.

LETTER FROM PARIS.

[From our Special Correspondent.]

“De Senectute.”

(With apologies to Mark Tully.)

Paris, Jan. 7, 1908.

Mr. Editor: The question has recently been raised whether the high-frequency treatment of arteriosclerosis, concerning which so much was said in the papers last winter, has stood the test of time; whether its results have proved to be as favorable as was claimed at that period by some writers.

So far as experience here in France is concerned, I think it can be fairly said that the majority of electricians condemn the method, many of them absolutely, a few in major part. Some have found that in occasional instances there is lowering of pressure, or relief from certain symptoms; but these cases are the great exceptions.

It is not difficult to understand that raised arterial pressure can be momentarily affected by powerful electric agencies; the same result could be obtained by a violent blow on the head! But to proceed from that to ask us to believe that a certain form of electricity is a specific treatment of arteriosclerosis, an organic disorder with destruction of anatomical elements, is demanding a good deal from our credulity. That electricians would ultimately have to come to the conclusions mentioned above could have been foretold with a relative degree of confidence.

Even admitting that the state of confirmed arteriosclerosis is preceded and caused by a condition of excessive arterial pressure, which is by no means demonstrated though tenaciously held by some writers, and that this excessive pressure can be influenced by powerful high-frequency currents, it is none the less self-evident to every nonprejudiced observer that the mode of action of such an agent is no more than a species of traumatism, and, as such, of only temporary duration. To show a man that his pressure was 19 before a *séance* and 16 after is, no doubt, very brilliant. Nothing in medicine appeals to the lay mind like figures. In an ordinary case of illness the relatives are hypnotized by anything that can be expressed in numbers, the breathing, pulse, stools and, above all, the temperature. Ah! that thermometer, — what tales could be told of it. But it never occurs to them to think or ask what the interpretation of these figures may be. When, now and then, in face of a parent crazed with apprehension on account of a rise of temperature of a degree or two in a child, I have ventured to observe that such a rise, within certain limits, is a matter of no importance whatever, indicating merely the degree of the patient's power of reaction and being possibly even a factor favorable to the discomfiture of the invading germs, I have been met with looks of such blank incredulity, not to say scorn, that I long ago gave up the plan of trying to make people comprehend. To them the pyrexia is the disease!

The case is the same with this electric treatment. The patient is supplied with a tangible result, figures that he sees on the dial, and he is delighted. But what has this to do with the fundamental morbid process? Arteriosclerosis is a disorder the causes of which are deep and long-standing; that much is certain, whatever these causes may really be. The condition goes often clear back to our ancestors, and is pretty certainly based at least on the whole of the patient's individual life. Now is it possible to conceive that in such a complicated machine as the human body, a result of causes that have been acting during a life-span, not to speak of heredity, is likely to be cured, or even permanently influenced, by a short series of electric applications?

Metchnikoff, of the Pasteur Institute, who for years has busied himself with arterio sclerosis and with senility in general, and who has elaborated some rather peculiar theories on these subjects, has recently come out with another book bearing on the topic, developing his ideas more fully, and answering some of the objections that had been made to his former publication on the question, that appeared four years ago. This book, it will be remembered, created no little surprise in the medical world and aroused a good deal of opposition.

But it may be incidentally remarked that in mundane circles, on the other hand, his theories had a *succès fou*. The conclusions he advanced were quite within their range of comprehension; and as they fitted in exactly with their wishes, which were to remain young and beautiful on the female side, and vigorous on the male, everybody in this town has since then been taking Metchnikoff's milk with a fervor proportionate to the scientific authority of its promoter. Apparatus has been devised for preparing it at home, and the fortune of several industrials has arisen out of this *elixir vitæ*. One man, a bacteriologist, has been credibly reported as having made $10,000 a year by specializing in the sour milk and bouillon cultures demanded by this elegant *clientèle*.

Metchnikoff's theme, briefly stated, is that we do not live as long or as effectively as we are rightly entitled to; that we die before our appointed term, and that our old age is not as productive as it could be, — all of this because we happen to be the unfortunate possessors of a big intestine, a sort of laboratory inhabited by noxious germs that elaborate toxins to bring us to a premature end. The deduction from this claim is that all would be right if we had no big intestine; or, failing that, if we possessed a means of annulling the action of these germs. This, he asserts, can be accomplished by the regular absorption of milk prepared with *yoghourt*, the Bulgarian ferment, or, more simply, by the use of pure culture-bouillons of lactic-acid-begetting germs. The latter course he, personally, has now followed for eight years with, he affirms, the greatest benefit.

He seems to place this intestinal auto-intoxication in the foremost rank among the causes producing premature old age and death, with syphilis next in importance; alcohol and the gout-rheumatism group of disorders he lays far less stress on. This opinion will, I think, not be substantiated by the clinical experience of physicians of a certain age; in fact, I should be greatly surprised if a consensus of medical men did not reverse his proposition altogether, putting arthritism and alcohol first, syphilis afterwards, and auto-intoxication far down on the list, if anywhere.

It is, in parenthesis, not without interest to raise the point whether Metchnikoff has not been hovering about an undoubted fact, but has taken hold of it by the wrong end. That is, whether there may not be much truth in what he claims: that we are poisoned by our big intestine; that it is a misfortune that we have one at all; and that if we were like the birds, who have neither colon nor bladder, but are constantly dropping their excreta as they fly, everything would be *couleur-de-rose.* And whether the real inwardness of the question is not that these troubles arise from what we put into this reservoir, the colon, and not from the fact of our possessing this organ. For after all, it is fair to presume that nature knows something about her business and did not endow us with an organ of that importance out of sheer malevolence.

It is a curious point, so far as my own observation goes, that the human being we occasionally meet whose regular habit it is to have an easy, quick stool *twice* a day, is certain to enjoy the best of health. It would be interesting to hear whether other medical men have observed this coincidence. There are not many such persons, but I have always found them as above; whereas the constipated individual, well, we are all familiar with *his* lovely disposition!

Just as it is fair to suppose that if we possess a colon it is an organ necessary to the system, it is, on the other hand, equally evident that we human beings do not do what we know to be best for us, and are constantly committing dietetic errors that probably make the colon what Metchnikoff claims it to be. Without referring to our habit of consuming alcohol, which we know to be noxious in every way, I need only mention excessive and rapid eating and over-indulgence in all kinds of albuminoid forms of food. It is really a curious fact that the higher we rise in the scale of civilization and material welfare, the more pronounced becomes our taste for meat, — that is, at a time and in a manner of life when we need it the least, advanced as we are in ease and in years. In a similar way, as we get on in life our general inclination to do what is least beneficial increases, and we overload our system with receipts by over-eating, and at the same time reduce our expenditure by under-exercising. These seem to be far more likely causes of the colon trouble. Truly, man is a perverse animal.

The endeavor on the part of Metchnikoff and other writers to make old age out a process akin to a *disease* is something that I have never been able to understand. Thus Terence, the Roman, says, "*Senectus ipsa est morbus*"; and a certain Dr. Turek published in Paris in the middle of the nineteenth century a book entitled "La Vieillesse Considérée comme Maladie." A definite span of life is a fundamental law of nature for everything, animate and inanimate; why, then, talk of old age and death as a disease? The bird, for instance, which has no colon at all, does not on that account live any longer in proportion than other animals. Again, in the vegetable kingdom, trees grow old and die; yet they have no colons. In the inorganic world, the most endurable thing imaginable, a granite mountain, slowly but steadily disintegrates down toward a level, which is its manner of death; and the finest machine which we mortals can manufacture, protected and cared for in every imaginable way, grows old in due course and is ultimately laid to one side. What are we men more than complicated machines, plus a species of automatic internal system of repairs? Why, then, go so far afield, and write of old age as a disease, when it is really only the universal law of limited existence?

The second theory advanced by Metchnikoff, that not only do we die too early, but such old age as we have is not as effective as it might be, raises other thoughts. And here again it is not difficult to take issue with him as to his claim that the main cause of this fact (which is quite true) is intestinal auto-intoxication.

The first point that strikes you in this question of relative intellectual vigor in advancing years is that there is a great deal concerning it of which we are as yet absolutely ignorant. Select two men of apparently similar physique and social status; one will take life just as he happens to meet it, and without contracting actual vices, will drink, smoke, overeat, etc., while the other from various motives will lead a prudent, almost ascetic, existence. And yet the second man is just as likely as not to end up badly and die long before his time; while the first will retain his health and mental activity well on into the eighties!

It would seem that independently of a man's mode of life, — which counts, of course, — each one of us is born with protoplasm rated at different values. This might be termed a varying scale of vital energy. Now if we suppose that our first man was born with a protoplasmic estimate of 85%, whereas the other man's was only 60%, it is easy to conceive that the first man, in spite of a careless mode of living, could ultimately come out better than the other in spite of the latter's greater caution in habits and indulgence.

Again, a man's intellectual vigor in old age depends to a very large extent on his cardiac energy and on the permeability of his cerebral vessels. A field that is not properly irrigated cannot be expected to produce much of a crop; neither will the brain. Consequently, a man the lining of whose heart and valves has been injured by infectious disorders, or whose heart muscle and arterial system have degenerated through alcohol, syphilis or arthritism, will naturally give out in brain efficacy at a far earlier age than one who comes through with a circulatory apparatus no more used up than his sixty years suffice to account for.

I imagine it to be a fair assumption, on the whole, that a vast number of people reach that age without much of anything organic the matter with them, and after having had a good original start in the detail of their protoplasmic index; and yet few of these people are of much value intellectually after three score of years, although without any valid reason for not being so.

My idea on this point is that such people come to be what they are from pure mental stagnation, rather than from auto-intoxication. Their minds are good gardens that have been neglected and have become choked with weeds; whereas if they had had moderate regular daily attention and cultivation, they would have continued productive to the end. The life of an organ is its function: a machine that is not kept running rusts; a perfectly healthy joint perhaps in an immobilizing apparatus becomes anchylosed.

What man is more charming than he who, in spite of many years, even of great age, retains his mental vigor? He possesses a vast accumulation of facts, great experience, broad judgment, moderation and indulgence. If you wish to learn how this *desideratum*, youthful old age, can be obtained, you must study the men of this sort there may be in your personal circle; the lesson is there before your eyes; you have only to interpret it.

Confining ourselves to men only, — the man of this class will be apt to be one who has had to actually use his brain in order to get through life: he will, therefore, very likely belong to one of the liberal professions. He will in some cases be found to be a mere man of means; but, differing therein from his kind, he will have spent his leisure in cultivating his mind, and will not have joined in the frantic chase after new devices for killing time, so common with that class of people. The average business man, on the other hand, seems to come out pretty badly in old age. I know of few more wretched creatures than business men forced to retire from active life through age, or, as so often happens, impaired health.

Again, the type of old man I refer to is one who is almost certain to have traveled. There is surely nothing to equal traveling for quickening the mind and widening a person's interests, — a point so very necessary if you aim at remaining young though old. And the younger the age, relatively, at which a man travels and the wider afield, the more satisfactory the results. The greater the extent of a property that can be brought under cultivation, the better, even though all parts of it cannot be equally thoroughly attended to.

He is also likely to know one or more foreign languages. Languages are a priceless possession. You cannot expect to appreciate a foreign country visited or its people, even superficially, unless you have a certain knowledge of their language. It has been said, and with great truth, that each language one learns, in addition to one's own, is equal to the acquisition of a new faculty. A language opens up to the possessor the entire history, life and literature of a people; and not only that, but by repercussion enables us to nnderstand and appreciate our own more fully.

There is no more interesting employment in advancing years than that of learning languages. Thomson has said that a healthy man scarcely ever acquires a new language well after forty, and that after fifty such instances are of the rarest. This may be so, as a rule; it is quite possible that a person who has never learned a foreign language in his life would have trouble in doing so for the first time after forty. Again, there are some people who cannot learn a new language at *any* time of life! But a person who already possesses a certain knowledge of languages and knows how to go to work to acquire a new language, can do so with very little trouble after forty, as many noted instances go to prove. Was it not Macaulay who said that with the New Testament and a small dictionary he would undertake to learn any ordinary language in a week? We common mortals cannot hope to compete with the facility of memorizing of Macaulay, who in a couple of hours learned by heart four hundred lines of the "Merchant of Venice," "just to dissipate the monotony of his days." But still, when a person knows how to set about it, the acquirement of a foreign tongue of the same family as your own is not a difficult matter. To any one, on the other hand, who wishes to go in for a *fancy* article, and to really *test* the vigor of his mind, Icelandic can be recommended in all security!

But there are two particulars on which I think too great stress can hardly be laid by any one seriously anxious to keep his mental faculties alert; one is the pursuit of hobbies and the other the habit of being keen on whatever is going on.

All the delightful old men I have known have had a hobby. An out-of-doors hobby would seem to be the best kind; it does not make much difference what it is. Be a golfer, a beetle-hunter, a collector of prints; even shoot tame bears, if you must kill something to be happy; but go for the hobby strong, and let the pace be good and not diminish. Cicero, in his ever-young essay on old age, recommends farming as an ideal occupation for elderly men. In this he is, no doubt, right; but unfortunately a country place lies without the scope of the majority of men for various reasons.

Equally desirable is the power of being keen, and keen on everything. Take the "wide interest" in human events so often mentioned, and with how much truth! It cannot be too often repeated. Avoid the fatal ruts that lie in wait for most of us, the lives of least resistance, that seem so convenient as we grow old, but that lead straight to mental perdition. Plough up a rut whenever you have the luck to be able to see it; destroy it so utterly that no trace of it shall remain, and then force yourself to find a new way round.

Metchnikoff has entitled his last work, "*Essais Optimistes*"; his former, "*Essai de Philosophie Optimiste*," very happy terms. Mantegazza has called his book an "*Elogio della Vecchiaia*," and in it he says that healthy and proper-minded old men are *all* optimists. And this is as it should be.

One of the most successful men in carrying his age I ever knew, now fully eighty, resumes all of the qualities I have mentioned save that of proficiency in languages, for which he seemed to have no natural bent. During his entire life he has steadily looked at the bright side of things and has risen superior to circumstances, good and bad. He has also had a wonderful gift of being able to sleep at any time and in any place. The result is that to-day he is really not more than a man of fifty, — in fact he could give points to many men of that age, both in vigor of mind and of body.

Pessimism raised to the height of a dogma, the confirmed habit of allowing oneself to "*broyer du noir*," seen so often in old men, always indicates something wrong in them, either mentally or bodily; for such is not the normal status of old age. Talk to me rather of men like the elder Cato, who mastered Greek when over eighty; or like a well-known London physician who at eighty-five still hurries to the Engadine each summer and clambers up the glaciers and over the hills with the same enthusiasm for mountain climbing he exhibited over fifty years ago; or like his friend, a very celebrated Berlin professor, who at seventy-six also does the same!

The world has only to gain by the disappearance of the peevish old men who huddle together in armchairs before club fires and listen to themselves digest, while they impart to each other their reasons for feeling confident that the world cannot possibly last beyond next Easter at the longest.

"Spectator."

THE EPIDEMIOLOGY OF INFLUENZA.

927 Grant Avenue, Bronx, N. Y.,
Jan. 16, 1908.

Mr. Editor: There is at present in this neighborhood a pronounced epidemic of influenza (I think influenza a better name than "La grippe"), but with a low fatality. It is interesting, from the point of view of epidemiology, to ascertain if this be generally diffused. From the historical point of view it is a fact that a widespread mild influenza epidemic has nearly always, perhaps always, been the precursor of a more malignant epidemic of some form in the following fall. I do not connect them as cause and effect, but if the fact is universal, they point to some common cause.

Will you invite the profession to report to you their experience as to the prevalence of influenza, and communications thereon to the undersigned will be highly appreciated.

Very respectfully yours,
M. R. Leverson, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 11, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	11	4
Chicago	—	—	Waltham	5	0
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	3	2
Baltimore	—	—	Brookline	8	1
Cleveland	—	—	North Adams	7	3
Buffalo	—	—	Chicopee	6	2
Pittsburg	—	—	Northampton	7	2
Cincinnati	—	—	Medford	4	—
Milwaukee	—	—	Beverly	3	—
Washington	—	—	Leominster	3	1
Providence	—	—	Hyde Park	2	0
Boston	229	53	Melrose	7	0
Worcester	60	15	Newburyport	—	—
Fall River	—	—	Woburn	8	2
Cambridge	26	9	Westfield	6	1
Lowell	47	12	Marlboro	7	2
Lynn	31	9	Revere	4	1
New Bedford	32	10	Attleboro	3	1
Springfield	32	3	Peabody	—	—
Lawrence	35	8	Adams	—	—
Somerville	15	2	Clinton	6	1
Brockton	19	3	Gardner	4	—
Holyoke	28	9	Milford	6	1
Malden	10	—	Watertown	0	—
Chelsea	20	9	Plymouth	—	—
Newton	13	1	Weymouth	3	0
Salem	15	4	Framingham	5	1
Haverhill	10	2	Southbridge	5	2
Fitchburg	14	4	Wakefield	—	—
Everett	11	3	Webster	—	—
Taunton	16	3	Arlington	3	0

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JAN. 18, 1908.

R. T. ORVIS, surgeon. Ordered to the Naval Recruiting Station, St. Louis, Mo.

W. W. VERNER, passed assistant surgeon. Detached from the Naval Recruiting Station, St. Louis, Mo., and ordered to the Naval Training Station, San Francisco, Cal.

D. C. CATHER, assistant surgeon. Detached from the Naval Training Station, San Francisco, Cal., and ordered to the "Lancaster."

J. C. SPEAR, medical director, retired. Detached from duty at the Marine Recruiting Station, Philadelphia, Pa., and ordered home.

C. BIDDLE, surgeon. Ordered to duty at the Marine Recruiting Station, Philadelphia, Pa., and to additional duty in attendance on officers not otherwise provided with medical aid in that city.

A. C. H. RUSSELL, surgeon. Detached from the Naval Torpedo Station, Newport, R. I., and ordered to the Naval Recruiting Station, Chattanooga, Tenn.

C. H. DELANCY, surgeon. Detached from the Naval Recruiting Station, Chattanooga, Tenn., and ordered to the Navy Yard, New York, N. Y.

J. B. DENNIS, surgeon. Detached from the Naval Hospital, Puget Sound, Wash., and ordered to the "South Dakota."

E. G. PARKER, surgeon. Detached from the Naval Hospital, New York, N. Y., and ordered to the "California."

A. W. DUNBAR, surgeon. Detached from the "California" and ordered to the "Relief."

C. P. BAGG, surgeon. Detached from the "Philadelphia" and ordered to command the Naval Hospital, Puget Sound, Wash., and to additional duty at that yard.

W. A. ANGWIN, passed assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the "Philadelphia."

L. C. JACOBSON, acting assistant surgeon. Ordered to the Naval Hospital, Norfolk, Va.

ANNOUNCEMENT.

PHYSICIAN (MALE) FOR PANAMA CANAL. — The United States Civil Service Commission announces an examination on Feb. 19, 20, 1908, to secure eligibles from which to make certification to fill vacancies as they may occur in the position of physician, at $150 per month, in the Panama Canal Service. It is probable that about fifteen appointments will be made, this estimate being based upon the number of appointments made during the past year.

Applicants must indicate in their applications that they are citizens of the United States, graduates of recognized medical schools, and have had at least one year's experience as interne in a general hospital. Persons lacking the above qualifications will not be admitted to the examination.

Applicants should at once apply to the U. S. Civil Service Commission, Washington, D. C.

SOCIETY NOTICES.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. — The Annual Meeting of the society will be held in Sprague Hall, Medical Library Building, on Monday, Jan. 27, at 8.15 P.M. Program: "A Case of Congenital Pyloric Stenosis," Dr. Charles W. Townsend. "Some Recent Literature on Intussusception, with Observations on some Cases," Dr. James S. Stone. The Annual Business Meeting will be held at 9 P.M. A full attendance of the members is desired.

SUFFOLK DISTRICT MEDICAL SOCIETY IN CONJUNCTION WITH THE BOSTON MEDICAL LIBRARY. — Surgical Section meeting Feb. 5, 1908, 8.15 P. M., John Ware Hall. The "Diagnosis and Treatment of Ureteral Calculus with a Further Report on the Combined Intra- and Extra-Peritoneal Uretero-Lithotomy," Dr. J. H. Gibbon, Philadelphia. Discussion, Drs. A. T. Cabot, F. B. Lund, E. A. Codman. "Subdeltoid Bursitis," a clinical report. Dr. E. A. Codman. (Sequel to "Stiff and Painful Shoulders." — BOST. MED. AND SURG. JOUR., vol. cliv, No. 22, p. 613.)

J. C. HUBBARD, M.D.,
Secretary.

RECENT DEATHS.

DR. STEPHEN F. POMEROY, who died Jan. 12, at the age of eighty, was one of the oldest physicians of Springfield, Mass. He received his medical education at the Yale Medical School, graduating in 1855, and after practising for ten years at Staffordsville, removed to Springfield, where he had since remained.

DR. STEPHEN N. MURPHY, a resident and practitioner of Chelsea, Mass., died in that city, Jan. 12, at the age of thirty-nine. Dr. Murphy was a graduate of Harvard College and the Harvard Medical School. He had established a successful practice in Chelsea. His death was due to pneumonia.

DR. JOSEPH COFFEY, of New York, died suddenly from cerebral apoplexy on Jan. 17. He was formerly a surgeon in the English Navy, and a few years ago was physician to the Tombs Prison.

DR. JOAQUIN MARILL, of Poughkeepsie, N. Y., died from tuberculosis on Jan. 14. He was a member of an old and titled Spanish family, and was born on Dec. 21, 1841, in Havana, Cuba, where he was graduated in medicine in 1861. Shortly afterwards he came to the United States and served in the Civil War, during which he was captured and confined for some time in Libby Prison, Richmond. He had practised for many years with success in Poughkeepsie.

DR. CALVIN A. WETMORE, aged seventy-six years, died at his home at Catskill, N. Y., on Jan. 12. He was graduated from the old Berkshire (Mass.) Medical College, and had practised for over a quarter of a century in Emporia, Kan.

BOOKS AND PAMPHLETS RECEIVED.

Anemia in Porto Rico. Report of the Permanent Commission for the Suppression of Uncinariasis, 1906-1907.

Cystocele. By Charles P. Noble, M.D. Reprint.

The Mosetig Batiste. A Useful Addition to the Armamentarium of the Hospital. By Charles P. Noble, M.D. Reprint.

The Abdominal Wound; Its Immediate and After Care. By Charles P. Noble, M.D. Reprint.

Tuberculosis of the Kidney. By Charles P. Noble, M.D. Reprint.

Transactions of the Fifth Annual Conference of State and Territorial Health Officers with the United States Public Health and Marine Hospital. Washington, D. C., May 29, 1907.

Medical Diagnosis. A Manual for Students and Practitioners. By Charles Lyman Greene, M.D. Second edition, revised. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1907.

Mortmain. By Arthur Train. New York: D. Appleton & Co. 1907.

A Textbook on Uric Acid and Its Congeners. By George Abner Gilbert, M. D. Danbury: The Danbury Medical Printing Co. 1907.

Transactions of the American Gynecological Society. Vol. 32. For the year 1907. Philadelphia. 1907.

Movable Kidney and Other Displacements and Malformations. By David Newman, M.D., F.F.P.S.G. Illustrated. Longmans, Green & Co. 1907.

Original Articles.

AN INSIDIOUS TYPE OF NONTUBERCULOUS PYELONEPHRITIS.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

Within the past eighteen months several cases have come under my care that have greatly modified the ideas I had previously held regarding nontuberculous pyelonephritis. I was aware that the type that comes on in urinary obstruction, either that due to a stricture or prostatic disease, might be practically symptomless or have its symptoms over-shadowed by the more marked symptoms of the lesion upon which it depended. I had supposed, however, that pyelonephritis in the absence of urinary obstruction usually presented pretty clearly marked symptoms including renal pain, kidney tenderness, temperature, etc.; that it seldom ran its course without presenting well marked symptoms referable to the kidneys.

I think the following cases demonstrate that there is at least a type of pyelonephritis in which this is not so. While I have seen other cases, the two presented here have been the most striking of those I have seen, and serve to illustrate my points sufficiently well.

Case I. The first case was a patient whom I saw in April, 1906. She was forty-three years old and had had frequent and painful micturition and a turbid urine for some four or five years. Her trouble was supposed to have had its origin in a marital gonorrhea. When seen she was too dull to answer questions intelligently, but her history in so far as we could get it was that her symptoms had always been referred to her bladder, and that two years before her uterus and tubes had been removed in the belief that their removal would allow her bladder to improve. This operation gave no relief to her bladder symptoms. She had, however, been able to work up to a short time before we saw her. For a short time she had had some mental disturbance, and there had been added to her other urinary symptoms attacks of retention and incontinence, which it was supposed, and I think it probable, were due to the mental condition.

The urine looked like pea soup and was most offensive. It contained pus and myriads of organisms, but no tubercle bacilli were found. There was no edema; there had been no convulsions. Her urea was 0.88 of 1%. The quantity of urine was unknown. It took methylene blue three and one-half hours to appear in her urine, and its excretion continued for a longer time than normal.

Palpation showed a questionable thickening in her right flank, which was very slightly tender. Her bladder had the appearance of having been the seat of a chronic cystitis of long duration. It was thickened and light-absorbing everywhere. There were old hemorrhagic spots on the surface, together with hypertrophy of the muscle bundles and little pouchings of the mucous membrane between them. Both ureters were dilated and showed feeble spurts of very turbid fluid. A catheter passed into the left ureter drained in a continuous stream several ounces of very turbid urine. It was supposed from what evidence we could get that her right kidney was the better, and that its drainage might relieve the toxic condition from which she was suffering. The right kidney was cut down upon and found very high up and everywhere adherent. A ureter the size of my forefinger led from the renal pelvis, and as the patient was in poor condition, it was opened instead of the kidney itself. A tube was passed through the dilated ureter into the kidney pelvis. This drained freely, but the patient continued to fail and died thirty-six hours after operation.

Autopsy showed a dilated kidney on her left with very little secreting tissue. The ureter was thickened and greatly dilated. On her right the condition was the same as regards the ureter, though there was rather more secreting tissue. There was no evidence of any obstruction at any point in the urinary tract.

Case II. The second case was a little girl of eleven, seen in the Children's Room at the Boston Dispensary, in February, 1907. She had never been very strong and had had "bladder trouble" since early childhood. Three years before she had had measles, and since then there had been an increase in the frequency and pain on micturition and a more turbid urine. Before coming to the dispensary it had been supposed that her trouble was a very obstinate cystitis. She had latterly had some eye trouble, and an examination had showed retinal hemorrhages. Her urine showed large amounts of pus, small round cells and many bacilli which were supposed to belong to the colon group. There were no casts, nor had any been found. No tubercle bacilli were found in slides of the sediment, and guinea pigs that were inoculated were also negative. Her bladder was very easily examined with a 15 F cystoscope, and it was found that the bladder itself showed no changes. The orifices of both ureters were, however, dilated and clouds of turbid urine could be seen coming from both sides. There was no history of any renal pain in this child. There was no tenderness in either flank. Neither kidney could be felt. Operation was suggested as the only possible way of checking the advance of the process, but was not particularly urged because of her poor condition. The parents decided against it.

The child was seen again some weeks later, when she had failed greatly in strength and had begun to show edema and shortness of breath. There was, however, nothing other than her bladder symptoms to point to the nature of her trouble. She died in May, 1907, having had convulsions and coma at times during the last days of her life. There was no autopsy.

Though at the time these patients were seen they had symptoms that pointed clearly enough to a considerable destruction of renal tissue, as shown by the mental dullness in the first patient and the eye changes in the second, yet there had been several years during which there was nothing that was distinctive, or in fact suggestive, of renal involvement. In both the symptoms had been solely those of an obstinate cystitis. In the first patient a careful study by a competent surgeon had led to the removal of an infected uterus and tubes in the belief that this would cure, or at least benefit, the cystitis that seemed to be the cause of her trouble. This lack of characteristic symptoms was during the stage when recognition of the true nature of the trouble was most important, since it was during the time when the kidneys might have been drained and presumably a sufficient amount of secreting tissue saved to have added considerably to the length of life of both these patients.

These cases are in my opinion not isolated instances, but examples of a considerable group.

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*Read at a joint meeting of the Suffolk Surgical Section and Boston Medical Library, Nov. 27, 1907.

They represent a class in which infection with a nontuberculous organism either ascends to the kidney, or if it does not ascend begins as a surface infection of the kidney pelvis, and in which the process of destruction is a slow erosion of the secreting tissue. The clinical picture in this type of pyelonephritis is that of cystitis. As the symptoms of cystitis persist, but without the great increase in frequency and pain that is often seen in tuberculous cystitis, the patient gets accustomed to the discomfort, and the process extends insidiously, in that there is the addition of no new or startling symptoms until the renal tissue is destroyed to such a degree that the patient has a deficient power of elimination. The duration of this insidious progression may be several years. The failure of the power of elimination and the appearance of symptoms that mark the true character of the process occurs only when both kidneys are involved to such an extent that they have a combined power of elimination that is less than that of one normal organ. At this time it will be too late to attempt operative measures successfully.

As the symptoms in these cases, during the time that it is possible to stay the process, point to the bladder, though the lesion is of the kidneys, it is useful to consider, in the light of the more accurate knowledge that cystoscopy has given us, what points we may accept as of value in differentiating between suppurations of the bladder and kidney.

We find that certain things that were believed to be of a good deal of value a few years ago are no longer considered so. In the first place we find that painful and frequent micturition and even some tenesmus may be present when a suppurative process is wholly confined to a kidney, or in instances where the bladder involvement is trivial and wholly secondary to a renal process. Pain, tenderness and a slightly enlarged kidney, when present, are suggestive of renal suppuration. The absence of these, however, has not the least negative value. The destructive process in certain renal suppurations, as in this type of pyelonephritis, is an erosion, so to speak, that advances very slowly and seldom leads to abscess formation in the cortical substance; as a consequence we may have in such cases almost a total absence of renal pain, tenderness and kidney enlargement,— things that I think many of us expect to find in any renal suppuration.

As there is no pus under tension in these cases there will be little if any temperature provided the kidney pelvis drains well.

The presence of casts is definite evidence of renal involvement. Their absence is at best only negative evidence upon which I think we are inclined to put too much positive value in distinguishing between bladder and renal suppurations. Their absence in the reported cases may have been due to the marked destruction of the tubules that had already taken place at the time I saw these patients. Whatever the cause may be, it is not infrequent to find no casts in renal suppurations, even after careful search. In by far the greater number of cases in which I have catheterized the uterers in renal suppurations, I have failed to find any casts.

The presence of squamous epithelium in any amount is positive evidence of bladder involvement, but this, even in the absence of casts, does not mean that the kidneys may not be involved too. On the other hand, the absence of squamous eipthelium in a purulent urine should make one very suspicious of a renal process. The amount of albumin that a urine contains is a distinguishing point of some value; a large amount rarely appears in a suppuration that is confined to the bladder. On the other hand, a small amount of albumin does not rule out a renal suppuration. I have seen within a week a patient with an actively suppurating kidney, whose urine showed only a slight trace of albumin (1-40 of 1% by Esbach's test).

Cryoscopy and the rapidity with which various substances, either taken by mouth or injected subcutaneously, appear in the urine are tests of renal efficiency and are of no help in distinguishing between renal and bladder suppurations.

We find, in fact, that practically all symptoms that point distinctly to the kidney may fail in some cases of renal suppuration; that we have simply a pyuria accompanied by signs of bladder irritation. Just how frequent these cases are I do not pretend to know, but I have seen enough to convince me that there are a considerable number of cases of pyelonephritis in which the symptoms are so atypical that it is quite impossible to make a definite diagnosis, in a reasonably early stage, without having recourse to visual inspection of the ureteral orifices, combined in some instances with separation of the urines. My experience has taught me to look with suspicion upon every case of apparent cystitis that persists in the absence of obstruction to urination or in the absence of tubercle bacilli. Some of these cases will be found to depend upon one of the rarer bladder lesions, but the greater number will be found to be of renal origin. Cystoscopy is indispensable in the recognition of these cases, as well as of great value in many of the cases in which we are in no doubt as to the nature of the lesion itself. In certain cases in which there is no question as to the nature of the process one will be in doubt as to whether the lesion is unilateral or bilateral. In bilateral cases the relative involvement of each kidney, which is of great importance where operative measures are contemplated, can be best judged by the examination of the separated urines.

Any of the recognized methods of cystoscopy will usually give the information that we require in these cases, while the different urines may be gotten by ureter catheterization or in some cases by the use of a segregator.

The two reported cases give, I believe, a good picture of the outcome we must expect, without operative interference, in a certain proportion of cases of chronic pyelitis, pyelonephritis and the lesser grades of suppurating kidney, which grade insensibly one into another. While I believe all these cases should be given an opportunity to clear up under internal medication, this should not be persisted in unless the condition improves. It is not sufficient to have the condition remain apparently stationary; under these conditions it is probably progressing insidiously; such cases should be given the benefit of operation.

It is much more important, naturally, that the double processes be submitted to operation than the unilateral ones. In young persons we may be sure that a double process, if unchecked, will considerably lessen the probable length of life. The possibilities are that it may prove fatal within a relatively few years. In a process that involves but one kidney the question of operation is more open to debate. Renal insufficiency, of course, does not occur with one healthy kidney, and as the pus is not under tension there is little toxemia from the mere suppuration itself.

On the other hand, the infected urine discharges into the same reservoir as the normal kidney. This constant presence of infected material in the bladder must be a certain danger to the other kidney, though we all know instances where it has continued for a long period without the second kidney becoming infected. Clinically, in a double process, the disease in one kidney is often more advanced than in the other; this would seem to point to the infection in one preceding that in the other, but it may perfectly well be that the progression in one has been faster than in the other.

A more intimate knowledge of the bacteriology of these nontuberculous infections may teach us which infections have the most favorable outlook and which ones we must fear most. My opinion, formed from relatively few cases, is that the colon group gives rise to a persistent and destructive infection.

The recognized surgical treatment of these cases consists in drainage. I believe it is yet to be proven that washing the kidney pelvis can exert any considerable curative action on the process. I feel we are also in doubt as to the results to be gotten by use of vaccines. There is a question whether drainage should be carried out by means of an incision through the cortex to the pelvis, or by means of a simple incision into the kidney pelvis. The first is undeniably the operation of greater magnitude, but on the other hand it seems probable that it drains the renal tissue better than the pyelotomy. In the few cases in which I have drained kidneys for the earlier stages of infections of this type, I have incised through the kidney substance into the pelvis. There has been no mortality and the results have been good, though the cases have been too few to allow one to draw definite conclusions.

The points I wish to bring forward are these: We have certain cases of pyelonephritis that simulate bladder infection very closely. In these cases the signs we commonly depend upon for making a diagnosis of kidney infection are not present.

These cases are insidious in that signs that point to the kidney occur only late in the disease, at a time when we are powerless to stay its course. The only way in which these cases of pyelonephritis can be recognized in season to render treatment of avail is by means of cystoscopy. In cases that are apparently chronic cystitis, but which persist without evident cause, we should consider that the burden of proving that the condition is NOT renal rests upon us.

Early treatment by means of drainage is probably our most efficient means of treating these cases.

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ADENOIDS AND TONSILS. FROM THE STANDPOINT OF THE GENERAL PRACTITIONER, WITH SPECIAL REFERENCE TO AN EXAMINATION OF THE THROAT IN CHRONIC SYSTEMIC INFECTIONS AND A CONSIDERATION OF THE QUESTION OF STATUS LYMPHATICUS IN THESE CASES.*

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At the present time there is a growing tendency from both clinical and experimental evidence to regard the faucial tonsils as the portals of infection in a wide range of diseases. Likewise, and to a less extent, perhaps, the pharyngeal tonsil, or so-called adenoid, is responsible not only for the classical symptoms with which all of us are familiar, but for many other conditions in young children, such as unexplainable attacks of febrile conditions, cervical adenitis and numerous symptoms attributed to intestinal disturbance. The purpose of this paper is not to touch upon most of the already well-known data commonly found under the title of adenoid and tonsils, but to present more recent deductions, chiefly experimental dealings with these organs in their connection with certain general infections. A study of the relation of the lymphoid tissue of the throat to chronic systemic disturbances is a most interesting one and covers many fields of work. Some of our most valuable contributions have come from those engaged in the practice of general medicine and surgery. Since the more thorough recognition of the importance of an examination of the pharynx and the remote effects of throat infection, the practitioner has been quick to consult the specialist, not only for such symptoms as mouth breathing, snoring at night, frequent earaches, repeated colds in the head, mental dullness, night sweats, etc., concomitants of adenoids, but also to discover the cause of repeated attacks of tonsillitis, supratonsillar abscess, tubercular adenitis, endocarditis and many joint affections.

At the present time the relationship of acute articular rheumatism (acute serous synovitis) to the tonsil is claiming the attention of the profession. Clinical evidence would often appear to show that there might be a connection as the removal of septic foci has sometimes been followed by complete relief of the joint symptoms. Certainly, joint inflammations of a more or less severe type occur not only in combination with general sepsis (pyemia), but after the most trifling local infections. It is also seen in certain specific diseases like scarlet fever, gonorrhea, pneumonia and typhoid. Lovett,[1] speaking as an orthopedist, remarks: "A long step towards explaining a possible source of pyogenic infection in articular rheumatism has been made in the recognition of the existence in the tonsils of organisms capable of producing the symptoms of rheumatism when injected into animals. The tonsils acting as a filter are, perhaps, more effective as such when they are normal than when inflamed. When their cells are injured or diseased it is obviously easier for the pyogenic organisms of the locality to enter the circulation, and the frequent association of sore throat with the early stages of rheumatism suggest a lesion of the tonsils, impaired efficiency of filtration and consequent easier entrance into the circulation for the pyogenic organisms. This to a certain extent explains the more frequent occurrence of rheumatism during the cold and damp weather most likely to attack the throat. Chronic tonsillitis is therefore to be regarded as a most likely source of rheumatic infection, either in the acute cases or in chronic joint affections."

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Goldthwait[2] also, in referring to infectious arthritis, notes that "the condition is rarely primary, but usually appears as a sequela of some other disease, representing in all probability the extention of an infection. The primary disease may be mild and attract little attention, so that in a large number of cases, especially the so-called acute rheumatisms, the few symptoms of the primary disease are often considered to be prodromata of the joint lesion." It is, then, in the class of cases where the source of infection cannot be established that an examination of the throat should be made.

Leaving the domain of general medicine for a moment, let us turn to other laborers, most of them throat specialists, and see what observations have been made. The relation of tonsillitis to rheumatism is no new subject, as the articles of Desmos, Hall and Tilley, Mackenzie, Cheatham, Ullman, Thomson, Adler, Rottenbiller, Gurich, Parmentier, Ingals, Freer and a host of others will testify. According to Ingals,[3] "One of the first references found on the relation of these two diseases was by Desmos, about forty years ago, who states that the poison of rheumatism occasionally favored the production of inflammation of the tonsils."

In spite of such extended research, however, we are still in the dark about much that we should like to know. Statistical deductions have come to be thrown out as almost worthless. As it is not clear what particular bacteria cause the trouble, it is impossible to state whether the condition is caused by the bacteria themselves gaining entrance to the body or merely due to the absorption of their toxins.

This brings us face to face with the question: Is the throat in a particular patient the point of entrance for the infection of the joints? The question is not an easy one and cannot as yet be truthfully answered. While the point of infection may occur in other regions than the throat, if these can possibly be eliminated, we can, if it seems wise, extirpate the tonsils thoroughly and replace a structure of at least lessened resistance by a sound wall of tissue. The responsibility in case of failure would rest as much with the family physician as with the specialist, if such advice were given. So much, then, for the vexatious problem of tonsillar lesion and joint infection.

The relationship between enlarged tonsils and tubercular cervical adenitis is another phase of the subject now being investigated. Is the tonsil frequently the seat of a tubercular process? That non-tubercular cervical adenitis is often produced by toxins absorbed from the tonsil, there can be no dispute. It occurs, as a rule, from lacunar retention, with usually some alterations in the appearance of the tonsil. In such cases the throat is undoubtedly the starting point of infection. In tubercular adenitis, however, while the connection is a very close one, it is not always clear just what route bacilli have followed. Tubercular cervical adenitis is essentially a disease of children. The disease may exist without much alteration, so far as one can see in or about the tonsil, although there may be considerable adenoid tissue in the vault. At first this was puzzling, until it began to be surmised that the micro-organism might enter through a tonsil of normal appearance, or possibly from the adenoid. In cattle Theobald Smith has attempted to show that the bacilli of tuberculosis may enter the body through the mucous membrane of the mouth and pharynx into adjacent lymph nodes without leaving any trace. While it is difficult to draw analogues from this, the evidence is at least suggestive. In adults, however, the tonsil should less frequently be the entrance point of a tubercular affection.

Goodale,[4] of Boston, presents an interesting series of 9 cases of cervical adenitis, which rapidly cleared up after the removal of the tonsils and whatever adenoid tissue was present. In every case the tonsils and adenoids were examined histologically and inoculations made into guinea pigs. In all but one case either one of the tonsils or both or the adenoid showed giant cells and tubercles microscopically, and inoculations into guinea pigs was followed by extensive tuberculosis. In one case, in which the examination of the throat showed tonsils of normal contour and color, not enlarged or adherent to the pillars, a microscopical study demonstrated giant cells and tubercles. Occasionally the bacilli of tuberculosis were noted. He concludes that "these cases demonstrate first that tubercular cervical adenitis may exist in association with the presence of tubercle bacilli in the tonsils, with or without visible changes in these structures, and is not necessarily affected by the removal of the tonsils. Second, that a form of cervical adenitis occurs, accompanied by distinct enlargement and subacute or chronic inflammation of the tonsils, and disappears after their excision. In the first instance it appears reasonable to assume that a penetration of tubercle bacilli through the tonsils into the lymph glands has occurred; in the second, that an absorption of irritating material generated in the tonsils is taking place from them into the adjacent lymph nodes. In the latter instance the removal of the focus of toxin production is followed by immediate relief."

In this connection it is of interest to further follow the experiments of Jonathan Wright, Grober, Harbitz, Lartigan, Goodale and others bearing on the possibilities of bacilli passing through the lymphoid tissue without local inflammation changes and on the absorptive power of the tonsil. Undoubtedly, this route of infection would assume greater importance if the tonsils were examined not only microscopically but by inoculation methods. Occasionally inoculations prove the presence of tuberculosis when the microscope will not. Grober, out of a total of 28 experiments along these lines, injected 1 cc. of a sterilized emulsion of black Chinese paint into the tonsils of a rabbit and two dogs. Autopsy was performed a week or more later. In the rabbit autopsy showed coloring matter behind the tonsil and in the lymph glands on the left side of the neck as far as the upper border of the thyroid cartilage. The lymph vessels were filled with the free coloring matter as well as the leucocytes. Autopsy on the dogs showed pigmented areas, not only around the tonsil but along the muscles of the neck. The coloring matter was even traced to the bony opening of the thorax and to the parietal pleura, which when stripped off and examined by transmitted light, showed the black pigmentations. The mediastinum was also affected in the same way.

Wright and Goodale have demonstrated that coloring matter need only be dusted into the crypts to be readily absorbed into the interior of the tonsil. Wright showed that while powder was absorbed there was a marked difference in the absorptive power of the tonsil for powder and bacteria. Bacteria, he thought, seemed to more or less resist absorption, but clung more tenaciously to the outside of the tonsil. Wright's[5] experiments on the fat contents of the tonsils are also worth noting. After becoming familiar with the appearance of fat in the tonsils under ordinary circumstances he smeared tonsils with butter ten or fifteen minutes before tonsillotomy. In these cases the distribution of fat was relatively exactly the same as in other cases, but the increase in amount was everywhere very decided. Evidently the rapidity of the absorption of fat by the tonsillar epithelium was greater even than that of dust.

From the work of men cited, and including the work of others whose names have not been mentioned, the following conclusions seem rational. I prefer in this to repeat the summary of P. K. Brown,[6] of San Francisco, which covers the following points convincingly:

1. Minute particles of foreign matter, dust, carmine and other pigment, when locally applied, are rapidly absorbed by the tonsils from the crypts and are found easily in sections of tonsils removed as early as fifteen minutes afterwards.

2. Bacteria do not pass so rapidly and are rarely recoverable in the tissue under ordinary circumstances.

3. Ordinary organisms are probably absorbed less rapidly on account of their mucous protection. They are promptly destroyed as soon as they enter the tonsillar parenchyma, unless able to resist this power of the tonsil. It is probable even in this case that their virulence is somewhat altered.

4. Virulent organisms follow the same course that dust particles and nonpathogenic or mildly pathogenic bacteria do and may cause local lesions, lymphatic involvement and lesions in any part of the body.

5. Tubercle bacilli may lodge and remain indefinitely in the crypts, ready to be absorbed at any time. They are a constant source of danger, even though not involving the tonsil in actual disease.

While one is hardly inclined to be such an ardent believer in the far-reaching evils of the so-called tonsil, as for instance Solenberger,[7] one cannot help agreeing with Campbell,[8] that very often diseased tonsils are a great menace to glands and contiguous parts which seem especially susceptible to infection. That the tonsil has an internal secretion or function I very much doubt. Like a troublesome appendix, there is so much evidence to show that they are better out than left behind to be a source of infection, that the force of such an argument is lost. The final word, however, cannot be added until their function is definitely established.

Cases of nephritis as a complication of tonsillitis are being reported, and even a few cases of leukemia and general septicemia. Holmes,[9] of Cincinnati, reports a fatal case of cryptogenic staphylococcus bacteriemia of undoubted infection through the tonsil and reviews the literature. The fact that the contagious diseases are preceded by an angina and swollen tender tonsil is, to say the least, suggestive.†

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†A recent editorial in the Jour. Am. Med. Asso., May 11, 1907, "Appendicitis and Angina," discusses the hypothesis supported by Kretz and already advanced by others that acute appendicitis in certain cases may be the result of a general infection which originated in a streptococcal tonsillitis and angina. The observations made are as follows: "According to Kretz (Verhandl. der Path. Ges., 1906, x, p. 229), acute phlegmonous appendicitis may be associated with acute tonsillitis, and in these cases streptococci occur as the predominating organism in the appendix, in the peritoneal exudate and in the tonsils. These conclusions are based on observations made after death, in cases in which the conditions were favorable for satisfactory study and all which occurred in young persons without previous attacks. The changes in the tonsils were marked. As regards the route of infection, assuming that the appendix is secondary to the tonsillitis, then the following possibilities must be considered: pyogenic cocci may be pressed out of the tonsils in the act of swallowing and carried to the intestine, or the cocci may be transferred to the appendix by way of the blood. In favor of the latter as the more likely route are the conditions described in the tonsils and cervical lymph nodes, whence bacteria may pass directly into the blood (tonsillogenous bacteriemia); and the condition in the appendix itself and the adjacent parts of the intestinal tract, especially when death ensues early, indicates clearly that inflammation begins about minute foci of necrosis and miliary abscesses, which correspond accurately in size and location to the lymphatic follicles and which undoubtedly result from mycotic embolism, minute masses of cocci being found within the vessels in the center of the follicles. These observations again emphasize the importance of the tonsils in the etiology of various pyogenic infections. Kretz also points out that Semmelweis really was the first to announce clearly that many apparently heterogeneous inflammations — acute endocarditis, osteomyelitis and arthritis, acute peri-

In concluding these remarks on the tonsil, the whole subject may be boiled down to the question of removal under certain conditions to be determined in each individual case, not alone by an examination of the tonsil, but bearing in mind as so well expressed by Ballanger,[10] that " when the tonsil becomes a well-established atrium of infection the physical economy of the patient is constantly menaced by conditions ranging all the way from a follicular tonsillitis to endocarditis and pulmonary tuberculosis."

Leaving the faucial tonsillar structure as a cause of so many ills, the adenoid next claims our attention. According to its situation these collections of lymphoid tissue have received various names, such as the faucial tonsils, one on each side of the pharynx, the pharyngeal third tonsil or so-called adenoid in the vault above, and the lingual or fourth tonsil below at the root of the tongue. It is observed that there is in reality a complete ring of tonsillar tissue (Ring of Waldeyer) about the entrance of the throat. The lingual tonsil is apparently the only one not predisposed to inflammation in so far as we now know. In considering the adenoid a word in regard to its pathology may not be out of order. These growths are composed of lymphoid tissue, formerly termed adenoid from the mistaken idea that it was glandular in structure. The term " adenoid" as originally employed by Meyer, however, still clings to it.

Our knowledge in regard to the absorption of dust on this lymphoid tissue of the naso-pharynx is much less definite than with the tonsils. There would seem to be no definite reason why the same thing might not occur in spite of certain anatomical differences in the position of the adenoid, relatively fewer number of bacteria and differences in the composition of the fluid bathing them. The fact that the adenoid tends to shrink at puberty also limits to a certain extent the production of added disturbances. In young children the presence of adenoid tissue is a greater factor in the production of harmful effects than are the tonsils. This is due mostly to the fact that the naso-pharynx is very small in infancy. In regard to frequency it may be said that adenoids are far more common in young infants than even the laryngologist has supposed.

Sprague [11] is correct in stating that " there is probably no condition of childhood which plays so important a part in the causation of febrile conditions, aside from the exanthemata. Many of the obscure and otherwise unexplainable attacks of febrile conditions in children up to eight years of age are due to acute inflammation of the adenoid tissue." He thinks it is safe to say that all earaches occurring in children under ten years of age and the periodical earache which occurs in the night, keeping the child awake for several hours, are due to temporary closure of the Eustachian tube, which results from adenoid congestion following some slight exposure.

Morse,[12] in a valuable review of the diseases of the naso-pharynx from the view point of the pediatrist, states that " rickets is especially prone to develop in these cases, and considerable deformities of the chest are sometimes produced. They are one of the commonest, if not the most common, cause of chronic 'snuffles' in infancy. They are always present in those babies that are subject to frequent colds in the head. The fact that the baby does not keep its mouth open and snore at night or have the typical facies of adenoids should not allow one to overlook the adenoid symptoms, but be on the lookout for them when they are present, since the frequent colds and chronic snuffles are almost as suggestive and characteristic of adenoids in infancy as these more marked symptoms are in childhood. Adenoids should always be thought of when babies sleep poorly."

It is hardly necessary to add that the practice of immediate removal should be instituted when offending lymphoid tissue seems in any way to be connected in the causation of symptoms. Adenoids are associated with enlarged tonsils in at least 85% of the cases. Sprague gives this percentage as 90% in 1,000 cases.

The preparation of the patient, although in a general way the same as for any surgical operation, demands a word of explanation. The patient had better be free from acute inflammation of the throat. It makes but little difference whether the child is in an upright position held in a chair or lying down on one side. Out of a total of 521 adenoid and tonsil operations performed in the last three and one-half years the upright position was utilized in 475 without a mishap. The blood does not tend to flow into the larynx. The patient must be fairly deeply under the anesthetic, deep enough to secure throat relaxation, but not so profound as to lose the laryngeal reflex. If this be kept trouble will be prevented.

The choice of an anesthetic has occasioned considerable discussion, ether being used almost to the exclusion of chloroform in some parts of the country. I have never happened to have any trouble with chloroform, perhaps because I have restricted its use. Chloroform is supposed to be especially dangerous in adenoid and tonsil cases, as it is thought that they may belong to the class known as " habitus lymphaticus." The whole subject of status lymphaticus is such an interesting one that it deserves a brief comment. The literature is mostly summed up in the papers of Breckele, Blumer, Connor, Cushny, Crile, Ewing, Furrer, Halsted, Norton, Osler and Vintras. As so clearly stated by Furrer:[13] " Sudden unexpected death under an anesthetic, without adequate cause, in a patient in good condition before the administration of the anesthetic and continuing so throughout the operation until the moment before the fatal determination is the untoward result that the surgeon may be called upon to face at any moment." We know that sudden death in infants and children and even

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carditis and acute inflammation of other serous membranes — really belong together by virtue of a common mode of origin, namely, acute angina. There is need of careful systematic clinical studies of the relation of tonsillar infections to acute appendicitis in order that the special characteristics of appendicitis as a manifestation of tonsillogenous bacteriemia may become better known."

young adults without obvious cause is not exceptionally rare. Post-mortem examination in these cases fails to show anything more than an enlarged thymus. Connor[14] remarks: "This tendency to overgrowth of lymphoid tissue may show itself in any structure where normally lymphoid tissue is to be found; both superficial and deep are frequently affected, as are also the tonsils, — faucial, pharyngeal and lingual. The lymphoid tissue of the stomach and intestines is especially prone to such hyperplasia, and the Malpighian bodies of the spleen are also usually enlarged and numerous, although the gross enlargement of the organ is often slight or lacking. The enlargement and persistence of the thymus, which is made up almost wholly of lymphoid tissue, is only another evidence of the tendency in such cases to universal lymphoid proliferation. The careful anatomical study of these cases has shown that certain other bodily abnormalities and diseases are present in very many instances, such as: hypoplasia of the heart and arteries, incomplete development of the sexual organs, evidences of old or recent rickets, abnormalities of the thyroid gland and idiopathic epilepsy."

The points of practical interest to us are: (1) The question of whether a diagnosis of status lymphaticus can be made during life. (2) Whether cases of greatly enlarged adenoids and tonsils are more likely to fall in this class than individuals who are not so affected.

In regard to the first point, it may be stated that a positive diagnosis is, to say the least, extremely difficult, if not impossible. The diagnosis is certain only when verified by a most careful autopsy. Nevertheless, such a disorder should be born in mind, especially if attention is drawn to it by any suspicious circumstances.

In considering the second point, it would seem reasonable to suppose that cases of simple adenoid and tonsils should not in themselves present reasons for doubt or anxiety in this respect. It is only when they are associated with some of the previously mentioned stigmata, as, for instance, absence of pubic hair in an adult, frequent attacks of syncope, dyspnea and laryngismus stridulus, etc., that the possibility of a *constitutio lymphatica* should be considered. As the list of fatalities increases we find death from all manner of slight causes, such as antitoxin injections, bathing, convalescence from acute infectious diseases, labor, etc., and from both ether and chloroform.

In closing I wish to call attention to the method of removal of tonsils (and adenoid) in these cases when they are but moderately enlarged and yet undoubtedly the cause of some disturbance. It is very important that the tonsils be removed thoroughly down to and including the capsule. It is the only method of procedure which can guarantee immunity from further infection. The tonsillotome so frequently used will not answer the purpose. It is about as surgical to leave large pieces of the tonsil in some part of the sinus tonsillaris as it is to excise but a portion of the appendix in an appendectomy. Incision, cauterization or partial decapitation does not meet the condition. The offending organs should be eradicated by scissors, snare or punch, and even the base curetted if necessary to secure a sound wall of tissue behind. The same applies to the adenoid, and after the removal of the adenoid with whatever instruments are used the naso-pharynx should be carefully cleaned out with the finger until smooth and free from all offending shreds. Adenoids and tonsils rarely recur after this systematic attention. A so-called regrowth in such instances is usually pretty fair evidence that the entire organ was never removed.

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DIVISION OF THE POSTERIOR SPINAL ROOTS FOR AMPUTATION NEURALGIA.

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The reason for the development of severe neuralgia in the stump after an amputation is still obscure, nor can we apportion precisely the share which is to be ascribed to each of the various pathological processes — involvement of the nerves in scar tissue, neuroma formation, or ascending degeneration of the nerve, although the latter is probably the most important. Although operative measures are sometimes of service, treatment is often unsatisfactory, and the trouble, as we all know, may prove to be the source of lifelong suffering.

In severe cases simple rest in bed, with a strengthening regimen, may offer temporary relief; but the attempt to return to the ordinary occupations, especially with painful stumps of the leg where the pressure of an artificial leg becomes a factor, promptly brings back the pain. The various surgical procedures — excision of the scar, re-amputation, removal of neuromata, or resection of the nerves higher up — sometimes afford temporary relief and sometimes prove unavailing.

In obstinate cases, as in the other inveterate neuralgias, division of the posterior spinal roots has been thought to afford the greatest promise of permanent relief, and it may well be considered if other operative measures fail. It is not, however, to be undertaken without grave consideration, for, as the following cases will show, it may be attended with serious danger.

A man of forty, addicted to alcohol, had necrosis of the right femur with a discharging sinus for some years. In November, 1890, his left foot was crushed by a railway train so that it was necessary to amputate, at the City Hospital, three inches below the knee. The wound healed in six weeks after discharging a little and after a small slough came away. In February, 1892, the cicatrix was excised on account of severe pain in the stump, which was aggravated by wearing an artificial leg. The necrosis of the other leg was also operated on with success. This relieved him for six weeks, and then the pain and tenderness returned. In August, 1892, the cicatrix was again excised, with relief for three weeks. In November, 1893, and again in November, 1894, he returned to the City Hospital and obtained some temporary relief by rest in bed and local applications. In December, 1894, the cicatrix was again excised, with only temporary relief. In the winter of 1895 and 1896 he was under treatment by electricity, tonics, anti-neuralgics, etc., in the neurological department, without any benefit. The stump was very tender; he complained of constant pain referred to the lost foot and ankle, and the slightest touch caused a general tremor of the leg. Since his accident, five and a half years before, he had abstained from alcohol, the necrosis had healed, and he was in good physical condition, except that he was very fat. In April, 1896, he was so anxious for relief that he consented to have the posterior spinal roots divided. The operation was performed by Dr. H. L. Burrell. The twelfth dorsal and first and second lumbar spines were divided with great difficulty, owing to the large amount of fat covering the spine and the thickness of the spinal muscles. A good deal of blood was lost before the posterior roots of the sciatic plexus were laid bare and resected. The operation lasted two hours, and he died on the table after its completion.

The operation of excision of the cicatrix which was repeatedly done in this case is probably less efficacious than any other, since involvement of the nerve in the cicatrix as a rule plays an insignificant part in the pathology of painful stumps. The resection of nerve trunks higher up is probably the most hopeful of any peripheral operation, since the same unknown factors which originally caused the development of neuromata or neuritis will probably be present in the case of excision of neuromata or re-amputation, and cause a recurrence of the trouble.

The following case not only illustrates the lack of success following any peripheral operation, but it shows the persistence of fairly normal fibers in the peripheral end of divided nerves, the retention of sensibility after the operation, the failure of any permanent relief from pain, not only after nerve resection, but after the posterior roots had been divided, and finally other disastrous consequences of the operation upon the cord.

A man of twenty-five caught his right hand between two hot rollers of a drying machine in June, 1898. After two weeks of treatment at home by poultices he was taken to the Massachusetts General Hospital, where the arm was amputated an inch and a half below the head of the radius by Dr. A. T. Cabot. The wound healed well with some granulation, and he was discharged in about two weeks to the Convalescent Home. The stump was always painful after the operation, but by the summer of 1899 the pain had become so severe that he went to the City Hospital. In October of that year a neuroma the size of the thumb was removed from the median nerve; one the size of a hazelnut was removed from the ulnar nerve, and two inches of bone were removed from the stump. This had no effect in relieving the pain. There was extreme hyperalgesia of the stump, the slightest touch with a camel's hair brush causing great pain and shrinking, and setting up a marked tremor of the stump. He wore a bandage on the stump, however, without discomfort. A small area at the tip of the stump was hypesthetic, but markedly hyperalgesic. Pressure on the nerve trunks higher up caused pain, referred to the stump. The muscles of the upper arm, including the deltoid, were atrophied, the deltoid showing a diminished reaction to electricity without polar changes, and the biceps not reacting to either current. The pain was constant and prevented him from sleeping. When in the hospital, however, he slept fairly well, and the stump at times could be handled if his attention were diverted. In March, 1900, the median, ulnar and internal cutaneous nerves were injected with osmic acid at about the middle of the upper arm, with temporary relief followed by a return of the pain, which was burning and tearing in character and referred to the hand, and especially the middle, ring and little fingers. In June, 1900, an inch was resected from the median nerve in the upper arm, and half an inch from the ulnar and internal cutaneous nerves. The nerve sheaths were found blackened at the point of operation. The pain returned and became as bad as ever, although while in the hospital, as at previous times, he slept fairly well and had little or no pain. In April, 1901, the arm was amputated three inches above the elbow, and the nerves excised as high up in the stump as possible. Large neuromata were found in the stump, the nerves were of good size and showed diffuse chronic interstitial neuritis, with atrophy of about three fourths of the nerve fibers. A moderate number of nerve fibers with normal axis cylinders and myeline sheaths were found in most of the sections, which were made by Dr. J. J. Thomas. This was thirteen months after the nerves had been injected with osmic acid and ten months after they had been resected.

It may be added that during all this period, from November, 1899, to February, 1902, he had been constantly under treatment in the neurological department, and that electricity, anti-neuralgic and analgesic drugs, tonics, etc., had been tried to their full extent without benefit. He was pale, thin, worn, nervous, hysterical and generally wretched. He also had hypesthesia of the upper right quadrant of the body (see Fig. 1), contracted visual fields without change in the relation of the color fields (see Fig. 2), exaggerated knee-jerks with spurious clonus, the knee-jerk being greater on the right side. There had been an element of litigation in the case, which was settled in 1901, but the settlement of his claim for damages had no influence upon his general condition, although it led to a delay in the performance of the more serious operation of division of the posterior roots, which had been considered in 1900, but was not performed until Feb. 20, 1902.

On that date the fifth, sixth and seventh cervical laminæ were removed, and the sixth, seventh and eighth cervical and first dorsal posterior roots were divided on the right side by Dr. J. C. Munro. Convalescence was slow. The edges of the wound were for a time somewhat unhealthy looking, although there was no septic infection. There was much discharge of cerebrospinal fluid, he had much headache, and he finally developed active delusions that there were rusty nails, money, etc., in the stump, and that men were secreted under the beds to attack him. He was noisy, incoherent and excited for several days. He complained of some pain in the stump, but it was by no means severe, and it was possible to handle the stump freely and to squeeze the end without eliciting pain. The tremor, however, persisted. The sensibility of the arm to pain, touch and temperature remained intact, and was somewhat more pronounced than on the other side. He finally recovered from his delusions and was free from pain for a number of months. He went away to another state to live with his family, and after a number of months the pain returned in the stump, and he gradually lost the use of his legs.

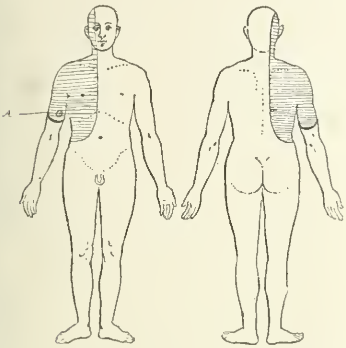

Fig. 1. Area of hyperesthesia shaded. A = hyperalgesic spot.

He came back to Boston and was admitted to the Carney Hospital, where I saw him in April, 1904. At that time he complained as much as ever of pain in the stump. The sensibility in the stump was the same as before, greater than that in the sound arm, and he had developed a most intense spastic paraplegia. He had no voluntary power whatever in the legs, but a slight touch or jar would cause painful spasm in the legs, drawing them up upon the body. There was extreme exaggeration of the deep reflexes with patellar and ankle clonus. There was a well-marked Babinski reflex in both feet. The sensibility was much impaired, both for contact, pain, temperature and localization, especially below the knee, but his answers were extremely contradictory, and it was impossible accurately to determine the upper border of the impairment of sensibility, although it affected the entire leg and possibly went up some distance upon the trunk.

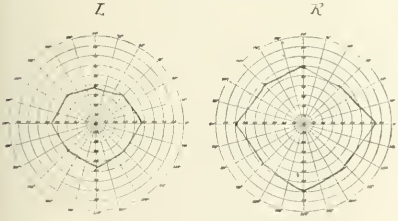

Fig. 2. Fields of vision.

On April 9 Dr. J. C. Munro made an incision through the scar in the back. The scar tissue was found adherent to the cord posteriorly, not involving the left-hand roots and slightly involving the region of the right-hand roots. The adherent tissue was easily freed from the cord, but posteriorly there was no evidence of any fluid until the level below the former operation was reached. The left posterior roots appeared normal. The cord appeared of normal size and consistency, but no pial vessels were evident in the lower third of the wound. There were fibers of probably the first dorsal root which had not been cut at the preceding operation. Above this the root stumps were atrophied and lying flat and adherent to the cord, except one small fiber which apparently had not been cut, or had reunited. This fiber and the intact root below it were cut through, the stumps trimmed down to the level of the cord; the remains of the dura were then freed from the cord laterally, and above and below some fine silver foil was placed against the cord and the dura sutured against them.

The wound closed well, and he recovered from the operation with no untoward symptoms. In a letter of July, 1907, he reports that his condition remains the same. He is unable to move the legs, the pain in the stump is as severe as ever, and he is the inmate of an almshouse in another state.

In this case, therefore, the operation for the division of the posterior roots not only failed to give permanent relief to the patient, but it undoubtedly was the cause of some change in the cord resulting in paraplegia. The precise nature of the change in the cord remains obscure, nor can I give any adequate explanation of the persistence of sensibility after the division of so many roots, or the persistence of healthy fibers in the distal portions of the divided nerves.

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THE REFORM OF EXPERT MEDICAL TESTIMONY.*

BY HON. L. C. SOUTHARD, OF THE SUFFOLK BAR.

The best in the medical profession have always had to stand between the quack and his victim, and as years have rolled on and a more intelligent knowledge of the human machine has been gained by the profession, the doctor has become more and more an active force in protecting the people from the charlatans and vagaries of the uneducated, half-educated and unbalanced with all their fads and fancies. Most astonishing indeed is the marvelous advance in the last few years, both in surgery and in medicine.

Formerly the doctor was called only when the patient's condition had become so critical that the family remedies were deemed inadequate, and ofttimes the patient by this time had been reduced to such a condition that even the most skillful attention could not avert the end. Nowadays people are appreciating more and more preventive medicine, and the doctor is called upon to protect the family from the ravages of disease.

In this respect there is a parallel between the two professions of medicine and law. As in medicine, a few years ago, the people seldom thought of calling upon a lawyer until litigation was imminent, to-day it is believed by the best authorities that there is a larger employment of lawyers in advising, counselling, drawing papers and the like for the purpose of preventing misunderstandings and lawsuits, than in the actual court work of protecting the rights of litigants. There have been two twin birds of mischief in the past, perched usually upon the same bookshelf, — "Every Man his Own Lawyer," and the "Family Physician."

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* Speech delivered at the Fifty-seventh Annual Meeting of the Norfolk District Medical Society, May 14, 1907. Revised for publication Jan. 12, 1908.

How much litigation and how much disease have been caused by these two mischief-makers is unknown, but every practising lawyer and medical man who has been in service any length of time has reason to know the baleful influence that has emanated from each of those birds of disorder.

As the health of the community is largely in the hands of the medical profession, their work is second in importance to none, for without good health man is but a feeble creature, and a race of sickly invalids could scarcely cope with the world's work successfully. The importance therefore of the medical man in the community cannot be overestimated, and anything which tends to lower his dignity in the eyes of the people and to interfere with his usefulness is a distinct calamity. In the trial of the most important cases, he is an essential factor. For instance, vast sums of money are to be disposed of by the wills of men and women whom the medical practitioner is called upon to proclaim either competent or incompetent to make a will. Estates are to be placed in the hands of guardians or conservators because the medical practitioner says that the individual is not mentally competent to guard his own financial affairs. In most murder cases the medical expert is prominent in the lime light of publicity, and not always, I regret to say, with advantage to the expert. The physician or surgeon is a necessary expert witness in many other kinds of cases, notably in the innumerable tort cases that the modern evolution of society with its varied means of swift, death-dealing locomotion has brought forth.

How familiar the expert witness for the plaintiff and the expert witness for the defendant have become. To mention it is to cause a smile, and therein lies the pity of it. In an immense number of cases the presence of the expert medical witness is absolutely essential; indeed, the case could not be tried without him. Let us pause a moment to consider the standing and responsibility of the expert medical witness. The jury is to find all the facts, whether the person, for instance, was injured by reason of his own carelessness or that of the defendant; whether there was contributory negligence on the part of the plaintiff; whether he was injured, and if so, to what extent; whether he has recovered or is likely to recover and how soon, etc.

It is evident that the jurors would be entirely incapable of deciding many of these points unaided. The injury must be a very palpable one for them to recognize it. It therefore becomes apparent that the expert must furnish the facts on which the jury is to base a conclusion; and necessarily he is called upon to tell the jury what are the facts, and his position becomes essentially judicial, except that he has no power to enforce his determinations by judicial process. His importance and responsibility are of the very highest character, and the justice of the jury's decision must in a great measure depend upon the knowledge, ability and character of the medical experts called. That this should tend to elevate the character of such witnesses to a high position is self-evident, and it is greatly to be regretted that such is not the case. Much has been said and will be said as to the venal character of medical expert testimony, but I, for one, do not believe in a universal condemnation of an intelligent and useful body of citizens, whose labors as a whole are not sufficiently appreciated, and whose work as a whole must be acknowledged by the thoughtful as highly conscientious.

There are inherent difficulties that beset the medical expert. In numerous cases conscientious men may honestly differ, and frequently do. Purely scientific subjects are of such a character that the average layman is unable to tell whether the medical expert's opinion is founded on good sense or otherwise, whether rational or irrational, competent or incompetent; and equal facility is given for varieties of opinion and deductions and conclusions by the learned experts. It is only fair to say that where medical men arrive at radically different conclusions, each may be entirely honest and sincere.

The advance in medical science is also responsible for changes in opinion. For instance, Dr. John P. Gray, the great mental alienist, after having given an opinion on the question of insanity and stating the different theories from time to time prevalent as to what insanity was, gave what he said was the established and accepted theory. On cross-examination he was asked by counsel for defendant as to what he thought of Dr. John P. Gray as an authority on that subject, and was then confronted with his own writings of previous years, quite voluminous in character, in which he had laid down quite contrary opinions to those which he had expressed on the witness stand. Placed in this embarrassing position, the distinguished gentleman replied, "It is true that I believed those theories at that time, but I have lived to learn better."

As we are all trying to learn better as we live, even if we do not live better, and as the expert's testimony is merely, after all, opinion evidence, it is self-evident that there will always be the greatest possibility of disagreement. Admitting all that may be said in this behalf, it nevertheless remains that the expert witness is looked upon with the greatest suspicion.

Consider for a moment the difference between the expert and the ordinary witness. The layman may be an artisan, a laborer, a bank president, the head of a great business corporation or a trunk line president, and yet, if summoned he must appear in court and give his testimony for a trifling fee. The president of a manufacturing corporation, employing thousands of hands and whose time is of the greatest value, not only to himself but to his employees and the public, may be obliged to spend the same amount of time in the court room that the medical witness is called upon to do; and yet the great manufacturer receives two dollars and a half and the medical expert anywhere from fifty dollars to two hundred and fifty dollars for the same time. Besides this, the two-dollar-and-a-half witness fee that is paid to the manufacturer is taxed as a part of the costs of suit, and if the side that calls him prevails, his fee must be paid by the opposing losing party. Not so with the medical witness. His fee is not only large, often alarmingly so, but even if the party that calls him is in the right of the case and prevails at every point in his legal contest, yet he must bear the burden of the expert's fee himself and there is no chance of recoupment from the losing side. The medical witness, knowing this, and having based his charge perhaps in part at least on the importance of the case and the size of the pocketbook at stake, would be less than human if he did not have a trifling bias towards the side that employed and paid him. It would certainly appear ungracious if he did not try to do something to earn his money, and herein lies the difficulty of the situation.

The attitude of the expert is not that of a disinterested man of science, but that of a partisan, the paid employee of the side that calls him. What Court would take the testimony of a lawyer employed in a case as to what was the law in that particular action? And yet the lawyer would be no more interested a party than is the medical expert paid by one side or the other. It is the most common belief that even the most high-minded men would be so swayed by employment of this kind as to lose their power of impartial judgment; and so intense is this conclusion in the minds of the people that a judge who accepted presents from those who appeared as suitors in his court would be driven from the bench and suffer the contempt of the entire community. Is it to be wondered at, then, that Lord Kenyon should have said that "skilled witnesses come with such a bias on their minds to sustain the cause in which they are employed that hardly any weight should be given to their evidence," or the opinion expressed by one of the judges of the supreme court of a neighboring state: "If there is any kind of testimony that is not only of no value but even worse than that, it is in my judgment that of the medical expert"? In the case of Pollock *v.* Gregory, 9 Bos., N. Y. Superior Court Reports, where an expert testified that he was to receive a contingent fee, he was disqualified from testifying.

This is the condition that confronts you of the medical profession, that confronts us of the legal profession and involves the welfare of all. Can anything be done to remedy this evil state of affairs? It seems to me that something can be done, and that a plain and simple remedy for at least a large part of the mischief is at hand, and that its adoption is feasible if backed by a strong sentiment emanating from the medical profession itself. Any scheme of this kind meeting the opposition of the medical fraternity would stand small chance of adoption, at any rate for a considerable time, until the lay people were educated to its necessity. On the other hand, there is no body of citizens whose influence would go so far toward securing necessary remedial legislation as that of the medical profession itself whose own honor is at stake.

The plan which I desire to suggest to you is this: many if not all of you are aware that in the trial of civil cases there is a provision of law which authorizes the Court to appoint auditors and masters to take the place, to a certain extent, of the Court in the trial of causes and in the ascertainment of facts.

Under our law, the Court not only appoints these auditors and masters, but their fees are paid by the state, and they are therefore as independent and can be as impartial as the Court itself.

Why cannot this plan be adopted in relation to the medical experts?

The family physician and surgeon must always be called as witnesses, it is true, but for such additional expert testimony as may be necessary for the enlightenment of the court and jury, let the judge appoint one or, if necessary, two duly qualified medical men to make such examination as may be necessary and to give their unbiased opinion as to the merits of the case.

Counsel for plaintiff and defendant might agree on the medical expert, and in such case, the Court, if it deemed the person qualified, could make the appointment of the individual selected. If the parties to the suit could not agree, then let the Court itself make the appointment. If it should happen that the parties to the suit have strong opposite opinions as to the schools of medicine, it so appearing to the Court, it perhaps might be well for him to appoint an expert from each school. The fees of these experts should be reasonable and should be paid by the state, thus giving the expert a truly independent position.

Of course, there should be a reasonably high standard of qualification; for instance, that the expert must have practised his profession a certain number of years, have been a graduate of a medical school of established reputation, be a member of the state medical association, either regular or homeopathic, and have had experience in the line in which he is to be called to testify.

If some such plan as this were adopted, it would seem to me that the medical expert would at once assume that position of dignity and importance which alas is now so sadly lacking; that his views and opinions would be received with much greater respect and would have much greater weight with court and jury than is now the case.

It would necessarily require legislative action to bring about this reform, but if your medical association should present the matter to the next legislature, by petition or otherwise, it would unquestionably receive that serious consideration which the subject deserves.

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SPINA BIFIDA.*

BY BENJAMIN BRABSON CATES, M.D., KNOXVILLE, TENN.

TEN years have passed since Barker began a series of articles in the *New York Medical Journal*, to present the "*newest investigations*" upon the anatomy and physiology of the nervous system.

As a result of these investigations, our ideas of the minute anatomy of the nervous system have undergone a radical change. In lieu of the old tenets concerning the histological arrangement of the nervous system, we have then the doctrine of the "neuron concept," which has for its basis the assumption that the nervous system is made up of millions and millions of units, or neurons, each independent of the other. A nerve unit or neuron includes not only the cell body and its protoplasmic prolongations or processes, but also the axis cylinder process, or axon, with all its subdivisions, collaterals and terminal ramifications or telodendrones.

Now to understand the surgery of the nervous system it is important to remember that axons, carrying impulses to and from the central nervous system, are neurilemic and aneurilemic. Those nerves that are extra spinal, and those of the brain, except the nerves of special sense, such as the optic, auditory and gustatory, are medullated and neurilemic. The different tracts of the cord and brain are made up of medullated axons, but the axons are aneurilemic.

The significance of this knowledge of the histological arrangement of the nervous system is of importance for this reason: any lesion of an aneurilemic nerve is not repaired. On the other hand an injury of a neurilemic nerve, when the proper surgical measures are used, has its anatomic structure and physiological function restored.

I have dwelt at some length on these preliminary remarks in order that we may better understand why a defect in the spinal column is more serious in one situation than in another.

Having then called your attention to some vital points in the minute structure of the nervous system, let me invite your attention to the anatomy of the spinal cord.

The spinal cord extends anatomically from the transverse ligament of the atlas to the body of the second lumbar vertebra. Occasionally, it only extends to the body of the first lumbar vertebra. The cord hangs loosely in the spinal canal, adapting itself to the various curves of the spinal canal, being invested by three membranes, surrounded by loose fatty tissue and numerous blood vessels. The cord terminates at the conus at the body of the second lumbar vertebra. The innermost covering of the cord terminates in the filum terminale, and continues from the conus to the coccyx. The arachnoid is next, and sends investments along the nerves, to become continuous with the peri-neural nerve sheaths. It extends downward in the dura, as far as the second or third sacral vertebra, investing the nerve roots of the cauda. The dura is the tough outer coat of the cord, and invests the nerve roots laterally, as far as the intervertebral foramina; below, it invests the cauda as far as the second or third sacral vertebra, where it terminates in a hollow cone. Beyond this point it is continued by the filum terminale.

I shall not attempt a description of the external characteristics of the cord, save to call your attention to the direction of the nerves as they emerge from the spinal cord; that is, they take a downward shoot.

The reason of this is obvious, when we consider the relative length of the cord in the early history of the fetus, and at maturity.

"The length of the spinal cord in the fourth fetal month corresponds with that of the spinal column, its lower termination being opposite the last coccygeal vertebra. From this time forward, however, the cord grows less rapidly than does the spinal column, so that at birth the cord terminates at the last lumbar vertebra, and in adult life at the second lumbar vertebra.

"This gradually acquired disproportion in the length of the two structures explains the more oblique direction of the lower spinal nerves as compared with those higher up. In the early condition of the cord each pair of nerves passes almost horizontally outward to the corresponding intervertebral foramina; but as the spinal column gradually outstrips the cord in growth, the lower nerves necessarily pursue a successively more oblique course to reach their foramina, the lower nerves being almost vertical in direction, and constituting collectively the cauda equina."[1]

This is interesting, because it explains the "exact relation of the cord to the cutaneous segments," and should admonish one in paralysis following injuries and growths in the cord not to look for the lesion of the cord segment involved on the same level as the sensory paralysis, but to go higher up, say two to four inches.

Again, it is of interest to note that anatomically the cord terminates at the second lumbar vertebra; surgically it is one or two inches higher. That is to say, the nerves supplying the lower extremities, buttocks, pelvis and genitalia have their origin from the cord in the case of the lumbar nerves in the neighborhood of the tenth and eleventh dorsal spinous processes, while the sacral nerves arise between the eleventh dorsal and first lumbar processes.

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* Read at the East Tennessee Medical Society at Knoxville, Tenn., Sept. 26, 1907.

[1] Heisler.

Having taken a brief retrospect of the histology and anatomy of the spinous nervous system, let us then examine somewhat into the embryology of the spinal cord and its collaterals, to see if we can forecast the cause of certain defects of development of the fetus.

If you remember from our studies of embryology, the spinal cord is developed in embryo by a multiplication and specialization of ectodermic cells on either side of the primitive streak. A wall of cells (altered in form) by an unequal development become piled up on either side of the primitive streak, forming what is known as medullary folds. It is by a coalescence of these folds that we have the future spinal nervous system developed. Furthermore, by a specialization of certain mesoblastic cells in the region of the cord, the future vertebral column is developed, which finally infolds and shuts off the cord from its former attachments. Now each vertebra is formed of four primary cartilaginous centers, one for each lamina and its process, and two for the body.

Ossification of the body of the vertebra commences in the middle by two processes which rapidly coalesce; ossification for the laminæ commences where the transverse processes afterwards project, shooting forward towards the body and backwards toward the spinous processes. However, if the ossific centers for the body fail to develop we have an explanation of the defect allowing a ventrad projection of the contents of the spinal canal. If, on the other hand, there is an arrest of ossification of the laminæ, we have an explanation of the defect allowing a dorsad projection of the contents of the spinal canal. Some authors claim " ossification commences in the laminæ only in the upper vertebræ, that is, the cervical and upper dorsal. The first ossific points in the lower vertebræ are those which are to form the body; the ossific centers for the laminæ appearing at a subsequent period."[2]

This in itself (that is, an arrest of development backwards) may explain the greater frequency of hernia of the cord dorsad than ventrad; on the other hand, that the laminæ of the lower vertebræ develop last may have some bearing on the relatively greater frequency of spina bifida in the lower than in the upper part of the spinal column.

Having thus considered in due course some points in the histology, anatomy and embryology of the spinal nervous system, and what effect arrested development of the spinal column may have on pathologic conditions of the cord, let us take up the question of spina bifida, and consider its definition, varieties, diagnosis, prognosis and treatment.

Spina bifida, then, means a protrusion of the spinal cord or its coverings, or both, owing to some defect in development in some part of the spinal column.

This condition has received different names according to the contents of the tumor. Thus, if the protrusion includes only the coverings of the cord, it is a meningocele; if the spinal cord and its membranes, then it is a meningo-myelocele; if the tumor is due to a dilatation of the central canal of the cord and the cord membranes, it is a syringo-myelocele.

Some surgeons report cases in which the central canal of the cord opens on the surface of the body, and which they call myelocele. Another variety of arrested development of the spinal column is described in which there is an absence of any hernia of the cord or its coverings, and which is called spina bifida occulta.

This condition may be accompanied by an unusual development of hair over the defect in early infancy or later at puberty. This variety may be associated with a great deal of pain in the region of the defect, owing to fibrous bands pressing upon the cord.

The diagnosis of spina bifida offers no special difficulties when situated dorsad to the spinal column. Usually in the great majority of cases the first thing to attract attention is the tumor appearing in the region of the defect, which may be congenital, or, it may develop later. The tumor being present the only question is to differentiate the kind.

The condition of spina bifida occulta is represented by a cleft without a tumor. In the region of the cleft a tuft of hair may exist at birth or develop at puberty covering over the buttocks. Pain is also at times a constant symptom in the region of the defect.

A patient presenting the condition of talipes, anesthesia, extrophy, perforating ulcer or any other evidences of trophic changes should have the spinal column examined. A serious, though not constant, complication is hydrocephalus. This may exist at birth, or may develop later, even after an apparent cure from operation.

Some surgeons have attempted to make a diagnosis of the contents of the tumor by its external appearance. Thus, if the tumor presented a medium longitudinal furrow, or a dimple, it is diagnostic of cord elements. Such refinements of diagnosis, while they may give a clew, have not always been corroborated by a surgical operation; because dimpling or furrowing might possibly be caused by fibrous bands.

On the other hand, if the tumor was in a portion of the spinal column above the origin of the lumbar nerves, and at the same time there were associate paresis of the lower limbs, with incontinence of the rectum and bladder, and trophic changes in the feet, such a symptom complex might not be conclusive, but is strongly suggestive that the tumor contained elements other than the coverings of the cord.

In the event no pathologic condition appeared dorsad to the spinal column, yet a patient presents himself showing well marked evidences of a tumor in the abdominal or pelvic cavities, with associated marasmus or talipes, or trophic changes in the lower extremities, I would give careful consideration to the question of a defect ventrad to the spinal column; especially if any change in shape or size of the tumor manifests itself on movement of the patient, or there was any increase in tension with coughing or laughing or crying, would one be justified in certifying to the probability of a ventrad defect.

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[2] Gray.

Cases of like nature have been reported in the literatures, varying in ages from two months to thirty-six years.

The prognosis of spina bifida may depend upon a variety of conditions: First, its situation; second, its contents; third, the age of the patient; fourth, the present condition of the patient; fifth, the presence or absence of complications.

First, as to the position: Jas. E. Moore, of Minneapolis, Minn., from a careful analysis of all cases reported in literature up to July, 1905, shows, twenty-three per cent were sacral, thirty-four per cent lumbar; twenty-nine per cent lumbo-sacral, and four and a half per cent dorsal; nine and a half per cent cervical, and two cases were occipital.

Now, the gravity of this disease increases in direct proportion as the situation of the defect ascends from the lower to the upper extremity of the spinal column.

The occasion of this is at once manifest when we remember the anatomical limitations of the cord. That is to say, if the defect is above the origin of the lumbar and sacral nerves we may be justified in rendering a doubtful prognosis, especially if such associate symptoms as incontinence of the rectum and bladder, or talipes, and trophic changes of the feet are in evidence. Hydrocephalus, coincident with the tumor of the column, or if, as sometimes happens, it should, develop after an operation of any part of the cord, offers a gloomy prognosis.

Necrosis of the overlying tissues is unfavorable, because at any time a perforation is likely, allowing an escape of cerebrospinal fluid, to be followed by a septic meningitis with a fatal termination, should infection occur. If a patient with spina bifida should also develop marasmus, the suggestion would be near that some serious complication was present that in itself might prove serious.

Now, as to the contents of the tumor influencing the prognosis. A simple uncomplicated meningocele may, if properly operated, be removed and offer a patient a fair degree of health even if situated high up in the spinal column.

Again, the age of the patient is an important factor in rendering a prognosis. The fact that a patient had survived the first few months or years of its life without serious complications) may be strong *prima facie* evidence that the tumor contents does not consist of any of the fundamental elements of the cord (that is, the aneurilemic elements) and may be relieved by operation.

Lastly, those cases of spina bifida ventrad that have been reported and have been operated have all died.

In regard to the *treatment* much can be said. Without entering into a discussion of the r lative merits of the different methods, I shall pass rapidly over those cases not amenable to treatment (and which we generally class under the head of palliative) and take up the operative cases.

By this I mean such cases as are favorably situated for an operation from an anatomical standpoint, and which we may call select cases. To this class I would assign all cases in which the tumor is below the origin of the lumbar and sacral nerves, and are dorsad to the spinal column. Even if the tumor was above the anatomical limitations of the cord, and I were reasonably sure of a meningocele, I would not hesitate to operate.

The method of operation I should prefer is excision of the sac and a return of the appendages of the cord to their natural channel.

Whether I should attempt to close the spinal column defect by osteoplastic flaps would depend upon circumstances. Ordinarily I would not; simply sliding the soft parts over the opening is all sufficient, for this reason: the osteoplastic flaps, unless anchored with a great deal of care, are liable to become displaced, and may cause pressure symptoms.

As to the obliteration of the tumor by injecting irritating substances, it may be said in passing that while a few cases of cure have been reported in the literature, the opinion among a great many surgeons is for the more radical removal by excision.

The report of the following case, that came under my observation by courtesy of Dr. W. L. Wallace, during the latter part of January, 1907, may be of some interest.

Donald Hammond, a finely developed, well nourished male child, age ten months, has a congenital defect over the mid-sacral region, allowing a tumor to project. He has no associate symptoms indicating pressure over the cauda. The tumor, about the size of a small hen's egg, was smooth and tense. The size of the tumor could be made to diminish on pressure, which again would increase in tension on crying.

The method of treating the tumor was by excision. The child being turned on its belly with the hips elevated, an elliptical-shaped incision on either side of the tumor was made through the skin down to the sac, the sac was followed down to the opening in the sacrum; then, after opening the sac to examine its contents, I cut away the pedicle and closed the opening with through-and-through stitches of catgut. During this maneuver there was an escape of a small quantity of cerebrospinal fluid, which did not give any subsequent trouble.

After closing the opening in the dura, the deep fasciæ on either side of the bone defect were brought together with catgut, thus effectually closing the opening and protecting the contents of the canal. The edges of the skin wound were similarly closed and sealed with iodoform collodion.

Subsequently, the edges of the skin having sloughed, I removed the skin stitches and kept a moist corrosive sublimate 1:5,000 dressing applied.

The wound granulated without suppuration and cicatrized in a short time. The child improved rapidly, grew in stature, and is well and happy to-day.

Since reading the above paper before the East Tennessee Medical Society I have had two interesting cases of spina bifida come under my notice.

Baby Faulkner, boy, aged three months, is a well-developed child, except he has a tumor in the sacro-lumbar region the size of a large orange. The tumor is sessile, with a slight constriction at its base. It is quite tense at times, is of a translucent, membranous nature (mottled in spots), except where the skin comes up on its sides for about an inch or more.

On the left of the median line is a dark spot slightly umbilicated. This dark spot subsequently proved to be the cauda attached to sac. There were no associate symptoms. There were two or three small ulcerated spots over the surface of the tumor from which cerebrospinal fluid exuded.

The parents of the child kept dirty cotton batting over these openings to stop the leaks and to catch the exuding fluid.

Oct. 7 we operated by making elliptical incisions on either side of the tumor where the skin joined the sac. In dissecting down the sac to the opening in the spinal column, I accidentally nicked the sac and let out the cerebrospinal fluid. This fluid measured 7 oz. plus. Some was lost.

Having dissected the sac down to the opening in the spinal column (and a little beyond), which was about the size of an ordinary man's thumb, we released the cauda from the sac and placed it in the spinal canal; then we cut off the redundant portion of the sac and stitched it up with cobbler's stitches of catgut. We then dissected up the sheath of the erector spinæ muscles on either side, beginning at the outer border of the muscles, turned them over the opening, and stitched them over the opening with catgut. These flaps closed the opening like a trap door. The wound in the skin was closed with silk sutures.

The stitches subsequently cut through, the entire wound became infected, sloughed and exposed the opening in the spinal canal. The baby died from the septic infection two weeks after the operation.

Baby Goode, female, aged two and one-half months, was born with a tumor in the back of its head above the foramen magnum. The tumor when I saw it was sessile, about the size of a small hen's egg, tender on manipulation; the least touch caused the child to cry. The child was nervous and cried constantly; otherwise it was healthy and well nourished. There were no associate symptoms.

Oct. 17 we operated by making elliptical-shaped incisions on either side of the tumor, followed the sac down to the opening (about the size of a lead pencil) in the occipital bone just above the foramen magnum, tied the pedicle off with catgut, turned it in after cutting away the sac, stitched the fasciæ on either side across the opening with catgut and closed the opening in the skin with silk sutures.

The baby recovered from the operation in good condition, and went on to recovery without any untoward symptoms. The nervousness disappeared; it ceased its crying and seems as happy and is taking on growth as rapidly as any baby of its age under the most favorable circumstances, without defect of mind or body.

I am under many obligations to Dr. C. Deaderick for assistance in these two cases.

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Reports of Societies.

NEW YORK PSYCHIATRICAL SOCIETY.

Stated Meeting, Nov. 6, 1907.

Dr. Adolf Meyer, President, in the chair.

PRELIMINARY REPORT ON THE SIGNIFICANCE OF THE OCULAR SIGNS AND SYMPTOMS OF DEMENTIA PRECOX AS OBSERVED IN A SERIES OF ONE HUNDRED AND FIFTEEN CONSECUTIVE CASES,

by Dr. H. H. Tyson and Dr. L. Pierce Clark.

The cases were from private practice, clinics and the metropolitan asylums. Definite changes were invariably found. The fundus changes as seen clinically are divided into three stages, in the order of their occurrence. First stage, congestion of the discs, hyperemia and edema, dilated veins, contracted arteries and blurring of the edges of the discs, of varying degrees, constituting a low-grade perineuritis of the optic nerve. Second stage, congestion of the nasal side with temporal pallor of discs, dilated veins and contracted arteries. Third stage, pallor of discs, dilated veins and contracted arteries, constituting partial or complete atrophy of the optic nerve.

All forms of dementia precox were under study. The more rapidly deteriorating forms show the most marked changes. The cases embraced both users of alcohol and tobacco, and abstainers. Theoretically, the changes are probably due to a vascular toxin from liver or intestinal auto-infective origin. A vascular alteration with edema takes place, resulting in disturbances of nutrition and slow degeneration of the nerve fibers. Cases in the first stage have shown fundus improvement under the usual treatment for intestinal auto-infective toxemias.

Other eye symptoms found uniformly were: enlarged pupils, negative sensory reflex, negative psychic reflex, negative Piltz reflex, diminished corneal sensibility, and concentrically contracted visual fields. No other psychosis presents similar conditions. The findings should be found useful in differential diagnosis, to a certain extent in prognosis, and possibly in the study of the pathogenesis and pathology of dementia precox. Cases illustrative of the three stages were demonstrated to those members who used the ophthalmoscope.

DISCUSSION.

Dr. C. E. Atwood, of New York City, had followed the investigations of Dr. Clark and Dr. Tyson, having seen nearly all the cases examined by them, and now looks for the changes in the optic disc and the other eye symptoms in every case of dementia precox which comes under his observation. In no case so far had he found the symptom-complex wanting. Recently, at the suggestion of Dr. Clark, he had been studying cases of infection, *e. g.*, lead poisoning, quinine poisoning, and cases of typhoid fever and pneumonia, etc., in the hope of finding some similar changes in these conditions which might be of similar origin. Dr. Atwood read the findings in a number of cases examined. In five men with typhoid infection, averaging about twenty-six days' duration, four of whom smoked and drank, all showed haziness of the disc with some blurring of the edges and fullness of the veins. In one (the non-drinker and non-smoker) there was limitation of the fields to about 30°. In one only (of six weeks' duration) there was an appearance of central fullness (edema?), the cup not showing. In four women with typhoid averaging twenty-six days' duration, the discs in two cases were normal and in the other two, anemic, the vessels being less full and the surface pale. In three men with *pneumonia*, all of whom smoked and drank moderately, the fundus in one was normal, and in the other two there was haziness of the edges of the disc with fullness of the veins, but no edema. In two *post-operative septic* cases, one a gangrenous appendicitis, the other an intestinal perforation, both exhibited haziness and venous enlargement but no edema. Both of these cases used alcohol and tobacco. A man with partial amblyopia from *quinine poisoning* (case of Dr. Tyson's), who neither drank nor smoked, showed haziness, congestion and edema of the nasal side, with fullness of the veins and pallor on the temporal side. Central scotoma was also present. The vision was 2–200 right, 20–100 left. The last case reported was one of infection from *lead*. A man, aged forty-four, born in Germany, drank beer, had slight arteriosclerosis, and had the occupation of making white lead in a factory. For seven months he had had double wrist-drop, and been under treatment in a neighboring town for this and lead colic, etc. Both discs exhibited central edema, pallor and enlarged veins. The fields were contracted to 15° for red, 10° for green. There was central scotoma principally for red. V.= 20–30. The examination of seriously ill patients, *e. g.*, with typhoid, etc., at Roosevelt Hospital, was facilitated through the kindness of Professor James, and made possible by the use of the electric ophthalmoscope.

Dr. William Mabon, of New York City, read the report of the findings in examinations of the fundi, of 25 patients with dementia precox and 25 with manic-depressive insanity, at the Manhattan State Hospital. These examinations had been made by Dr. Holden, whose report was as follows: "Blin has reported in a series of observations of dementia precox patients, a persistent congestion of the optic disc in 10%, a persistent anemia in 8%, and an alternating congestion and anemia in 6%, with intermittent congestion or anemia in 45% more. However, I wish to say that the color of the optic disc varies within wide physiological limits, and many of us do not like to speak of congestion or anemia of the disc unless the condition is pronounced and palpably abnormal. In none of these one hundred eyes examined did I find a congestion or an anemia that seemed to me significantly abnormal. The color of the disc may be said to depend largely upon the personal equation of the examiner. In the 25 patients with dementia precox, the outlines of the discs were blurred more than in the average normal eye in 11 patients. In 6 of these 11 the large veins of the disc and retina were appreciably dilated. In the 25 patients with manic-depressive insanity, on the contrary, there was a blurred outline of the discs in but 4 patients and in but 2 of these were the large veins appreciably dilated. This blurring of the outline of the discs is, in many cases of dementia precox, too pronounced to be considered physiological and must be regarded as pathological. It is due to cloudiness of the nerve-fiber layer of the retina and optic nerve, which in some cases seems to be caused by a cloudy swelling of the nerve fibers which can be individually made out, and in other cases perhaps to an edema of this layer without swelling of the fibers, or in other cases perhaps to both of these causes combined. In half of the cases in which the outline of the discs was blurred the veins of the retina were, as compared with the arteries, abnormally dilated. The condition may be analogous to the circulatory changes and edema found in other parts of the body in dementia precox. In some cases it is so pronounced as to give rise to a characteristic picture; and from the examination of these 25 patients and of about an equal number previously examined, of which complete statistics were not kept, I should judge that the condition was to be found in about half the cases of dementia precox and rather exceptionally, and in a less pronounced degree, in manic-depressive insanity." In view of Dr. Holden's statement that the condition was to be found in about half of the cases of dementia precox and exceptionally in manic-depressive insanity, it would seem advisable to make further investigations before reaching the conclusion that these conditions are of diagnostic significance.

Dr. P. C. Knapp, of Boston, called attention to the importance in these cases of refraction errors. In a considerable number of cases of brain disease, especially in cases of headache, he had found such a congestion of the optic disc as had been described, with blurring of its outline, so great as to suggest beginning neuritis, but due, as further investigation showed, to a considerable degree of hypermetropia. It would be well to eliminate the possibility of refraction error before assuming changes in the optic disc. Dementia precox was not the only mental disease, as suggested by Dr. Tyson, in which these changes are noted. They occur in general paralysis in a number of cases, although they are less frequently seen than conditions of optic atrophy. He had seen a number of cases where there was congestion of the disc and haziness of outline in which the changes were indubitably those of low-grade neuritis.

Dr. Adolf Meyer, of New York City, remarked that in order to prove that we are dealing with an inflammation and subsequent atrophy of the optic nerve, it would be very desirable to have sufficiently strong evidence of functional disorders of vision. In the absence of visual defect in cases of remission, etc., it remains to be shown that the appearance of the disc is not merely an incidental phenomenon of a general vasomotor difficulty.

Dr. Clark, in closing the discussion, said that in a number of cases at the Vanderbilt clinic, followed independently by Dr. Holden and by Dr. Tyson and himself, the results tallied exactly so far as the disc changes were concerned. In the report just presented, Dr. Holden seemed to take it for granted that the only changes were congestion and haziness, whereas these formed only a part of a series of changes. These changes would not be noted unless the entire series were followed. Careful analyses in other types of mental disease had failed to reveal changes which could be confounded with those described. The different phases of the changes described, ranging from the congestive stage to the terminal one of general diffused atrophy of perineuritis, should be borne in mind, otherwise it is impossible to arrive at statistics. Of course there were optic changes in paresis, but this was not often to be differentiated from dementia precox. He had made it a point to look for the physiological cupping of the disc, and if this could not be noted to look for other features that go with dementia precox. One hundred and fifteen cases, the number studied, would not *establish* any of these changes for diagnostic purposes. The work, as stated, was but a preliminary communication and must be verified by more exhaustive studies by many different observers before this eye syndrome could be finally considered as definitely established. The significance of these clinical features was tentative, and might undergo modification, but after two and a half years of investigation he was convinced that there is a characteristic toxic change going on in dementia precox, which must be recognized as a feature of the disease, possibly rendering it a somatic disorder with a mental accompaniment.

Dr. Tyson, in closing the discussion, said, with reference to errors of refraction, that it was only in high degrees that congestion of the disc was found, and that high hypermetropia was found in only 1%. In atrophy it was only by contraction of the field and diminution of visual acuity, with cupping and pallor of the discs and contracted arteries, that the diagnosis was made; and finally that in using the ocular signs and symptoms to aid in making a diagnosis, the entire eye symptom complex should be used and not only the appearance of the fundus oculi.

THE ANXIETY PSYCHOSES.

Dr. George H. Kirby, of New York City, read this paper. The effect of anxiety is of wide occurrence and appears in a variety of psychoses, yet our clinical experience teaches that there is a group of cases in which the anxiety appears to stand out more or less as a fundamental symptom and not in association with additional features that would stamp the disorder as belonging with any other well recognized symptom complex. These anxious depressions occur mainly in the climacteric period or later in life, yet similar symptom pictures occasionally develop in earlier years. Kraepelin's recent proposal to merge the anxious depressions into the manic-depressive group as "mixed forms" was argued against by the author, who showed that Kraepelin was led to this change of position chiefly because he found that nearly all of the surviving cases of involution depression had terminated in recovery even after a prolonged course. This generalization exemplifies to what an extreme degree the Kraepelinian statistical method may be pushed. The authors' material afforded many reasons for keeping the anxious depressions apart from the manic-depressive psychoses — they appear to arise out of a different etiology, show important symptomatological differences, run a different course from the manic-depressive cases and are especially dangerous to the life of the patient. Various factors were mentioned which seem to prepare the ground for the origin of the anxious effect, *e. g.*, intoxications, organic insufficiency, advanced age, etc., and attention was drawn particularly to the great frequency with which the anxious mood arises out of prolonged worries and chronic emotional strains of various kinds. Cases were reported to demonstrate the importance of these psychogenetic elements in the development of the psychoses with anxiety. The cases studied fall into several groups, each of which seems to have some prognostic significance. (1) Cases showing a simple form of anxiety or general uneasiness, apprehensive anticipations with or without ideas of sin. (2) A severer form showing anxiety with fear, perplexity and allo-psychic concepts. (3) Cases presenting the sensory-somatic complex, hypochondriacal trends and feelings of unreality. (4) Cases developing with arteriosclerosis. The anxious depressions here described are not regarded as a special form of disease, but are considered rather as a type of reaction of fairly characteristic form in the evolution of which a number of factors participate; the psychogenetic features appear to be particularly important. There seems to be a difficulty in adjustment to a situation which would naturally put the patient into an anxious frame of mind. In a smaller group of cases the physical causes seem to be most important and arteriosclerosis is especially apt to be accompanied by an anxious depression.

DISCUSSION.

Dr. William Mabon, of New York City, was of the opinion that the anxieties should be kept separate from the manic-depressive group.

Dr. August Hoch, of Bloomingdale, said: Dreyfus tries to show that melancholia is merely a phase of manic-depressive insanity. Kraepelin agrees with him, as he states in the introduction which he wrote to Dreyfus's book. But to do Kraepelin justice we must remember that he specially mentions the fact of the differences in duration in the two groups of cases. While Dreyfus has made a valuable contribution in having shown that what most of us, with Kraepelin, regarded as permanent mental dilapidation, is in reality a recoverable condition; there is little gained by merely identifying the two groups of cases. There is no doubt as to a certain relationship, but there is also no doubt as to the differences, and we would have to say that these cases of melancholia are manic-depressive depressions under special conditions with special features and with certain peculiarities in course. It seems to me that we may regard the development of the anxiety and the unreality complex in depression; in other words, those features which characterize the involution melancholias, somewhat in the light of complications, very much as we regard complications in other diseases. By this we emphasize on the one hand the relationship and on the other hand the differences. I, therefore, quite agree with Dr. Kirby that it is more profitable to keep the two groups separate. I am also very glad that Dr. Kirby emphasizes the psychogenetic factors in the development of these cases, and I am quite sure that the work of Dr. Meyer and of Dr. Kirby in this direction is of great value as it calls attention to many facts which are clear enough when one looks for them, but which have often been singularly disregarded.

Dr. A. R. Diefendorf, of Middletown, Conn., was inclined to agree with Dr. Kirby in his contention for the maintenance of the anxiety psychoses. In his own experience the melancholia of involution was not as prevalent as he had formerly believed. There were cases developing in the involutional period which show anxiety but are also accompanied by considerable psychomotor retardation. These cases which tend to recur should not be confounded with the anxiety psychosis, as they rightfully belong to the manic-depressive group. He had failed to note psychogenetic factors in the origin of his cases as being particularly prominent. In view of the fact that there is often a long prodromal period during which the patient is introspective, symptoms of the disease may be mistaken for psychogenic factors; that is, the patient fails to exhibit anxiety over troubles that have long existed in their life, until they show the first signs of the disease. With reference to the group designated by Dr. Kirby as the arteriosclerotic group, he saw no reason why they should not be considered as cases of arteriosclerotic insanity.

Dr. Charles L. Dana, of New York City, said that in private practice one sees many of the anxiety psychoses, though not of so severe a type as those described by Dr. Kirby. It undoubtedly made a clean-cut clinical picture, and to recognize it as a distinct form of melancholia was helpful in the prognosis and in the treatment. At the same time, the more he saw of melancholia the more it seemed to him that the "anxiety complex" occurs not only in the involutional period but in early life. It was his experience that nearly one half of the cases of involutional melancholia coming on after fifty or forty give a history of one or two attacks of "neurasthenia" years before, these often being mild psychoneuroses calling for no special attention from the psychiatrist. With reference to the psychogenetic factor, he believed that the patients who develop these involutional psychoses are generally men and women of rather inferior mental caliber or persons who have worked in an environment which was too strenuous for them, and which, consciously or unconsciously, pulls them down. He could not recall any really brilliant mind that has suffered from involutional insanity. The women belong to the type of women who have been worriers all their lives, who have had "precisions" and constant anxiety over details, and who were not fitted to carry on easily the work they are appointed to do. Melancholia in all its phases was the same thing, but occurring in different individuals it produced the differences noted. The same definite lesion occurring in one individual would produce melancholia with anxiety, in another retardation and apathy, and in still another, in addition to anxiety there may be self-accusation, or hypochondria. The differences in the clinical picture were due to the original differences in the make-up of the individual. He would represent melancholia by the term x which meant a definite unknown lesion of the psychical apparatus, some break in association-paths, perhaps; the special characters, of self-reproach, depression, anxiety, retardation, would depend on the physique and character of the individual patient.

DR. ADOLF MEYER, of New York City, pointed out how, after all, a new standpoint, such as that of Kraepelin, of dividing all mental diseases into non-dementing and dementing processes, is apt to tend to become a sort of all-embracing system with very few subdivisions. The welcome awaking of interest in the outcome of the disease has finally been pushed to the position of a logical decision which naturally must either fit or not fit; but such division of all mental disorders would ignore many other matters which have long been thought of and cannot be neglected. The fact that the outcome issue had been neglected for such a long time was no reason for making it an all-embracing issue for all decisions. To argue merely about the outcome would again lead to a great deal of guessing, and from a didactic point of view it would be better to fix the attention upon what is seen in the patient at the time of examination. It would be a much better working principle to try to recognize the concrete difficulties under which the patient labors, to examine the factors which led up to these difficulties, and to estimate the balance of the forces of the individual to meet the situation. This, in practically all cases of manic-depressive insanity, would naturally lead to the recognition of a non-dementing disorder in harmony with Kraepelin's nosology. Dreyfus's claim that the anxiety depressions are mixed conditions of manic-depressive insanity is another overstretching of a fruitful principle. As soon as one constructs mixed conditions of manic-depressive insanity, practically everything, even normal mental activity, can be included in this category. We already hear that hysteria should be included in the depressive psychoses. With regard to the psychogenetic nature of the process, he was inclined to consider Dr. Dana's remarks very well to the point. Dr. Diefendorf's exception to the issue might hold for some cases, but it was absolutely undeniable that there is a larger percentage of palpable causes for a depression than in the ordinary manic-depressive insanities. Many manic-depressive depressions in the involutional period begin to show anxieties. As soon as manifestations of manic-depressive features were noted one had symptoms which were of prognostic value. But the fact remains that the pure anxiety states for etiological and practical reasons form a group with differentiation.

DR. KIRBY, in closing the discussion, referred to Dr. Gregory's suggestion that anxiety is largely a general symptom which occurs in a number of psychoses and recalled the fact that he had emphasized this point in his paper. Anxiety is a prominent feature in a variety of disorders, associated, however, with additional symptoms sufficient to mark the psychosis as belonging with some one of the better known types; thus the anxious alcoholic cases mentioned by Dr. Gregory usually presented distinctive features, particularly in their evolution. He would agree with Dr. Diefendorf's suggestion concerning the grouping of the arteriosclerotic cases, but in many agitated depressions the arteriosclerotic basis is apt to be underestimated or even overlooked for a considerable time, perhaps until some definite cerebral attack occurs. When the arteriosclerotic nature of the disorder is clear, the proper group would be, of course, the organic brain diseases. He could not subscribe to Dr. Dana's conception of melancholia as a general disorder or a single disease, no matter whether it belonged to the manic-depressive or involution type of depression. The cases studied show that the two forms of reactions, certainly when they are pure, are symptomatically and prognostically different, and above all they seem to develop on a different foundation. Provision must be made for a small number of cases which seem to show admixtures or appear to be transitional forms. Many cases of manic-depressive insanity show anxiety, but here it is usually found in a fairly characteristic setting. These cases have nearly always a feeling of insufficiency or show clearly some difficulty of thought or constraint in activity which does not appear in the anxiety psychoses described.

Book Reviews.

Text-book of Medical Jurisprudence and Toxicology. By JOHN J. REESE, M.D., Late Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania, etc. Seventh edition. Revised by HENRY LEFFMANN, A.M., M.D., Professor of Chemistry and Toxicology in the Woman's Medical College of Pennsylvania, etc. Pp. 656. Philadelphia: P. Blakiston's Son & Co. 1906.

This volume of convenient size has reached a seventh edition. The purpose for which the book was originally written has been maintained in succeeding editions, namely, a concise textbook for the student and a manual for the attorney and general expert. The revision of this last edition has incorporated recent advances in the broad field which it covers, particularly in the application of x-rays to the study of the development of the skeleton and in matters relating to toxicology.

The Pancreas; Its Surgery and Pathology. By A. W. MAYO ROBSON, D.Sc. (Leeds), F.R.C.S. (Eng.), London; and P. J. CAMMIDGE, M.B. (Lond.), D.P.H. (Camb.), London. Illustrated. Philadelphia and London: W. B. Saunders Company. 1907.

This is one of the important books of the year.

Mayo Robson's writings, as they issue from the press, grow constantly more vital; and this latest book, written in conjunction with the well-known chemist, Cammidge, is for the general practitioner and surgeon the most valuable volume on the subject of surgical diseases of the pancreas which has been published in English up to this time.

The book is an octavo of 546 pages, profusely illustrated. The authors consider their subject in nineteen chapters, and consider it exhaustively, dealing with anatomy, physiology and chemistry; with diabetes, with symptomatology and diagnosis; with injuries, inflammatory diseases and new growths. They state truly, in their admirable preface, that proper study of the pancreas really began with aseptic surgery. "So long as clinical observation was only capable of being checked by the experience of the post-mortem room . . . the important and complex part that the pancreas plays in the physiology of the body remained unsuspected, and descriptions of the diseases to which it is liable were confined to a few lines on malignant disease, cysts and calculi." The chapter on histology discusses in interesting fashion the structure and functions of those characteristic groups of cells known as the islands of Langerhans, the writers expressing their personal opinion that these islands are independent structures related to the control of carbohydrate metabolism within the body. In discussing chemical changes the authors remark that our knowledge of the pathology of diabetes is still obscure; and so their descriptions of the clinical pathology of the pancreas are confined largely to the condition of the urine and feces associated with diseases of the gland; "and although we have now devoted special attention to this subject for six or seven years, we are conscious that as yet only the fringe has been touched upon." They state that the so-called "pancreatic reaction" in the urine is still under investigation, but that their method has been improved. They urge, further, that Cammidge, the author of this method, has never claimed for it infallibility. The pancreatic reaction must still be regarded as but one of many aids in arriving at the diagnosis of pancreatic disease. Chapter XII, on the general symptomatology and diagnosis, is the most interesting chapter in the book, and is illuminating. The authors lay great emphasis on the intimate relation between disease of the bile ducts and pancreatic disease, and urge the importance of operations for the relief of established bile duct disease in order to anticipate consequent pancreatitis with not improbable resulting diabetes. Again we are told of the similarity in symptoms between cancer and chronic pancreatitis in the head of the gland, and are reminded of operative measures which may relieve the latter condition.

An admirably comprehensive bibliography is appended to every chapter of this book; the illustrations and press-work are satisfactory. Again we commend the work cordially to the profession.

The Physiology of Alimentation. By Dr. Martin H. Fischer, Professor of Pathology in the Oakland College of Medicine. New York: John Wiley & Sons. 1907.

In no field of physiology has the advance of the science been more rapid than in the field of digestion and nutrition. In Russia, Germany, England and the United States investigators have been active and have brought forward many new facts regarding the activities of the alimentary canal, both mechanical and chemical, and the factors which control those activities. So rapid has been the advance that many of the results have not yet been included in the ordinary text-books of physiology. Dr. Fischer has performed a distinct service in bringing together in compact form the results of these newer physiological investigations; and to those who recognize physiology as an important science contributory to medicine, the present volume will prove interesting and instructive.

In his review of the physiology of alimentation Dr. Fischer has summarized Cannon's work on the motor activities of the alimentary canal, Pawlow's studies of the digestive secretions, Bayliss and Starling's important discoveries of the chemical control of the digestive secretions, besides an instructive discussion of the methods of action of the various enzymes of the alimentary tract from the point of view of physical chemistry. The treatise ends with a consideration of the alimentary tract as an absorptive system and as an excretory system.

The promise is made that the present volume is to be the first of a series of monographs dealing with various phases of physiology. It is to be hoped that the succeeding volumes will be as interesting and as stimulating as the present one.

Kirke's Handbook of Physiology. Revised and rewritten by Charles Wilson Greene, A.M., Ph.D., Professor of Physiology and Pharmacology, University of Missouri. Sixth American revision. New York: William Wood & Co. 1907.

The American edition of Kirkes' Handbook has for many years lagged behind the English edition in thoroughness of treatment, in carefulness of statement and in being abreast of the times. It is to the credit of the present reviser that he has largely obviated these defects. The anatomical and histological discussions, so prominent in the earlier editions, have been much reduced. The text has been to a great extent rewritten and many new illustrations of physiological experiments have been introduced. An entirely new feature of the present edition is the inclusion, at the end of the chapters, of directions for laboratory work. The spreading of the laboratory method of teaching physiology in medical schools should make this feature an additional attraction to this well-known handbook.

A Textbook of Physiology. By ISAAC OTT, A.M., M.D., Professor of Physiology in the Medico-Chirurgical College of Philadelphia. Second edition. Philadelphia: F. A. Davis Company. 1907.

The second edition of Dr. Ott's textbook has been enlarged by two hundred and forty pages more than the first edition contained, and by over two hundred and fifty additional figures. The treatment of the sympathetic nervous system and the chapter on vision have been entirely rewritten. The subject of electro-physiology is considered more comprehensively than in the first edition. The publication remains, however, an example of the conventional textbooks of which there are so many in the market.

A Manual of Clinical Diagnosis by Means of Microscopic and Chemical Methods. For Students, Hospital Physicians and Practitioners. By CHARLES E. SIMON, B.A., M.D., formerly of the Resident Staff of the Johns Hopkins Hospital; Professor of Clinical Pathology at the Baltimore Medical College, etc. Sixth edition, thoroughly revised. Illustrated. Pp. 682. Philadelphia and New York: Lea Brothers & Co. 1907.

This volume, appearing now in its sixth edition, has evidently been launched upon a career of usefulness, and demands no special comment. The rapid advance in the methods of which the book treats has led to a somewhat complete revision in this edition in order to keep within prescribed limits. A new chapter has been added on the opsonins, conservative in statement, together with two appendices, — one on the preparation of culture media, and the second an outline of a course of clinical laboratory methods. The book remains the careful, thorough and acceptable manual of diagnosis which its previous editions would lead one to expect.

Elements of Human Physiology. By ERNEST H. STARLING, M.D., F.R.C.P., F.R.S., Jodrell Professor of Physiology, University College, London. Eighth edition. Chicago: W. T. Keener & Co. 1907.

Professor Starling's volume has for many years had a very favorable reception in England. The author is a widely-known contributor to numerous important subjects of physiological research, so that much that he describes is known to him first hand. As the title of the volume indicates, the book is not a thorough-going treatise, but aims merely to present, in the shortest possible compass, the essentials of the science. The exposition, however, is so simple and lucid, and the author so well acquainted with modern work, that even in this description of the elements of physiology one gets from Professor Starling an excellent account of the most recent well-established results of physiological investigation as well as an indication of the methods of physiological research.

Metabolism and Practical Medicine. By CARL VON NOORDEN, Professor of the First University Medical Clinic, Vienna. Vol. I. *The Physiology of Metabolism.* By ADOLF MAGNUS-LEVY, Berlin. Anglo-American issue under the editorship of I. WALKER HALL, Professor of Pathology, University College, Bristol; Pathologist to the Bristol Royal Infirmary. Chicago: W. T. Keener & Co. 1907.

Few books have ever entered upon a second edition with such radical changes as Von Noorden's "Pathologie des Stoffwechsels." From one small volume of 500 pages, published in 1893, it has expanded into two large books, each of twice that size. Like the first edition, however, the handbook in its new form will be the reference textbook on metabolism for many years to come. The whole of the first edition was written by Von Noorden himself, but the second represents the work of Von Noorden and other collaborators, — F. Kraus, Ad. Schmidt, Weintraud, Strauss, Neuberg, Salomon, Czerny, Steinitz, Matthes, Loewi, Mohr and Magnus-Levy, names so well known that it is almost superfluous to state that their work has been well-nigh perfectly done. To the majority of American physicians, however, these medical classics would remain a *terra incognita* without a translation, and we are pleased to call the attention of our readers to the fact that this has been made under most favorable auspices. The editorship of the translation has been undertaken by I. Walker Hall, of Bristol. The translation is, however, not a perfunctory one, but it is enriched with the results of English and American research, and has also taken advantage of German work appearing since the first German edition went to press.

We heartily recommend the volumes to any student of medicine, young or old, both in and out of practice, who wishes to be in touch with recent work in metabolism. It is not too much to say that these volumes will represent the *pièce de resistance* for the scientific papers of students and doctors for many years to come. The literature alone is easily worth the cost of the volumes.

The first volume of the American edition is devoted to physiology of metabolism, and is entirely the work of that clear and concise writer, thinker and experimenter, Magnus-Levy. His grasp of the whole subject is phenomenal, and excites one's admiration on every page. It is an example of the best scientific literature which we have. Magnus-Levy has done for the physiology of metabolism what Foster did for physiology in general.

The second volume in English (for there are more English than German volumes) comprises sections by Von Noorden on hunger and chronic starvation, over-feeding and diseases of the kidneys, with an article of exceptional merit by Kraus on fever and infection, and others on diseases of the stomach and intestines, diseases of the liver, diseases of respiration and circulation, and diseases of the blood by Schmidt, Weintraud, Matthes and Strauss respectively.

The type, paper and binding are commendable.

Atlas and Text-Book of Human Anatomy. By Dr. Johannes Sobotta, Professor of Anatomy in the University of Würzburg. Edited, with additions, by J. Playfair McMurrich, A.M., Ph.D., Professor of Anatomy in the University of Toronto; formerly Professor of Anatomy in the University of Michigan. Vol. III. *Vascular System, Lymphatic System, Nervous System and Sense Organs.* Illustrated. Pp. 342. Philadelphia and London: W. B. Saunders Co. 1907.

In our review, published July 25, 1907, of the first two volumes of this *Atlas and Text-Book of Human Anatomy,* we made the following statement: "We see no evidence that a third volume is to appear, and miss any section on the central or peripheral nervous system. This is an unfortunate omission." We regret exceedingly this error, brought about by the fact that no mention of a third volume was made in the preface or introductions of the earlier ones. It is, therefore, with special satisfaction that we notice the volume, now in our hands, which completes this most admirable atlas. The contents of this third volume covers the vascular system, the lymphatic system, the nervous system and the sense organs. The same general method has naturally been followed in this volume as in its predecessors and calls for nothing but the warmest praise, not only for the ease of reference which the arrangement of the material permits, but also for the illustrations in which colors have been liberally used, almost, we are tempted to say, unnecessarily in some of the plates. There are 297 of these illustrations, many of them full page, and most of them in colors. The text is brief and descriptive, as becomes a volume produced in atlas form. The spinal cord is rather cursorily treated, possibly somewhat too much so, in view of the important clinical bearings of this part of the cerebrospinal system. We should also have been glad of a few plates illustrative of the segmental sensory distributions on the surface of the body, although such plates may be considered somewhat beyond the scope of the author's design. In general, however, it has been the author's intention to limit himself to the most necessary anatomical data, and he has admirably succeeded in this purpose. The illustrations, although at times somewhat idealized, are for the most part taken from actual dissections, and are most admirably drawn in all instances. As a volume of ready reference, it would be difficult to find its equal among anatomical textbooks. We most cordially recommend it not only to those particularly interested in anatomical research and teaching, but also to physicians in general who are too often unfamiliar with anatomical details and are too busy to refresh their knowledge through the medium of the ordinary textbook. The well sustained atlas character of this series of three volumes is one of its chief recommendations.

THE BOSTON
Medical and Surgical Journal.

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THURSDAY, JANUARY 30, 1908

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THE FINANCE COMMISSION ON BOSTON'S HEALTH BOARD.

The report of the Finance Commission on the Health Department of the city of Boston is an interesting presentation of the manner in which a department, which for years has been respected by successive administrations as one in which partisan and petty politics should play no part, can be debauched by a mayor desirous of building up a personal political machine. While not so stated in the report, it is well known by those who have followed the fortunes of this department that, prior to the accession to office of the late mayor's immediate predecessor, its work had been efficient and free from friction, the two lay members of the Board co-operating with their chairman to give to the city an administration of health laws which was regarded by other municipalities as worthy of the highest praise. With, doubtless, the best of intentions, and looking to still further strengthening an already efficient board, the late mayor's predecessor appointed to succeed the two lay members whom he found in office, when their terms expired, a medical subordinate of the Board and a lay politician of his own party. It was here that the demoralization of the Board began, for as soon as the appointment of the second of these was confirmed, the two combined against the one who had made the Board what it was and proceeded to conduct the affairs of the office, so far as they dared, in their own way. When the late mayor came into power, he found the department in a condition of impairment of efficiency, which he hastened to make still more marked. He transferred the lay politician to another field, reduced the late subordinate to his former position, and filled their places with two of his henchmen, who have been shown by the report to have been placed in office to carry out his wishes, regardless of their own ideas as to the expediency or wisdom of the same. New positions were created, and despite the unanimous sentiment of the Board that they were unnecessary, the two servants of the mayor uniformly out-voted the conscientious chairman and appointed, to fill them, the persons whom the mayor thrust upon them to strengthen his political future. In this way were appointed two deputy commissioners, neither of whom performed any useful service; a smoke inspector, who was kept in office, although unanimously regarded by the Board as inefficient and useless; an additional medical officer with practically no duty to perform; an additional secretary, for whom a place was made by changing the title of the one who had served with conspicuous ability for many years to "chief clerk," the appointee having been compelled by the Civil Service Commission to relinquish a position in the ferry department to which he had been illegally assigned; a dermatologist, admittedly able and competent, but paid a salary far in excess of what every member of the Board considered adequate; and thirty medical inspectors of school children, some of whom, including one recently convicted for failure to report cases of scarlet fever in his own practice to his official superiors, were unanimously regarded by the Board as incompetent to perform the very important duties of their office. The report shows further that of the sixteen sanitary inspectors, six, and of the three collectors of samples in the Bureau of Milk Inspection, two, are unworthy of retention in office.

Truly, the conditions made public by the Finance Commission are deplorable in the highest degree, but it can safely be predicted that the present mayor, whose ante-election promises of reform have thus far been shown to have been sincere, will not long continue to permit them to exist.

The Commission's report includes certain recommendations, some of which have already been adopted, looking to a return to decent administration and to the attainment of an even higher degree of efficiency than the existing laws have made possible, with a very considerable reduction in running expenses. Among those not already adopted may be mentioned the removal of incompetent inspectors; the appointment of experienced men without limit of time, at minimum and maximum salaries; an increase in the number of sanitary inspectors, some districts being now far too large; more efficient co-operation with the sanitary, sewer and law departments; the amendment of existing laws regarding the inspection of meats; the enactment of new legislation giving the right of inspection of public buildings and of the offices of those advertising to cure venereal diseases, and providing for the signing of certain death returns by the medical examiners rather than by the agents of the board.

To advise concerning the expediency of transferring the medical inspection of schools to the school committee; whether a better system of garbage and waste disposal can be devised; whether certain medical specialists can be secured without pay; and whether the present system of safeguarding the public from contagious diseases can be improved upon, especially with reference to tuberculosis, are questions which the Commission proposes to refer to a committee of professional men, consisting of three physicians, an engineer and a statistician. The most important question, however, which the Commission is entertaining is whether or not the present Board should be supplanted by a single commissioner. In the executive function it is conceded that a one-man power is preferable; but inasmuch as the work of the Board is largely of a judicial nature, the Commission is in doubt as to the advisability of intrusting this important function to one man, and reserves its opinion until it shall have been advised thereupon by the findings of its committee of further investigation; and as to the wisdom of temporarily withholding its final opinion in this important matter we heartily agree.

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THE REFORM OF EXPERT MEDICAL TESTIMONY.

Among the many bills of interest to the medical profession before the Massachusetts Legislature this year, few are likely to excite more widespread attention than that on expert medical testimony presented by Dr. George W. Gay, President of the Massachusetts Medical Society, and others. This bill provides that the court may, on its own motion, and at the request of either party to a suit, appoint one or more medical men of proper medical or surgical training to render an expert opinion on the case under consideration. The bill designs that such report shall have the same place in the eyes of the law as that now given to the report of an auditor. In furtherance of this plan, it is proposed that the chief medical societies of the state furnish the

Chief Justice of the Superior Court a list of not less than fifty physicians of good professional standing and of not less than five years of actual practice in their profession, from whom may be chosen expert witnesses, with the designation of the specialty in which the individual physicians are deemed to be experts. It is furthermore provided that reasonable compensation for services rendered by such witnesses be allowed by the court and paid from the county treasury. The appointment of such witnesses by the court does not preclude the testimony of other medical witnesses who may be called by either party to the action.

The foregoing outline of the bill to be presented to the legislature, if it becomes law, will manifestly prove a distinct step toward the improvement of the present unfortunate state of medical expert testimony. We are convinced that no physician who has the best interests of his profession at heart can look with equanimity upon the present system in which experts in any number may be summoned by the two parties in the suit so far as the supposed needs of the case or the financial capacity of the contestants may go. Out of this system, as it has practically developed itself in many trials, great and small, has grown a general disparagement of all medical expert testimony, not infrequently, we regret to say, justified by the character of the testimony offered. On the other hand no fair-minded person would be disposed to question that the physician under the existing system is placed at a manifest disadvantage. He is forced into an attitude of partisanship; he is not allowed to state completely both sides of the question, and his remuneration is not fixed. One of the most conspicuous evils has been the development of the contingent fee to which the physician has too often lent himself at the solicitation of attorneys who themselves are trying cases on a contingent basis. It is, however, not our present purpose to discuss the various defects of the present system, but rather to draw attention to the possibilities of reform as exemplified in the rational bill to which we have referred.

It has commonly been said that the legal profession is opposed to any such plan as that contemplated by this bill. This is certainly only in a measure true. Many lawyers are entirely in accord with the medical profession in the attempt to restore something of the dignity of medical expert testimony which has of late been in such great measure lost. It is with special satisfaction that we publish in this issue an admirable statement of the situation from the legal standpoint by the Hon. L. C. Southard of the Suffolk Bar. These remarks, originally delivered at a meeting of the Norfolk District Medical Society, have been revised for publication, and express in succinct form the deficiencies of the present system and the opportunities for the future if a law designed to provide for the appointment of witnesses by the court be finally enacted. Mr. Southard's fairness toward the medical profession is not less striking than his dissatisfaction with the present state of affairs. His expressed opinion is that an appointment of medical experts corresponding to auditors and masters is wholly within the range of possibility, and that could some such system be adopted, the medical expert would reassume the position of dignity and importance which is now lacking.

In spite of the various attempts which have hitherto been made in the same direction and which we believe without exception have resulted in failure, there seems no reason why the medical and legal professions working together, reinforced by a strong public opinion, should not finally effect the needed reform. It is not to be questioned, as must indeed happen in all attempts at progress, that many dissenters will appear, both in the ranks of medicine and the law. Mercenary motives are sure to come to the front, and many more or less specious arguments be advanced to check a reform which the best minds of both professions admit is highly desirable, if not absolutely necessary. That the ends of justice demand an absolutely unbiased opinion on the part of the medical expert in all cases is not to be questioned. That such unbiased opinion is not obtained by the present partisan method of expert testimony is reasonably apparent. That a possible solution of this problem lies in the appointment and payment of experts by those wholly unprejudiced in the case at issue seems reasonable. We, therefore, urge upon our readers to support by all means in their power the bill about to be presented to the legislature which receives the cordial endorsement of both the professions concerned.

TYPHOID FEVER CONTAGIOUS IN THE FIRST WEEK.

The benefit to be derived from an early diagnosis in typhoid fever accrues not alone to the patient but to his neighbors as well. Conradi has recently shown that the disease is far more contagious in the first week of illness than in the following period. The sources of infection of six hundred cases were studied, and it was found that eighty-five of the patients contracted the disease by contact. On investigating the primary cases from which these eighty-five patients contracted typhoid fever, Conradi was able to prove that forty-nine of the cases acquired the disease during the first week of the illness of the primary patient, sixteen during the second week, ten during the third week and ten only in the fourth to seventh weeks inclusive. It would appear at first thought that this could be accounted for by the fact that isolation of the primary case prevented exposure of other individuals in the later course of the disease. Conradi particularly looked up this point. He found that nineteen of the eighty-five patients obtained the disease from primary cases in whom the disease was accidentally discovered, or where no physician was called in, and in consequence no isolation was practised. Ten of these nineteen non-isolated cases contracted typhoid fever during the first week of the illness of the primary case, and only nine in the subsequent weeks, thus demonstrating that isolation is not the cause for the non-transmission of the disease in the later weeks of illness. An early diagnosis of typhoid fever is therefore essential for the prevention of its spread.

Conradi also discovered other facts which are of interest in this connection. In the sister of a typhoid patient he found typhoid bacilli in the blood four days before symptoms of typhoid fever appeared. If the bacilli are in the blood it would seem probable that they might pass into the excretions during the incubation stage, and this also Conradi was able to demonstrate. In one instance typhoid bacilli were isolated from the stools eight days before the disease developed, and in another instance eleven days before symptoms appeared.[1]

It is indeed fortunate that new methods for an early diagnosis of typhoid fever are now at our disposal. Instead of the Widal reaction, which is rare in the first week, and present in only about eighty per cent of the cases in the second week, the use of blood cultures renders possible the demonstration of typhoid bacilli in the blood in ninety to one hundred per cent of the cases within the first few days of the onset of the disease. With this improved method of diagnosis and a better knowledge of the early contagiousness of typhoid fever in our possession we may hope that the year nineteen hundred and eight will, like its predecessor, nineteen hundred and seven, establish a new low record for typhoid mortality.

MEDICAL NOTES.

CHANGE OF PUBLICATION OF THE "ZENTRALBLÄTTER." — The publication of the *Zentralblätter* for *Innere Medizin*, for *Chirurgie*, for *Gynäkologie* and for the *Gesamte Medizin*, has been assumed by the well-known publishing house of Johann Ambrosius Barth, of Leipzig, which was founded in 1780.

LECTURE. — Dr. Louis Livingston Seaman delivers a public lecture at the New York Academy of Medicine on Thursday, Jan. 30, 1908, on "Some of the Triumphs of Scientific Medicine in Peace and War in Foreign Lands, with Suggestions upon the Necessity of Important Changes in the Medical Service of the United States Army." Dr. Seaman's extensive experience in the Spanish-American war, in the Philippines, in China and Manchuria, in South Africa, South America and the Canal Zone cannot fail to profit his hearers.

THE ARCHIVES OF INTERNAL MEDICINE. —The first number of the previously announced *Archives of Internal Medicine*, published under the auspices of the American Medical Association, is in our hands. This journal, which it is announced will be issued monthly, is under the editorial management of Drs. Joseph L. Miller, Chicago; Richard C. Cabot, Boston; George Dock, Ann Arbor; David L. Edsall, Philadelphia; Theodore C. Janeway, New York, and Dr. W. S. Thayer, of Baltimore. This number contains five articles, among the most significant of which is one by Dr. Friedrich Müller, of Munich, on the nervous affections of the heart, being a Harvey Lecture delivered in New York last March.

WORK OF THE PORTO RICO ANEMIA COMMISSION. —The work during the past year of the Porto Rico Anemia Commission has resulted in the treatment of nearly 90,000 persons suffering from the disease, of whom nearly 40,000 have been cured, many others improved or still under treatment, and of the whole number only 193 have died. To accomplish this most satisfactory result less than $50,000 has been expended, including salaries, medicine, laboratory expenses, hospital expenses and transportation. It is stated that in return for this small outlay 22,000 laborers have been restored to usefulness and more than 66,000, who would otherwise have been incapacitated, have been able to earn a livelihood. There are few more striking chapters in the history of prophylactic medicine than that of the Porto Rico Anemia Commission.

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[1] Ueber die Kontagiosität des Typhus. Dr. H. Conradi: Klinisches Jahrbuch, siebzehnter Band, 1907.
Wann steckt der Typhus Kranke an? Dr. H. Conradi: Deut. Med. Wochenschr., No. 41, Oct. 10, 1907, p. 1684.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Jan. 29, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 79, typhoid fever 4, measles 103, tuberculosis 56, smallpox 0.

The death-rate of the reported deaths for the week ending Jan. 29, 1908, was 20.54.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Jan. 25, 1908, was 230, against 239 the corresponding week of last year, showing a decrease of 9 deaths and making the death-rate for the week 19.68. Of this number 125 were males and 105 were females; 223 were white and 7 colored; 145 were born in the United States, 79 in foreign countries and 6 unknown; 47 were of American parentage, 146 of foreign parentage and 37 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 58 cases and 3 deaths; scarlatina, 85 cases and 1 death; typhoid fever, 1 case and 0 deaths; measles, 107 cases and 1 death; tuberculosis, 61 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 30, whooping cough 1, heart disease 15, bronchitis 11, and marasmus 2. There were 9 deaths from violent causes. The number of children who died under one year was 48; the number under five years 79. The number of persons who died over sixty years of age was 56. The deaths in public institutions were 85.

There were 4 cases and 1 death reported from cerebrospinal meningitis during the week.

During the same period there were only 2 deaths reported from la grippe.

Bequest to Exeter (N. H.) Hospital. — By the will of the late Elizabeth Folsom, of Brookline, $10,000, is left to the Exeter (N. H.) Cottage Hospital.

The Atomic Theory. — Beginning Monday, Feb. 17, Prof. Theodore W. Richards, of Harvard University, will deliver a series of eight lectures, under the auspices of the Lowell Institute, on the "Early History and Recent Development of the Atomic Theory."

Good Results from Use of Flexner Serum. — It is reported from the Naval Hospital, Rhode Island, that two naval apprentices who were sent to the hospital in December suffering from cerebrospinal meningitis, both of whom were regarded as hopeless cases, have steadily improved as a result of treatment by the new Flexner serum. One of them is now convalescent, and the other believed to be in a fair way to recover.

Centenarians. — The death is announced of Robert Ely, of Agawam, Mass., at the reputed age of one hundred years. The house in which he died was built by him in 1845.

Mrs. Matilda F. Capen, said to be one hundred and two years old, died recently in Stoughton, Mass., the oldest resident of that town. She is said never to have ridden in the steam or electric cars.

NEW YORK.

Mrs. Grover Cleveland on Board of Managers of Epileptic Colony.— Governor Stokes of New Jersey, as the last appointment of his term of office, on Jan. 13, named Mrs. Grover Cleveland as one of the board of managers of the State Village for Epileptics at Skillman. It is said that Mrs. Cleveland has for some time been greatly interested in the work of this institution, which is not far from Princeton, where she resides.

Obituaries.

JOHN ORDRONAUX, M.D., LL.D.

John Ordronaux, M.D., LL.D., formerly of New York, died at his home at Glen Head, Long Island, on Jan. 20, from cerebral apoplexy. He was a native of New York City and seventy-seven years of age. He was graduated from Dartmouth College in 1850, from the Harvard Law School in 1852, and from the National Medical School in 1859. He served as a surgeon in the Civil War, during most of which he was stationed in New York, and from 1872 to 1882 he was a member of the New York State Commission in Lunacy. For many years he was either professor or lecturer on medical jurisprudence at the Columbia University Law School, Boston University, Dartmouth College and the University of Vermont. He was long regarded as an authority on this subject, and his writings upon it were highly esteemed. He was also the author of a work entitled "Constitutional Legislation of the United States." Dr. Ordronaux never married, and left an estate of $300,000, fully one half of which by his will is bequeathed for benevolent and charitable purposes. The largest single bequest is one of $30,000 to his alma mater, Dartmouth College, and sums varying in amount from $1,000 to $10,000 are given to different churches, hospitals and charities. Among the institutions named are three hospitals on Long Island, the Jamaica and Flushing hospitals in the borough of Queens, New York City, and the Nassau Hospital at Mineola. To each of the three $6,000 is left for the endowment of beds.

THOMAS FILLEBROWN, D.D.S., M.D.

Dr. Thomas Fillebrown, who died Jan. 22, at the age of seventy-two years, was born in Winthrop, Me., Jan. 13, 1836. He graduated from the Harvard Dental School in the class of 1869. He first practised dentistry in Portland, Me. In 1883 he received the degree of M.D. from the Maine Medical School. In 1883 he was appointed Professor of Operative Dentistry in the Harvard Dental School. This position he filled until 1897, when he was appointed Professor of Operative Dentistry and oral surgery. He held this professorship until 1904, when he retired from the Dental School. Dr. Fillebrown paid especial attention to oral surgery. He perfected the details of the operation for cleft palate, and devised efficient apparatus for maintaining anesthesia during the progress of this operation. Dr. Fillebrown was a member of the Massachusetts Medical Society. He was president, at the time of his death, of the American Academy of Dental Science.

Current Literature.

Medical Record.
Dec. 28, 1907.

1. Bryant, J. D. *Some Unclassified Dangers in Anesthesia.*
2. *Newton, R. C. *Environment and Personal Hygiene as Causes of Consumption.*
3. Wadsworth, A. *The Bacteria as Incitants of Malignant Endocarditis.*
4. Albee, F. H. *Skiagraphy in Orthopedic Surgery.*
5. Hinsdale, G. *Hot Springs, Virginia.*
6. Thrush, M. C. *Appendicitis Due to the Presence of Oxyuris Vermicularis.*

2. Newton believes that the principal causes in the production of consumption are life habits and environment. Infection and heredity play secondary parts. We always have tubercle bacilli with us. Civilization has brought to the Indian and the negro not only tubercle bacilli, but also demoralizing changes in environment and habits. The immigrants and the "submerged tenth" undergo similar disastrous changes.

[R. I. L.]

New York Medical Journal.
Dec. 28, 1907.

1. Donley, J. E. *Neurasthenia. Its Relation to Personality.*
2. Lilienthal, H. *Tuberculosis of the Bones and Joints of the Lower Extremity.*
3. Huber, J. B. *The Tendency to Consumption.*
4. Waters, B. H. *The Modern Management of Tuberculosis.*
5. *Weinstein, H. *Silver Nitrate in Gastric Diseases.*
6. Pitfield, R. L. *The Oxychloraniline Reaction for Free Hydrochloric Acid.*

5. Weinstein advocates the use of silver nitrate in certain gastric affections in conjunction with other therapeutical agents. He finds it useless in gastric neurosis, but especially efficacious in irritative conditions of the gastric mucosa, characterized by hyperacidity, nausea and pain. He prefers to give the drug in solution in doses of one quarter to one half a grain three times a day on an empty stomach. No food is allowed for a half hour after its administration. He has found it rarely necessary to continue the use of the drug longer than three weeks. No cases of argyria were seen.

[R. I. L.]

The Journal of the American Medical Association.
Dec. 28, 1907.

1. *Atlee, J. L., and Mills, C. K. *Brain Tumor with Jacksonian Spasm and Unilateral Paralysis of the Vocal Cord and Late Hemiparesis and Astereognosis.*
2. Child, C. G., Jr. *Tubal Twin Pregnancy.*
3. Herb, I. C. *Diverticulum of the Vermiform Appendix.*
4. Butler, G. F. *Pathophysiology and Therapeutics.*
5. Fischer, L. *Clinical Observations in the Acute Infectious Diseases.*
6. Robertson, H. E. *Phlegmonous Gastritis. A Report of Two Cases.*
7. Jack, F. L. *Ossiculectomy in Chronic Middle Ear Suppuration.*
8. *Beall, K. H. *The Paravertebral Triangle of Dullness in Subphrenic Abscess (Grocco's Sign).*

1. Atlee and Mills report the successful removal of a brain tumor in the Rolandic area. The pathological report was that of an epithelial tumor arising from the choroid plexus. Of considerable interest was the unilateral paralysis of the vocal cord. Physiologically, unilateral lesions of the cortical center for movements of the larynx cause bilateral paralyses of the laryngeal muscles.

8. Beall reports a large subphrenic abscess, apparently of amebic origin, which gave signs of fluid in the right chest, displacement of the heart, and a paravertebral triangle of dullness on the opposite side. So far as known this is the only case so far reported in which the presence of a paravertebral triangle of dullness has not signified a pleural effusion on the opposite side.

[R. I. L.]

Surgery, Gynecology and Obstetrics.
January, 1908.

1. *Bland-Sutton, J. *On the Treatment of the Pedicle and the Ureter in Nephrectomy.*
2. *Moynihan, B. G. A. *Observations upon the Treatment of Chronic Diseases of the Stomach.*
3. Ware, M. W. *Radiograms of Syphilis of the Long Bones.*
4. *Schumann, E. A. *A Study of Pseudomyxoma Peritonei, with the Report of a Case.*
5. *Cammidge, P. J. *Pancreatic Diabetes, with Remarks upon Its Surgical Treatment.*
6. *Robson, A. W. M. *Pancreatic Catarrh and Interstitial Pancreatitis in Their Relation to Catarrhal Jaundice and also to Glycosuria.*
7. *Connell, F. G. *Peptic Ulcer of the Jejunum.*
8. Wagner, C. *Hirschsprung's Disease.*
9. McDonald, E. *Laceration of the Perineum.*
10. *Deaver, J. B. *The Medical and Surgical Treatment of Gallstones, Their Scope and Relations.*
11. Ferguson, A. H. *Excision of the Knee-joint.*
12. *Collinson, H. *Cholecystotomy and Cholecystectomy as Practised in the Clinic of Mr. Moynihan.*
13. Morris, R. T. *Another Method for Forming a Gastric Fistula.*

1. Bland-Sutton calls attention to the importance in nephrectomy of isolating the renal vessels from the ureter and pelvis of the kidney, and tying them separately. If any part of the pelvis be included in the ligature of the pedicle, there is great likelihood of suppuration, cyst formation and persistent sinus. The ureter should be tied and cut as low as possible, and the distal stump allowed to retract beneath the peritoneum.

2. From his experience in gastric surgery, Moynihan is led to believe that gastro-enterostomy should never be done unless demonstrable organic disease is found at operation. He performs it by the no-loop method, with the jejunum applied to the stomach almost vertically. Ulcers in the cardiac half of the stomach he treats by excision without gastro-enterostomy; duodenal ulcers by excision and end-to-side anastomosis, with or without gastro-jejunostomy.

4. Pseudomyxoma peritonei is the condition arising when the escape of pseudomucin from an ovarian cystadenoma is followed by the formation of multiple mucoid masses on the peritoneum. It is a genuine implantation, histologically carcinomatous. Only 56 cases have been reported, with temporary recovery of 70%, but recurrence is almost universal, and the ultimate prognosis bad.

5. Cammidge believes that 75% of all cases of diabetes

mellitus are due to pancreatic disease involving the islands of Langerhans, and that by means of the pancreatic reaction in the urine these cases can be diagnosed as such in the pre-glycosuric stage, when efficient treatment may postpone or prevent the occurrence of diabetes, especially if it is caused by a chronic pancreatitis associated with gallstones, or with duodenal ulcer or catarrh. If medical treatment fails in such cases after a reasonable time, he recommends drainage of the pancreatic ducts by cholecystenterostomy, with gastro-enterostomy, if necessary, to relieve the duodenum.

6. In view of Cammidge's chemical researches, which are confirmed by his own clinical observations, Robson states his opinion that a large proportion of cases of catarrhal jaundice is due, not to duodenal catarrh, but to catarrhal or interstitial pancreatitis compressing the third portion of the common bile duct, which in 62% of all cases passes through the substance of the head of the pancreas. For this condition and for pancreatic glycosuria, he regards permanent drainage of the pancreas by cholecyst-enterostomy as the operation of choice. His article suggests an even closer relation than is now recognized between diseases of the pancreas, duodenum and biliary tracts.

7. Peptic jejunal ulcer following gastro-jejunostomy is rare, only 39 cases being reported in the literature. It frequently perforates, and is much commoner after the anterior than after the posterior operation. Persistent hyperchlorhydria is apparently the chief cause. The condition should always be considered when gastric symptoms recur after gastro-enterostomy. Prophylactic treatment is by alkaline medication and gastric ulcer diet for some time following operation. The treatment of perforation is, of course, surgical.

10. Though believing that surgery offers the safest and final cure for gallstones, Deaver recognizes that it is often elective rather than imperative, and that Carlsbad or other medical treatment may be desirable and effective when there is some contra-indication to operation.

12. A description of operative technic in Moynihan's clinic presents more thorough asepsis than is common in America. It is worth while to note the protection of the skin in the field of operation from contact with the hands and instruments, and the care with which bile is kept out of the wound in cholecystotomy

[R. M. G.]

The Lancet.

Jan. 4, 1908.

1. Keith, A. *Address on Human Anatomy in England during the Nineteenth Century.*
2. Thompson, P. *Lecture on the Study of Embryology.*
3. *Lane, W. A. *The Modern Treatment of Cleft Palate.*
4. *Thomson, H. C. *Preliminary Note on the Kinemetograph in Medicine.*
5. Bosanquet, W. C. *Diabetes Mellitus in Two Brothers, with Necropsies.*
6. *Slater, A. B. *Case of "Diphtheria of the Skin" of Three Years' Duration treated by Antitoxin.*
7. Turner, C. H. *An Unusual Pathological Condition of Meckel's Diverticulum.*
8. Boston, L. N. *Delirium Tremens. Statistical Study of 156 Cases.*

3. Lane describes the technic of his operation on cleft palate and harelip, with numerous illustrative diagrams. He believes in repairing the harelip at the same time that he operates on the cleft palate, for the following reasons: (1) the soft parts which are necessarily removed from the margins of the lip may be of the greatest service in completing the closure of the anterior part of the cleft; (2) postponing the harelip operation reduces the chances of union; (3) the sooner the pressure of the complete lip is brought to bear upon the segments of the upper jaw as well as upon a displaced premaxilla, should it exist, the more rapid is the approximation of the bones forming the front of the cleft and the restoration of the premaxilla to its normal relationship.

4. Thomson has used the kinemetograph as an aid in teaching nervous diseases, and believes that this method will form an important addition to the equipment of the practitioner who is unable to keep in touch with the large centers of education.

6. Slater reports a case of "diphtheria of the skin" of three years' duration in a girl of thirteen years. She was treated for a long time for syphilis, mercury and iodides being given for two years without effect. On entering the hospital a bacteriological examination was made of the serum from the skin eruption which showed the presence of the diphtheria bacillus. Antitoxin treatment was commenced at once with remarkably satisfactory results, so that inside a month practically all lesions had disappeared. [J. B. H.]

British Medical Journal.

Jan. 4, 1908.

1. Bennett, W. *Modifications in the Movements of the Knee-Joint Directly Consequent upon Injury.*
2. Fenwick, E. H. *An Operative Demonstration of the Occasional Diagnostic Accuracy of the X-Ray in Urinary Stone.*
3. *Bland-Sutton, J. *A Clinical Lecture on Cancer of the Ovary.*
4. Thomas, J. L. *Some Recent Experiences in the Surgery of the Liver and Gall Bladder.*
5. Mott, F. W. *Some Recent Developments in our Knowledge of Syphilis in Relation to Diseases of the Nervous System.*
6. *Weber, F. P. *A Note on Excessive Patellar Reflex of Functional Nervous Origin and Especially the "Trepidation" or "Spinal Epilipsy" Form.*
7. *Ledingham, A., and Ledingham, J. C. G. *Typhoid Carriers.*
8. Corner, E. M. *The Contents of Irreducible Inguinal Herniæ in Female Subjects, and True Hermaphroditism.*
9. Eve, F. *A Note on Nephropexy.*

3. Bland-Sutton believes that cancer of the ovary ought not to be considered primary without careful examination of the intestines and all the abdominal organs; this is neglected in far too many instances. He presents several cases illustrating this point.

6. Weber thinks that too much value is attributed to excessive knee-jerks as suggestive of the presence of organic nervous disease. Extreme exaggeration, what he terms trepidation or spinal epilepsy, when in addition to a violent knee-jerk there is a kind of knee clonus, be believes is often due to functional disease. Functional nervous vomiting is a condition analogous to this, and the symptoms produced by those abnormal functional states may equal, or even exceed, those produced by organic disease.

7. The writers have made a careful study of an epidemic of typhoid fever occurring in a certain lunatic asylum in Scotland, making many examinations of feces and urine in recently recovered cases, and in many instances finding active typhoid bacilli in these excreta. They believe that many typhoid epidemics would be avoided if the excreta of recovered cases were examined systematically once a month up to six months after recovery.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 47.

Nov. 21, 1907.

1. *Cramer, A. *Treatment of Arteriosclerotic Atrophy of the Brain.*
2. *v. Strümpell, A. *The Combination of Tabes Dorsalis and Diseases of the Heart and Great Vessels.*
3. Wassermann, A. *A Review of Recent Work on Immunization.* (Continued article.)
4. *Schmidt, A., and Lohrisch, H. *Importance of Cellulose in the Diet of Diabetics.*
5. Tillmanns, H. *The General Treatment of Luxations.*
6. *Bumm, E. *The Treatment of Eclampsia.*
7. *v. Bokay, J. *Lumbar Puncture in the Treatment of Cerebraspinal Meningitis.*
8. Kreibich, C. *Inflammation of Normal Skin caused by the Static Brush.*
9. Lewandowsky, F. *Pathology and Treatment of Multiple Abscesses in Infants.*
10. Sternberg, W. *Diet in Obesity.*
11. Deutsch, A. *A Chair for Office Examinations.*
12. Wederhake. *Permanently Sterile Suture Material.*

1. Cramer, in a clinical lecture, says that if cases of arteriosclerosis of the cerebral vessels come early for treatment, the physician can do much towards arresting the process and enabling the patient to go back to work. Success depends on the promptness with which treatment is instituted after the appearance of the ominous triad of symptoms,— headache, dizziness and occasional lapses of memory. Of first importance is rest of the brain, which can only be obtained by keeping the patient absolutely away from his business, and perhaps away from his family, who must all co-operate in removing causes of worry, else the demands which the emotions make upon the vascular system may cause the incipient brain affection to progress rapidly. The patient must keep in the open air as much as possible, carefully regulating walks to level ground, and avoiding all kinds of severe exercise, loud speaking, alcohol, sexual intercourse, etc. Straining at stool is dangerous. Cramer finds that a course of Carlsbad Mühlbrunnen is very useful; two glasses before breakfast for a month, then skip a month. Such treatment is kept up for six months or more. In the intervals fruit or a mild laxative at night, changing frequently. Potassium or sodium iodide in a simple solution is the main medicinal remedy, commencing with four grains, and increasing slowly up to 45 or 60 grains a day. This should be kept up for years, pausing a week or two every six weeks. It is best given in milk after meals. Bromides may be given temporarily in connection with the iodide in cases of great mental disturbance, stopping as soon as possible. Under such treatment Cramer considers that much can be done to postpone mental decay when hemiplegia is already established, or at least to prolong life.

2. v. Strümpell calls attention to the frequent combination of tabes dorsalis with aortic or other vascular disease, and reviews the literature of the subject from 1879 when Berger and Rosenbach first described it. He thinks that modern pathology has given us the reason for this coexistence of apparently widely diverse affections: viz., syphilis being an etiological factor in each. He is convinced that syphilis is the sole factor in the production of tabes, its toxins causing paralyses and nerve degenerations similar to those caused by the diphtheria toxins. The rôle played by syphilis in arterial disease is now universally acknowledged. In all vascular affections, the discovery of symptoms suggesting tabes, such as absence of the pupil reflex or the tendon reflex, can be taken as an almost certain indication of the syphilitic origin of the trouble, and is of very great diagnostic importance.

4. Schmidt and Lohrisch describe test meals given to five diabetics, to demonstrate the use of cellulose as a food in such cases. Two of the patients did not assimilate it readily and they were not included in the table. One hundred grams of cellulose equal 37.5 gm. fat, or 75 gm. cane sugar. The tables are given for three cases, before, during and after the ingestion of cellulose. These show that 75% of the 30 gm. of cellulose was assimilated, and had a favorable influence on metabolism. No bad effects were observed. These three cases were all patients whose glycosuria persisted in spite of complete absence of carbohydrates from the diet. The cellulose was specially prepared from cabbage, which was chopped and boiling water poured over it until the wash water gave no reaction for sugar. It was then dried and ground fine, and given to the patients in the form of a broth with an absolute meat diet. They claim that many patients can assimilate cellulose and that it forms an advantageous addition to their diet.

6. Bumm says that the treatment of eclampsia is still symptomatic, and the physician is often powerless. Malignant forms are distinguished less by the number and severity of the convulsions than by the profound coma which may follow the first convulsion. It is often associated with fever, hemoglobinuria, anuria and jaundice. In his experience rapid delivery has only a mortality of 2% or 3%, if done after the first attack. If delayed, the mortality is between 25% and 30%. Slitting the anterior wall of the cervix is recommended as causing less injury and being more rapid. Bumm warns against the giving of narcotics in eclampsia, and says there is no sense in giving a paralyzing poison to a woman already suffering from a paralyzing poison. If the nervous system still responds to stimuli, morphine by rectum may be given. Lumbar puncture does no good. Hot packs around the loins with massage of the kidneys are more effective than drugs to stimulate the secretion of urine.

7. v. Bokay from Budapest recommends the employment of lumbar puncture in all cases of cerebrospinal meningitis. Its curative effects are due to the removal of the bacteria and their toxins. In children 30 cc. can be removed at one time, and in acute cases the punctures are repeated at daily intervals. [L. G. M.]

Berliner Klinische Wochenschrift. No. 47.
Nov. 25, 1907.

1. *Mahler, P. *A Case of Sepsis Due to Diphtheria Bacillus and Streptococcus.*
2. Schnütgen. *Use of Cow's Milk Containing Iron.*
3. Philippson, P. *The Influence of the Galvanic Current on the Electrical Irritability of Children with Tetany.*
4. *Cohn, S. *The Ophthalmo-Reaction in Tuberculosis.*
5. Bruck, K. *The Medico-Legal Value of the "Diversion of the Complement" Method.*
6. Rosenburg, A. *Cold Abscess of the Larynx.*
7. Schlesinger, A. *Operative Treatment of Traumatic Meningitis.*
8. Beitzke, H. *The Underlying Anatomic Conditions in Heart Weakness.*

1. Mahler reports a case of general sepsis in a woman thirty-one years old. Diphtheria bacilli and streptococci were recovered from the blood, and Aronson's serum and antitoxin were both administered. At the seat of injection a very large area of skin necrosis developed. The case recovered. The probable port of entry was a focus of infection in the throat. The skin condition must be regarded as a toxic necrosis, due to the serum.

4. Cohn has studied the ophthalmo-reaction in tuberculosis, and finds that a positive reaction with 1% tuberculin is extremely suggestive of an existing tuberculosis. A negative reaction is not absolute evidence against it, for 50% of severe phthisis cases in his series did not react. However, mild and middling severe phthisis cases usually give a positive reaction. Patients with typhoid show a remarkably high per cent of reactions to tuberculin, particularly during convalescence. The author found that subcutaneous injections of tuberculin, administered some time after tuberculin has been given in the eye, will cause another reaction in the eye, or bring one about where none was before obtained. [R. D.]

No. 48. Dec. 2, 1907.

1. Benda. *The Lumière Method of Making Colored Photographs.*
2. Braun, H. *The Recognition of Antigens by Means of Diversion of the Complement.*
3. Langstein, L. *The Problem of Artificial Feeding of Infants.*
4. Escherich, T. *The Organization of Institutions for the Care of Infants.*
5. *Falkenstein. *Review of Five Years' Experience with the HCl Treatment of Gout.*
6. Orthmann, E. G. *Perforation of the Uterus During Abortion.*
7. Hymans, H. M., and Daniels, L. P. *Treatment of Tuberculosis with Marmorek's Serum.* (Continued article.)
8. Umber, F. *Gastric Secretion after Rectal Feeding.*
9. Michael. *Remarks on the Above Article.*

5. Falkenstein reviews the work of Pfeiffer, van Loghem and Silbergleit, Brugsch and Schittenhelm (the latter reviewed in this Journal, vol. clvii, p. 508) on the effect of large doses of HCl in gout. He agrees with their results, but does not believe that gout is due to a faulty nuclein metabolism. He lays most stress on the fact that in the stomachs of gouty persons, according to most observers, there has been a lack of HCl. In the last five years he has treated 390 cases of gout with HCl, including himself. He himself is taking about 60 gtts. of concentrated HCl *per diem*, well diluted. Most of his cases, whether early or very marked, have had relief from attacks, or the severity of the attacks has been lessened. Colchicin, aspirin and many other remedies recommended for gout have had a certain amount of influence on the course of the acute

attack, and have alleviated pain, but have not influenced the course of the disease, which the author claims may be arrested by the continued use of HCl.

[R. D.]

Deutsches Archiv für Klinische Medizin. Bd. 91. Heft 3 and 4.

1. *Schmidt, J. E. *The Relation of the Kidney to Hemoglobin Excretion.*
2. *Janowski, W. *Minimal Variations in the Duration of Single Pulse Waves under Normal and Pathological Conditions.*
3. Rautenberg, E. *The Registration of Auricular Pulsation in the Esophagus.*
4. *Müller, E. *The Relation of Proteolytic Leucocytic Ferments and Antiferments in the Normal and Pathological Excretions of the Human Body.*
5. *v. Hösslin, H. *Typhoid with Slight and Absent Agglutinotion, and Typhoid-like Attacks.*
6. Tiedemann. *Functional Test of the Heart by the Method of Heinrich v. Recklinghausen.*
7. *Finkelnburg, R. *Clinical and Experimental Obser vations on Diabetes Insipidus.*
8. Strasburger, J. *The Influence of Aortic Elasticity on the Relation between Pulse Press ureand Stroke Volume of the Heart.*
9. Dunger, R. *The Relations of Leucocytes to Intravenous Injections of Collargol and Their Clinical Significance.*

1. There has always been considerable difference of opinion as to the amount of injury to the kidney resulting from the excretion of hemoglobin in conditions of hemoglobinemia. Experimental testing of this question has given more or less discordant results, probably because conditions have varied in different experiments and have failed to approximate the conditions in man. Schmidt has attempted to eliminate every factor except the hemoglobin excretion, by laking blood by repeated freezing instead of by the addition of chemicals, separating the red blood corpuscle stromata and injecting the hemoglobin dissolved in the blood serum. The blood of the same kind of animal is the source of the hemoglobin in each experiment. Under these conditions no anatomical lesion in the kidney is produced; there is a transient albuminuria, but these experiments show that the hemoglobin in itself in hemoglobinemia is not a cause of renal lesions. If renal lesions occur, they probably result from the excretion of toxic substances associated causally with the hemoglobinemia.

2. By tracing pulse waves of normal individuals on a rapidly moving Jaquet sphygmograph, and measuring the length of the pulse waves, Janowski finds that succeeding waves show a considerable variation in length, especially marked in the ascending limb of the curves. Thus in the normal, the arrhythmia of the abnormal finds a prototype.

4. The technic used by Müller in studying the proteolytic leucocytic ferment and antiferment is as follows: Petri dishes are prepared with coagulated Lœffler's blood serum. To these are added drops of the fluid to be tested, and they are put in a thermostat at a temperature of 55° C. for twenty-four hours. If there is a proteolytic ferment present a depression is found in the blood serum, and its depth indicates roughly the activity of the ferment. The presence of antiferment is determined by mixing the fluid to be tested with pus known to contain ferment, and then seeing whether digestion of the blood serum still takes place. The amount of antiferment can be determined by multiple dilutions of the fluid until digestion just takes place. The polynuclear neutrophiles are the leucocytes containing the ferment, and it is present in the cytoplasm, not in the nucleus. This ferment is not destroyed by the action of 10% formalin. It is present in those secretions into which leucocytes enter, as saliva and colostrum. Under normal conditions, antiferment is present in blood serum, not in urine, bile, milk or cerebrospinal fluid. It is present in albumin-containing transudates, and the study of the ferments and antiferments of exudates and transudates is of some clinical interest. A subnormal amount of antiferment in proportion to the albumin content indicates that polynuclears have shared in the process, bringing ferment, though they may have disintegrated so as not to be evident by the methods of cytodiagnosis. The determinations of ferment and antiferment are helpful in distinguishing exudates from transudates.

5. v. Hösslin reports some cases proven to be typhoid by blood culture, in which no agglutinins, either for stock culture or for the organism isolated from the case were formed. In others the amount of agglutinins was very small. Such cases could be accurately diagnosed only by means of blood cultures. In other cases, apparently typhoid, both blood cultures and agglutination tests were negative.

7. In diabetes insipidus Meyer has shown that the kidney is unable to excrete a urine of normal concentration; polyuria is primary because in order to excrete an increased amount of solids in a urine whose concentration can vary but little, greater quantities of water are necessary. The relation of urine concentration and amount to changes in diet can serve as tests of the existence of a true diabetes insipidus. Finkelnburg has applied this test to one case of idiopathic diabetes insipidus, and to two cases in which the symptom followed organic cerebral lesion, to see whether there is any difference between the polyuria in these two groups of cases. In one case of cerebral tumor after puncture of the lateral ventricle, polyuria followed. In this case the amount of urinary secretion was in high grade dependent upon the diet, while urinary concentration remained very constant. Salt and phosphates in day and night urine were almost the same in amount. A certain capability of concentration after additions of salt to the diet was present, but far less than normal. Theocin acted as in the normal individual. In a second case the polyuria followed no demonstrable cerebral lesion. Urinary excretion showed the same relations as in case I, except there was less capability of concentration after additions of salt to the diet. In a third case, with the possible presence of a cerebral lesion, the concentration and amount of the urine varied with the diet much as in the normal individual. The study of these cases appears to show a variation in the mechanism of the polyuria of diabetes insipidus between the idiopathic cases and those following organic cerebral lesion. In rabbits, Finkelnburg shows that experimental lesions of cerebellum or medulla often produce polyuria. This is a primary polyuria, but the concentration capability of the kidney does not seem to have greatly suffered. The experimental evidence supports the clinical evidence of the existence of a different mechanism for the production of polyuria in different types of cases of diabetes insipidus.

[H. A. C.]

Deutsche Zeitschrift für Chirurgie. Bd. 89. Heft 5 and 6.

1. *Göbell, R. *Prostatectomy.*
2. *Harmer, L., and Glas, E. *Malignant Tumors of the Interior of the Nose.*
3. Preiser, G. *A Study of Arthritis Deformans of the Hip.*
4. Brunner, F. *A Case of Septic Thrombosis of the Mesenteric Veins Cured by Operation.*
5. Strauss, M. *Myositis Ossificans Traumatica in the Subclavian Muscle Following Dislocation of the Clavicle above the Acromion.*

1. Göbell, writing from the clinic of Helferich, states that prostatectomy has been performed on twenty-three patients up to the first of April of the present year. These operations were done for the most part for cases of benign hypertrophy, as Helferich does not consider prostatectomy justifiable in cases of malignancy. It is further contraindicated in cases of very poor general condition, in marked nephritis, in renal insufficiency following pyelonephritis, in severe cystitis and in diverticulum of the bladder. Vasectomy is performed in all cases where an immediate prostatectomy is not considered feasible, as well as in cases of retention due to a malignant prostate. The advantages claimed for vasectomy are the following: (1) it relieves congestion; (2) it protects the patient quite often from a new attack of congestion and subsequent retention; (3) it protects him from an epididymitis. The suprapubic method of prostatectomy was the one employed in the majority of cases, although if the prostate was found to protrude markedly toward the rectum, the perineal route was chosen. A majority of the cases were operated upon under spinal anesthesia. Cases of supra-

pubic prostatectomy were healed in thirty-eight days, while those done by the perineal route averaged sixty-five days. All cases done by the former method were discharged with healed bladders; in two of the latter a secondary operation was necessary to close the urethral fistula. The good results in this series of cases Göbell attributes to the following factors: spinal anesthesia; the careful selection of the cases: painstaking preparation of the bladder by irrigations, till it could be considered relatively aseptic; thorough drainage of the bladder and copious irrigation after operation; extremely careful oversight during the after-treatment.

2. A clinical and histological study of malignant tumors of the interior of the nose is presented by Harmer and Glas from the clinic of Chiari. Such tumors are relatively infrequent. Their etiology is obscure, there being no authentic ground for believing that a benign polyp can assume a malignant character. The frequency with which such malignant tumors have been found in cases where there has previously been a polyp can only be explained by assuming a condition of the mucous membrane which predisposes it to abnormal tissue overgrowths. The three regions from which these tumors can take origin are the septum, the lateral nasal wall, and the antrum. Of 32 tumors observed by the writers, however, only 2 took origin from the septum. One of the first symptoms may be a facial neuralgia. Spontaneous hemorrhage occurs more frequently in sarcoma than in carcinoma. Headache is often quite considerable, and may occur owing to the presence of suppuration in an accessory sinus, as a pressure sign, as a reflex from compressed nerves, or from meningeal hyperemia. Anosmia is common. The submaxillary glands are involved with relative infrequency, because the nasal lymph channels are drained by the subarachnoid and subdural spaces. In examining for metastases one should always inspect a retro-pharyngeal lymph gland lying at the level of the second cervical vertebra. The writers consider the involvement of this gland to be a contra-indication to a radical operation. After a careful differential diagnosis, the differences between sarcoma and carcinoma are stated to be the following: Sarcoma occurs at no especial age; carcinoma, in the large majority of cases, after forty-five. Sarcoma is frequent on the septum; carcinoma on the lateral wall. Carcinoma grows by infiltration; sarcoma by pushing the bones apart. Sarcoma bleeds easily on palpation or even spontaneously; epistaxis in carcinoma is less frequent. The infiltration of neighboring lymph glands is more frequent in cancer. The writers further discuss the various methods of radical operation, as well as other forms of treatment. In any event, the mortality is high.

[W. C. Q.]

Correspondence.

LETTER FROM LONDON.

THE ANTI-SUICIDE BUREAU. ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH FOR LONDON. MEDICAL INSPECTION OF SCHOOL CHILDREN. MR. JAMES BERRY ON GOITER. DISCUSSION ON LOBAR PNEUMONIA. DISTINCTIONS CONFERRED. DEATHS.

[*From our Special Correspondent.*]

LONDON, Jan. 4, 1908.

Mr. Editor: A few days ago the *Times* published a letter from General Booth of the Salvation Army, dealing with the results of the first year's work of the "Anti-Suicide Bureau" in London. The bureau was established simultaneously with similar institutions in Berlin, New York, Chicago and Melbourne, as part of a scheme "for combating the suicide mania," with three leading principles: inviolable secrecy, consultation and advice free, and no financial help guaranteed; but as you are probably as well informed of the details as we are, I need say no more as to that aspect. The interest to us lies in the figures adduced. During the year, 1,125 men and 90 women have applied to the London bureau; the figures are significant, in the first place because the proportion of male suicides to female in this country is only three to one, and also because, even supposing all the potential suicides for the year were included in the list, the figures would be high as compared with the Registrar-General's statistics of actual suicides. The small proportion of women applying is explained by Mr. Booth as due to "the natural timidity of the sex" which prevents their applying in so public a manner for relief, and to their being "better able to bear up under their sorrow and trials." In considering the large number of male applicants, it is, of course, obvious that there is a vast difference between the man who contemplates the possibility of putting an end to his existence "if something doesn't turn up" and the man in the last throes of desperation. That this is the case is borne out by the remark that only "a few persons have set our counsels at naught and have perished." Nevertheless, the "General estimates that 75% were diverted from a definite purpose of self-destruction. The applicants belonged almost exclusively to the upper middle and middle classes, and included members of all the learned professions and most of the occupations attended by grave responsibilities. The causes to which those who applied attributed their state were as follows:

Financial embarrassment or hopeless poverty,	609	54%
Drink, drugs, or disease,	121	11%
"Melancholia," proceeding from loneliness and other causes,	105	9%
Crimes, such as embezzlement, forgery and the like,	54	5%
General causes, such as accidents, sickness and other misfortunes,	236	21%

No indication is given of the number of those dealt with who were mentally unsound, or of neuropathic inheritance (since probably the term "melancholia" is not used in its strict sense); but in the nature of things that was not to be expected. At the same time, the figures are eloquent testimony to the absurdity of the verdict almost always returned by coroner's juries here, of "suicide whilst of unsound mind." Perhaps I ought not to say "absurdity," since there is a reason to be found if not an excuse, and it is not based entirely on sentiment. The plea of poverty is unfortunately only too real; the latest returns of the legal poor of London show that on Dec. 14 there were 126,065 persons in receipt of relief from the rates. This amounts to 26.5 per thousand of the population. These figures, however, give an exaggerated idea of the true state of the case, for indiscriminate charity has to some extent undermined the sturdy independence of character which has been an Anglo-Saxon characteristic on both sides of the water, and the serious part of it from our point of view is that the great hospitals are charged with having "done more to demoralize the community and to increase the number chargeable to the poor-law than any other institution existing." Our hospitals are, of course, absolutely free; no patient is charged a penny, and this must continue if justice is to be done to the medical profession as a whole so long as the staffs remain entirely honorary, or until the hospitals become state institutions. No one deplores the abuse of hospital charity more sincerely than those who serve the hospitals.

In his annual report, the Medical Officer of Health for London deals, amongst other things, with the question of the advantages that might accrue from the notification of consumption. Sir Shirley Murphy thinks the advocates of notification and segregation have overestimated the value of these measures, basing his opinion partly upon Prof. Karl Pearson's statistical investigations which went to show that the risks run of "infection" by all the inhabitants under urban conditions are so great as to constitute inheritance, "constitution" or diathesis, by far the most important factor, and to relegate special liability from direct association with those already infected to a subordinate place. An interesting example is given: in a district where 232 deaths from consumption occurred in 1906, 70 of these or 30% were in houses in which one or more deaths from the same cause had occurred in the preceding ten years; the average annual deaths from consumption for the district being taken as 224, and the number of houses being 8,500, a simple calculation shows that the expectation of deaths taking place in houses in which similar deaths had occurred before, during the decennium, would be 54 or 23.3%, a number that approximates to the actual figure of 30%.

An enormous amount of attention is now being paid in London to the medical inspection of school children in the primary schools, and in response to a suggestion of the Prime Minister that the available data ought to include details as to the children of the well-to-do as well as of the poor, Eton has led the way among the great public schools by instituting a thorough system of anthropological investigation of all its boys. Not only are the physical characters of the boys recorded according to an elaborate scheme that permits of correlation of developmental progress with the several factors of their daily life, but an endeavor is made, also, to estimate mental characters. The characters particularly to be observed by the house masters and estimated with revision from time to time are, accuracy, quickness, perseverance, memory, courage, conscientiousness, industriousness, sensitiveness, initiative, masterfulness, esthetic feeling and energy. Boys of the same age are to be arranged in five classes representing their value for each character.

Mr. James Berry, the greatest authority on goiter in this country, recently read a paper before the Royal Society of Medicine, on 274 operations performed since 1901. Many of the patients were exhibited, and everybody was struck with the perfect results he obtained, from a cosmetic point of view; he employs a curved incision just above the top of the sternum and when he divides the infra-hyoid muscles does so a good deal higher up. The scars were in almost every instance scarcely visible. Of his patients, 268 in number, 238 were females and 30 males; 6 of them were under fifteen years of age; 19 between the ages of fifteen and nineteen; from twenty to twenty-nine there were 60; from thirty to thirty-nine, 91; from forty to forty-nine 59; from fifty to fifty-nine, 25; from sixty to sixty-nine, 7; and from seventy upwards, 1 only. The reasons for operation were: dyspnea, 177; deformity, 33; discomfort or deformity, mostly with minor degrees of dyspnea, 47; malignancy, papilliferous tumor, etc., 10; suspected malignancy, 3; dysphagia, 1; increasing size, 3. Mr. Perry remarked that no degree of dyspnea is too severe to permit of an operation for its relief; the dyspnea of innocent goiter is always caused by direct pressure on the trachea and not by irritation of the recurrent nerves; sudden dyspnea is generally due to hemorrhage into a cyst or into the softer kinds of solid adenoma. The nature of the growth: of encapsuled tumors, 106 were solid adenomata; 94 cystic adenomata; 2 pure cysts; one hydatid cyst; of the non-encapsuled, 26 were parenchymatous, 28 adenoparenchymatous, 10 papilliferous and 7 malignant.

There were 7 cases of true intrathoracic nonmalignant goiter. Of innocent tumors, 208 were enucleated (with 1 death) and 59 were extirpated (with 2 deaths). Of the 7 malignant cases, 3 died. Mr. Berry considers that a general anesthetic may be given except in cases where high degrees of tracheal stenosis or cyanosis are present. No cases of genuine exophthalmic goiter were treated by removal, but 10 of the so-called "formes frustes," or incomplete Graves's disease, were included in the figures above. Mr. Berry thinks the advisability of removal in true Graves's open to grave doubt.

There was a discussion a little while ago at the Medical Section of the Royal Society of Medicine on lobar pneumonia and its complications, for which a great deal of statistical information was collected from the records of the London hospitals. Seven thousand eight hundred and sixty-eight cases were reported, with a mortality of 21.8%; no cases in patients under ten years of age were included. As a whole it may be said that complications are not common; empyema occurred 290 times, and of these, 88 were fatal. Simple pleural effusion was recorded only 125 times, and 13 were fatal; pericarditis and albuminuria were the only other complications of any frequency. A good deal of desultory discussion as to the value of serum treatment seemed to point, on the whole, to an unfavorable opinion on the part of most of those present. With regard to vaccine treatment there was too little evidence to go upon, but Dr. Butler Harris described a few cases in which he had obtained very good results, chiefly in cases of unresolved pneumonia or where there were other pneumococcal lesions. Dr. Hector Mackenzie, who opened the debate, made an interesting suggestion with regard to the labial herpetic vesicles, that, being a local infection with the pneumococcus, they amount to an auto-vaccination, and he cited the common opinion that the occurrence of herpes is a favorable prognostic indication.

Since my last letter to you, distinctions have been conferred upon three members of the profession who are probably all known to you in America: Allchin, author, or rather editor, of a "Manual of Medicine," and an authority on diseases of the stomach and intestines, has been knighted; Allbutt, whose voluminous "System of Medicine" has had a tremendous vogue, has been made a K.C.M.G., and Malcolm Morris, one of the leading dermatologists, has been created a K.C.V.O. An honor which has given more general pleasure than any of these, perhaps, is the conferring of the Order of Merit (that most exclusive and most coveted distinction) upon Miss Florence Nightingale. Probably it came as a surprise to many to find that the heroine of the Crimean war was still alive. As a matter of fact, at the age of eighty-seven, she still, though living in retirement, is consulted by Ministers and Generals upon matters of moment connected with the nursing service of the Army and Navy.

I have also to note the deaths of Sir Alfred Baring Garrod, Sir Patrick Heron Watson and Professor Annandale.

C.

INSURANCE DOCTORS MEET.

Boston, Jan. 23, 1908

Mr. Editor: Last evening, at the Hotel Somerset, about fifty examining physicians, members of the Boston Society of Examining Physicians and Surgeons, gathered for the purpose of discussing vital matters pertaining to "Life Insurance Examinations."

After a dinner, which was served in the Green Room, Dr. Francis D. Donoghue, president of the society, introduced, as the guest of the evening, Dr. Augustus S. Knight, medical director of the Metropolitan Life Insurance Company, of New York. Dr. Knight spoke of the many problems which come before a medical director, which, as a rule, are not considered by the medical examiner in the field. He maintained that the examiner for life insurance should endeavor to frame a picture on the application blank that could be clearly understood by the medical director at the home office. After a very instructive discourse on these matters, he spent some little time in answering questions.

The next speaker was Dr. Francis H. Williams, visiting physician at the Boston City Hospital, and the American authority on x-ray. He demonstrated the value of x-ray chest examinations in life insurance, and exhibited some wonderful radiographs showing how accurate the x-ray is as a diagnostic measure in chest work.

Dr. Frank E. Allard, medical director of the Boston Mutual Life Insurance Company, spoke at some length of the value of such an organization at the Boston Society of Examining Physicians and Surgeons, and said that the medical student of to-day was taught little or nothing in regard to this work in the medical schools.

Dr. Frank G. Wheatley, chairman of the Committee on Legislation, of the Boston Society of Examining Physicians and Surgeons, also chairman of the Committee on Insurance at the State House, talked about "Insurance Legislation."

Letters of regret were read from Dr. Frank Wells, medical director of the John Hancock Mutual Life Insurance Company, Dr. Daniel L. Hunt, medical director of the Columbian National Life Insurance Company, and Dr. Mark W. Richardson, medical referee of the Equitable Life Insurance Company.

Others present who took part in the discussion were Dr. John S. Phelps, medical director of the Columbian National Life Insurance Company, Dr. Edward M. Greene, medical referee of the Mutual Life of New York, Dr. Chas. Theo. Cutting, associated medical director of the Boston Mutual Life Insurance Company, and Dr. A. C. Potter, of the Travelers Insurance Company.

Very truly yours,
Chas. Theo. Cutting, M. D., *Secretary.*

RECORD OF MORTALITY

For the Week ending Saturday, Jan. 18, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	11	1
Chicago	—	—	Waltham	7	0
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	8	1
Baltimore	275	58	Brookline	5	—
Cleveland	—	—	North Adams	9	2
Buffalo	—	—	Chicopee	8	3
Pittsburg	—	—	Northampton	8	2
Cincinnati	—	—	Medford	3	—
Milwaukee	—	—	Beverly	1	—
Washington	—	—	Leominster	1	—
Providence	77	17	Hyde Park	2	0
Boston	248	60	Melrose	—	—
Worcester	45	16	Newburyport	—	—
Fall River	64	28	Woburn	6	1
Cambridge	30	7	Westfield	7	—
Lowell	37	9	Marlboro	4	0
Lynn	27	7	Revere	4	4
New Bedford	26	8	Attleboro	8	2
Springfield	29	2	Peabody	—	—
Lawrence	26	8	Adams	5	2
Somerville	21	6	Clinton	—	—
Brockton	12	2	Gardner	1	—
Holyoke	18	8	Milford	5	—
Malden	10	2	Watertown	4	0
Chelsea	11	1	Plymouth	—	—
Newton	12	3	Weymouth	2	0
Salem	16	2	Framingham	7	1
Haverhill	15	—	Southbridge	3	—
Fitchburg	—	—	Wakefield	—	—
Everett	8	5	Webster	—	—
Taunton	21	3	Arlington	2	0

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JAN. 25, 1908.

H. F. Strine, passed assistant surgeon. Detached from the Naval Hospital, Annapolis, Md., and ordered to Washington, D. C., Jan. 20, for special temporary duty, and thence to the "Relief."

H. B. Fitts, surgeon. Ordered to the Naval Recruiting Station, Indianapolis, Ind.

R. E. Riggs, passed assistant surgeon. Detached from the Naval Academy and ordered to the Naval Station, Charleston, S. C., for temporary duty, and thence to Camp Columbia, Havana, Cuba.

J. H. Iden, passed assistant surgeon. Detached from duty in connection with the Cape Cruz-Casilda survey expedition, with headquarters at Manzanillo, Cuba, and ordered to continue other duties.

L. H. Wheeler, assistant surgeon. Detached from the Navy Recruiting Station, Indianapolis, Ind., and ordered to Washington, D. C., Jan. 27, for examination for promotion, and then to wait orders.

A. H. Allen, assistant surgeon. Detached from duty with the Marine Detachment at Lajas, Cuba, and ordered to duty with the Cape Cruz-Casilda survey expedition, with headquarters at Manzanillo, Cuba.

L. M. Schmidt, E. G. Mackenzie, assistant surgeons. Appointed assistant surgeons from Dec. 29, 1907.

H. Wells, medical director. Ordered to duty at the Naval Recruiting Station, New York, N. Y.

APPOINTMENT.

Dr. W. Sturgis Bigelow has been appointed by the Corporation of Harvard College to deliver the Ingersoll Lecture on Immortality for the year 1908.

SOCIETY NOTICES.

American Climatological Association. — The American Climatological Association will hold its annual meeting at Boston, June 9, 10, 11, 1908.

New England Pediatric Society. — The New England Pediatric Society was organized Jan. 4, 1908. The object of the society is to advance the knowledge of disease in early life. Any physician of good standing who is a resident of New England and has been registered in his own state is eligible for membership. Applications for membership should be sent to the secretary who will notify the applicants if they are elected. The entrance fee is $1.00 and the annual dues for 1908 are $2.00. The first meeting of the Society will be held on Saturday, Feb. 15, at the Boston Medical Library, 8, The Fenway, at 8.15 p.m.

Thomas Morgan Rotch, *President.* A. H. Wentworth, *Secretary and Treasurer.*

Boston City Hospital Alumni Association. — The Association will hold its Annual Meeting at Hotel Brunswick, corner of Boylston and Clarendon streets, on Tuesday evening, Feb. 11, 1908, at 6.30 o'clock. Dinner will be served at 7 o'clock, immediately after the business meeting. Dr. Samuel B. Woodward will preside. There will be an exhibit of interesting medical and surgical cases in the amphitheater of the hospital between eleven and one o'clock. The Trustees invite the members of the association to luncheon in the Hospital Library at 1 o'clock.

William H. Robey, Jr.,
Secretary.

The Fourth International Congress on Electrology and Radiology. — We have the honor to inform you that the Fourth International Congress on Electrology and Radiology will be held at Amsterdam, Sept. 1-5, 1908. The results of the three former congresses, at Paris in 1900, at Berlin in 1903 and at Milan in 1905, have proved their utility and importance. The Fourth Congress will be organized on the same lines. The program will comprise questions on "Electrophysiology and Electropathology," "Electrodiagnostics and Electrotherapeutics," "Diagnostics and Therapeutics of Röntgen Rays," "The Study of Diverse Radiations," "Medical Electrotechnics." In conjunction with the Congress, an exhibition will be arranged of new or modified apparatus used in clinical and laboratorial work, and also a collection of important radiographs. The Congress and the exhibition will be held in the University.

Prof. Dr. J. K. A. Wertheim Salomonson, *President*,
Dr. J. G. Gohl, *General Secretary*,
Dr. F. S. Meijers, *Treasurer*.
The Executive Committee.

RECENT DEATHS.

Dr. Frederick Augustus Burrall, an old and highly esteemed practitioner of New York, died at White Plains, N. Y., on Jan. 22, in the seventy-fifth year of his age. He was born in New York City, and was a graduate of Williams College. In 1857 he was graduated from the College of Physicians and Surgeons, and later was appointed to a position on the teaching faculty of that school. Dr. Burrall had not been in good health for some time, and a few months ago became mentally incapacitated.

William Stratford, M.D., Ph.D., head of the Department of Natural History in the College of the City of New York, died on Jan. 24. He was born in Newtown, Long Island, Nov. 4, 1844, and was graduated from the New York City College in 1865; after which he pursued a course of study in that institution to take his Master of Arts degree. He then studied medicine, was graduated from the New York University Medical School, and practised for a number of years. From 1886 until the time of his death he was connected with the City College as instructor or professor, and during this period he made several trips to the Rocky Mountains in search of the fossils of mammals for the college museum.

BOOKS AND PAMPHLETS RECEIVED.

Gonorrhea, Its Diagnosis and Treatment. By Frederick Baumann, Ph.D., M.D. Illustrated. New York and London: D. Appleton & Co. 1908.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Vol. X. Nervous and Mental Diseases. Series 1907. Chicago: The Year Book Publishers.

Transactions of the Association of American Physicians. Twenty-second Session, held at Washington, D. C., May 7, 8 and 9, 1907. Philadelphia. 1907.

Nothnagel's Practice. Diseases of the Heart. By Prof. Th. v. Jürgensen, Prof. L. v. Schrötter and Prof. L. Krehl. Edited with additions by George Dock, M.D. Authorized translation from the German, under the editorial supervision of Alfred Stengel, M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

Primitive Secret Societies. A Study in Early Politics and Religion. By Hutton Webster, Ph.D. New York: The Macmillan Co. 1908.

Applied Physiology. A Manual Showing Functions of the Various Organs in Disease. By Frederick A. Rhodes, M.D. Pittsburg, Pa.: Medical Press. 1907.

The Prolongation of Life. Optimistic Studies. By Elie Metchnikoff. The English translation edited by P. Chalmers Mitchell, M.A., D.Sc. Oxon., Hon. LL.D., F.R.S. Illustrated. New York and London: G. P. Putnam's Sons. 1908.

The Harvard University Catalogue for 1907-08.

Original Articles.

THE TREATMENT OF SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS * AND BACILLUS PRODIGIOSUS.†

BY WILLIAM B. COLEY, M.D., NEW YORK.

1. At different times during the past sixteen years I have reported to the profession the progress made in the use of the mixed toxins of erysipelas and bacillus prodigiosus in the treatment of inoperable sarcoma, the several improvements made from time to time in the preparation of the toxins and the results obtained by myself and other surgeons from the use of the toxins.

2. A list of the papers I have written on the subject is appended for facility of reference.

3. The treatment by the mixed toxins is based upon the following accepted clinical facts:

(1) That inoperable sarcomas, and even carcinomas, have been known to disappear and the patients to remain well and permanently cured as the result of attacks of accidental erysipelas.[1]

(2) That inoperable sarcomas have disappeared as a result of attacks of erysipelas produced by inoculation, *vide* cases of twelve patients treated by injections of the living cultures of the streptococcus of erysipelas.[2]

A further scientific support to the treatment has been furnished during the last year by the experimental work of Dr. S. P. Beebe and Dr. Martha Tracy at the Huntington Cancer Research Laboratory, which proved that multiple sarcoma in dogs frequently entirely disappears under treatment with the mixed toxins.[3]

4. It will be seen from the papers cited above that the use of the toxins has been followed by complete disappearance in 47 [4] personal cases and nearly 100 cases reported by other surgeons and physicians. If, however, we count as cures only those cases in which there is known to have been no recurrence for at least three years, there have been 28 cures in cases under my own treatment, and upwards of 30 cures in cases treated by other medical men.

Although sufficient time has not yet passed to justify us in counting the total figure of about 150 successful cases as cures, the effect of the toxins in destroying the disease and in preventing metastases warrants the conclusion that in the great majority of those cases the disappearance of the tumor will prove to have been final and the cases will eventually have to be classified as cures.

5. My twenty-eight cases of cures, already of over three years' standing, include sarcomas of every kind, except melanotic, and in all parts of the body ordinarily subject to the disease. They include cases primary in the skin, muscle and fascia; cases originating in the bone, periosteal and myeloid; cases primary in the neck, tonsil, pelvis, long bones (femur and tibia), spine and breast; and they include small round-celled, large round-celled, giant-celled and mixed-celled sarcoma.[5]

Full details of the most important of the cases summarized in the tabular lists of the different papers cited above are given in the letter press of those papers.

In the great majority of the cases the diagnosis of sarcoma was confirmed by microscopical examinations made by the leading pathologists of the United States, and in the few remaining cases the concurrent opinions of independent surgeons left no reasonable doubt as to the correctness of the diagnosis. In several cases there was also a history of recurrence after primary operation.

6. Although the cases summarized in the tabular lists, together with the cases subsequently added to those lists, show that the mixed toxins have already been used with success by a very large number of surgeons and physicians besides myself, it is constantly being brought to my notice that the possible benefit to be gained by the use of the toxins, in inoperable and apparently hopeless cases and as a prophylactic against recurrence after primary operation, is still unknown to the majority of medical men. I also frequently receive letters from surgeons and physicians in this country, as well as in other parts of the world, who are aware of the use of the toxins, but are unacquainted with the recent developments in their preparation and application, or are in doubt as to the method of treatment in particular cases.

I am moved, therefore, to write this further paper in which I propose to deal with the practical aspects of the subject.

LIMITATION OF THE CURATIVE EFFECT OF THE TOXINS TO SARCOMA.

7. I wish at the outset to state what is known to every one who has read my previous papers, that the mixed toxins, prepared in the way described in these papers, have been shown to have a curative effect sufficient for practical purposes only in cases of sarcoma and not in cases of carcinoma. It is important to emphasize this, because misunderstanding and confusion have occurred from the different uses of the word "cancer," not only by the public, but also by professional men. For instance, when a recognized authority states that up to the present time operation is unfortunately the only resource which gives any hope in cases of cancer, he must, in view of the numerous cures recorded in the papers cited above, be taken to refer to carcinoma and not to include sarcoma. Such a statement is liable, however, to be misunderstood by other persons, both within and without the profession, who use the word "cancer" in a wider sense as covering both carcinoma and sarcoma, or even all classes of malignant tumors. In consequence of this misunderstanding, a patient suffering from inoperable sarcoma may be de-

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* I retain the word "erysipelas" because of the origin of the method of treatment, although for the last two years the streptococcus used in some of the most effective of the mixed toxins was isolated from a fatal case of septicemia and not from an actual case of erysipelas. (See footnote 6 on page 178 of this paper.)

† Read before the Suffolk District Medical Society, Nov. 13, 1907.

[1] See papers cited in paragraph 2 above; also "Tumours Innocent and Malignant," by J. Bland-Sutton, 4th ed., p. 303.

[2] Coley, 1891–92: Am. Jour. Med. Sc., 1893.

[3] See "The Treatment of Inoperable Tumors with Bacterial Toxins." Jour. Am. Med. Asso., Nov. 2, 1907.

[4] Including five cases since my last publication.

prived of the possible benefit from treatment by the mixed toxins.

While the mixed toxins have a marked inhibitory effect upon the growth of carcinoma, experience thus far has shown this effect to be almost always temporary and very rarely curative. There is some evidence, although not enough for a definite conclusion, that this inhibitory action, even in carcinoma, is sufficient, in cases in which the toxins are used as a prophylactic after primary operation, to prevent or delay recurrences. This matter will be considered later.

CASES IN WHICH THE TREATMENT OF THE MIXED TOXINS IS APPLICABLE.

8. I deal with these cases under three sub-heads:

A. Inoperable Cases.

(1) Cases which are inoperable from the beginning by reason of the situation of the tumor.

(2) Cases which, by the time the diagnosis of sarcoma is made, have become too far advanced to admit of operation.

(3) Cases which have recurred after one or more operations and are no longer operable.

(4) Cases which admit of operation, but in which the operation is refused by or on behalf of the patient.

Fully 75% of all cases of sarcoma recur after primary operation and eventually become inoperable. If to this number be added the other three classes of cases mentioned above, it follows that the four classes of cases cover considerably more than 75% of the total number of sarcomas. In all of those cases, whatever be the character of the sarcoma and whatever its situation, the mixed toxins should, in my opinion, be used as offering the best and generally the only prospect of a cure.

In the extremely rare cases in which the sarcoma might spontaneously disappear, the treatment by the mixed toxins would not interfere with such spontaneous disappearance, and if the treatment has a beneficial effect, it will only have expedited the disappearance. Also, as only a very small number of *bona fide* cases of spontaneous disappearance have been recorded in medical literature, such cases may be left out of further consideration.

Although I have not myself had or known of a cure of *melanotic sarcoma* by the mixed toxins, I would not exclude even such a case from treatment by them, as there are instances on record of sarcomas of this type having disappeared as a result of accidental erysipelas.

B. Cases of Sarcoma Originating in or Involving the Long Bones in which Operation Means the Sacrifice of a Limb.

In a considerable number of cases this sacrifice is refused by the patient. Such cases fall under the heading of inoperable cases already dealt with above. The remaining cases may be divided into two classes:

(1) Those in which the disease is so situated or so far advanced that even a delay of three or four weeks will probably make the operation impossible.

(2) Those in which the sacrifice of the limb can be delayed without serious risk for this limited period.

In the former class of cases the operation should certainly not be delayed. In the latter class of cases, comprising the great majority of cases involving the long bones, the patient, in my opinion, should be given the benefit of a trial with the mixed toxins before amputation. A period of three weeks will almost always be sufficient to determine the probable success or failure of the treatment. If the tumor continues to increase in size during this period, I should not prolong it to the full three weeks, but should amputate — even only after one week — and then, as soon as practicable after operation, possibly after two or three weeks, continue the use of the toxins as a prophylactic against recurrence. The following extract from my paper on "Sarcoma of the Long Bones" summarizes the facts and experiences which have led me to extend the use of the mixed toxins to this class of operable cases:

"Up to the present time I have been able to collect 12 cases of sarcoma of the long bones (3 personal cases and 9 reported by other observers) in which the use of the toxins has rendered amputation unnecessary and the limb has been saved."[5]

C. Cases in which the Sarcoma has been Removed by Operation.

In all these cases the toxins should, in my opinion, be used as soon as practicable after operation as a prophylactic against recurrence. The method of their use in these cases is given further on, under the heading of "Treatment." The practical ground in favor of adopting this plan is that in the cases in which I have carried out this prophylactic treatment the number of recurrences has been extremely small, far less than I should have expected from the records of reported cases of similar operations or from my own previous experience.

In a series of 22 cases, in which the toxins were used after primary operation, 4 are now well after periods of three to eight years and 9 after periods of one to three years; in 5 cases recurrence took place in spite of the toxin treatment; the remaining cases are still under treatment or very recent cases. Most of these cases were treated by myself personally and the rest were treated under my direction. A number of other surgeons are also using the toxins as a prophylactic after operation. Theoretically, too, it seems rational to assume that as the toxins exert a deterrent action, sufficient in many cases to cause the permanent disappearance of large inoperable sarcomas, they will be much more likely, when given after primary operation, to destroy the few cells which have been left behind and which found the basis for future recurrence which takes place in at least three-fourths of all cases operated upon. And, inasmuch as the action of the toxins is systemic as well as local, they offer a reasonable probability not only of destroying infected cells left behind in the field of operation and possibly a basis for local recurrence, but likewise of destroying infected cells which have been carried to remote parts of the body and might, if not destroyed, give rise to general metastases.

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[5] The first two figures in this extract should now be raised to 13 and 4 respectively by the inclusion of a further successful case.

Inasmuch as in rapidly growing round-celled sarcomas the tumor occasionally breaks down faster than it can be absorbed, one might think the treatment would be a frequent cause of metastases. My own experience with the toxins shows that such a result practically never occurs. This is easily explained by the theory that the systemic action of the toxins through the blood serum not only destroys and inhibits the growth of the local tumor, but also renders the soil elsewhere unfavorable for the growth and development of any cells that are carried to remote parts of the body.

PROSPECTS OF SUCCESS FROM THE USE OF THE MIXED TOXINS.

9. The number of successes from the use of the mixed toxins, the fact that the large majority of cases of sarcoma are inoperable and otherwise hopeless, the frequency of recurrence after operation, and the absence of any appreciable risk from the use of the toxins, leave, in my opinion, no place for doubt as to the propriety or desirability of the treatment recommended above in the classes of cases specified. I desire, however, to guard myself from conveying the impression that there is any certainty of success in any particular case.

Altogether I have personally treated about 430 cases of sarcoma with the mixed toxins. In 47 of these cases, as has already been stated, the tumor has completely disappeared; and in 28 cases a period of from three to fifteen years has passed since the disappearance. Twenty-six patients have remained well from five to fifteen years. Moreover, these figures cover a period of fifteen years, and during this period important improvements have been made, from experience, in both the preparation of the toxins and the method of administration. The proportion of successes is therefore higher now than in the whole past period. Furthermore, the cases treated include cases brought to me in the last stages of the disease, cases of melanotic sarcoma in which I have had no successes, and many desperate cases which had become inoperable after one or more extensive operations. In these desperate cases the percentage of successes from the use of the toxins is necessarily extremely low, while in other cases, not involving the long bones, the percentage of successes is considerably higher than is indicated by the figures given above. When the growth is slow, the patient is in good general health, and the case is treated at a comparatively early stage of the disease before the involvement of any important organs or the development of metastases, the chances of success are certainly much higher than the general percentage of 11% derived from the total figures of my own cases. The cases, however, vary so much and in so many features, that no pretense can be made to accuracy in estimating the chance of success in any particular case, or even in any particular class of cases. It can, however, be safely said that in a very large number of cases there is a very fair prospect of permanent cure, while no case is so desperate that the possible benefit from the use of the toxins should be withheld. The latter part of this statement will be best appreciated by an examination of the notes of three exceptional cases which are given at the end of this paper.

RISK FROM THE USE OF MIXED TOXINS.

10. I have already stated that there is no appreciable risk from the treatment of sarcoma by the mixed toxins. As, however, I am aware that some members of the profession labor under a misapprehension on this point, it is best that I should here give the facts of my own experience.

I have used the mixed toxins in about 430 cases, and in only 3 of those cases could death possibly be attributed to the toxins. All these 3 cases were in the last stages of the disease, with extensive metastases and very feeble heart action. Two of the cases presented extensive involvement of the mediastinal glands, and in both the treatment had only just been begun, for two or three days, and sufficient doses had not been given to produce any marked reaction. The patients died suddenly, apparently as a result of an embolus.

With this personal experience, I can only explain some of the statements which have been made as to the risks from the use of the toxins by some error or accident in their administration or preparation.

In my earlier work, 1891–92, in which I used the actual, living germs of the streptococcus of erysipelas in 12 cases of inoperable sarcoma and carcinoma, there were 2 deaths undoubtedly due to the inoculation. But from the mixed toxins prepared and used in the way described below, I believe the risk to be purely nominal.

This conclusion is certainly not in conflict with, but rather supported by, the few reports which have come to my notice, of casualties from the use of the toxins by other surgeons. In one case, the patient was over seventy years of age, with an enormous and very vascular sarcoma of the femur, and the second injection, which was made into the tumor, caused a rigor followed by prostration from which the patient never rallied. In 2 cases in which the patients died from acute pyemia there were ulcerating areas of tumor in which pyogenic micro-organisms, probably staphylococci, must have been present, as the toxins were found, on subsequent examination, to be absolutely sterile. It is well known that micro-organisms that are comparatively harmless may, under certain conditions, become intensely dangerous by reason of the presence of other organisms or the injection of other toxins. In another case the patient, after five injections, developed a very general infection from the gas bacillus and died in about thirty-six hours. In this case, also, the toxins were found to be absolutely sterile, and the organism which was responsible for the casualty must have been present in the skin of the patient or elsewhere in the body, and its virulence must have been greatly stimulated by the toxins. In one case death was, I believe, due solely to the too rapid increase of the dosage and the administration of daily injections causing high temperatures, without the patient's temperature having been allowed to fall to normal or nearly normal in the intervals. The remaining cases were of two elderly women, one of whom suffered from a very large inoperable sarcoma of the ilium and the other from a mediastinal tumor projecting well above the clavicle. In the former case death occurred two hours after a severe chill and was probably due to an embolism. In the latter case the injection of ¼ minim directly into the tumor was followed by a sharp hemorrhage, lasting about one minute, at the side of the needle puncture. A chill lasting twenty minutes occurred within about three hours and was followed by a temperature of 103°; about eight hours after the injection the patient became comatose and died 7½ hours later. These cases emphasize the importance of the precautions recommended under the heading "Treatment."

DESCRIPTION, PREPARATION AND CARE OF THE TOXINS.

11. In preparing the mixed toxins according to the latest method, the two organisms are grown separately, and the bacillus prodigiosus, in the form of a dry powder, is added to the sterilized streptococcus broth.

The process of preparation is as follows:

To prepare the streptococcus broth. — Soak 1 lb. minced beef over night in 1,000 (one thousand) cc. of cold water. Then boil for one hour and filter through coarse cotton cloth of any sort. Add of peptone (Witte's) 10 gm.; of NaCl (sodium chloride) 5 gm. Test the reaction to litmus and render slightly alkaline by addition of a sufficient quantity of 10% NaOH (sodium hydroxide) solution. Boil for one hour. Filter through filter paper. Distribute into small flasks, 25 to 50 cc. in each flask. Sterilize by boiling for one-half hour on 3 (three) successive days. Sow each flask with a few cc. of a broth culture of streptococcus.[6] Allow to grow in the incubator for three (3) weeks.

To prepare the prodigious suspension. — Spread an ordinary 2% agar medium to a depth of about 1 cm. at the bottom of a large "Roux" or "antitoxin" culture flask. Sterilize as usual by boiling for one-half hour on three successive days. Over the surface of the agar with the usual precautions against contamination pour a two-days old broth culture of bacillus prodigiosus.[7] Manipulate the flask so that the entire agar surface has been touched by the broth, and drain off the surplus fluid. Allow the prodigiosus to grow at room temperature in daylight, but protected from the direct sunlight, for ten days. Scrape off the thick red growth with glass rods and rub up with a pestle and mortar to a smooth rather thick suspension, using physiological salt solution as diluent. Bottle and sterilize in the bottle, by heat, at 75° C., for one hour. This suspension can be diluted further at any time. The amount of diluent needed is ascertained by determining the weight of nitrogen per cubic centimeter of suspension (Kjeldahl's method). This multiplied by 6.25 gives the weight of proteid present, and this should be 12.5 mgm. per cubic centimeter of the suspension to be used for the mixture.

To prepare the mixture. — Take of streptococcus broth culture, three weeks' growth, 100 cc.; of prodigiosus suspension (containing 12.5 mg. of proteid per cubic centimeter or 375 mg.[8] of proteid in all) 30 cc.; of glycerine, 20 cc.

Each cubic centimeter of the mixture then contains 2.5 mg. of prodigiosus proteid.

After mixing, bottle in glass stoppered bottles. Add a small piece of thymol (size of pea to 1 oz. bottle) to each bottle and sterilize two hours at 75° C.

Keep on ice until used.

The above description of the latest process of preparation has been given to me by Dr. B. H. Buxton, professor of experimental pathology at Cornell University, and Dr. Martha Tracy, pathologist of the Huntington Cancer Research Fund. I have used the preparation in this form almost exclusively during the past year, and I think it is considerably more powerful and also more efficient than any of the previous preparations.

It is important that any one using the toxins should know how they have been prepared, for the results vary greatly with their composition and manner of preparation. Many of the preparations put upon the market have been so weak as to produce hardly any reaction and have been found to be of little value. Parke, Davis & Co., of Detroit, Mich., have, I know, made great efforts to keep their product up to the standard of the Research Laboratory. Of other preparations I have no personal knowledge.

It is important, too, that the mixed toxins should be carefully kept in a glass-stoppered bottle in a cool dark place. It is best to keep the bottle on ice from the time of preparation to the time of use.

The toxins retain some, though not all, of their virulence for a long period of time, and in some cases excellent results have been obtained from preparations which were at least eight months old. My own experience is, however, that the mixed toxins are liable to lose some of their efficiency with time, and I do not myself use preparations which are more than a few weeks old.

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[6] The streptococcus used during the past two years, in the Laboratory of the Huntington Cancer Research Fund, was isolated from a fatal case of septicemia. It is doubtful whether an organism from an actual case of erysipelas would give any better results. The stock culture of streptococcus has been maintained more satisfactorily in broth than on agar. No attempt has been made in recent work to keep up the virulence by passing through animals.

[7] The stock culture of prodigiosus is kept upon agar slants, a tube of broth being inoculated from the agar two days before it is needed for the large flasks.

[8] It was found desirable to reduce the amount of prodigiosus proteid to one half of the amount shown in the formula given in my paper published in the *Medical Record* of July 27, 1907.

THE TREATMENT WITH THE MIXED TOXINS.

12. Although with proper precautions the use of the mixed toxins is not attended with any appreciable risk, it is necessary in using such powerful poisons that all the precautions dictated by experience be carefully observed. The dosage, duration of treatment, intervals of rest, and other details necessarily vary considerably with the condition of the tumor, the health of the patient, individual susceptibility to the toxins and other circumstances. I repeat here with a few additions the rules and conditions which I have already given elsewhere and which a number of medical men have applied with successful results:

1. *Inoperable Sarcoma.*

(1) Begin in every case with a very small dose, not over $\frac{1}{4}$ minim for an adult diluted with a little boiled water to insure accuracy of dosage. For a child the dose should be proportionately smaller according to the weight of the patient. As a matter of precaution, the first few doses should in all cases be systemic, remote from the tumor.

(2) The dose should be gradually increased by $\frac{1}{4}$ minim when given into the tumor, by $\frac{1}{3}$ to $\frac{1}{2}$ minim when injected outside the limits of the tumor, until the desired reaction is obtained. The best results are obtained by doses sufficiently large to produce moderately severe reactions, a temperature of 102° to 104° F. with or without a chill. The more highly vascular the tumor, the more severe is the reaction and therefore the smaller must be the dose. If a chill occurs, it will usually take place from one-half to three hours after the injection. The smallest dose from which I have known a chill to occur in an adult, is $\frac{1}{4}$ minim; the highest dose from the latest preparation of the toxins, to which I have myself advanced by gradual increase, has been 12 minims, although I know of one physician who has used the same preparation, in the case of a sarcoma of the sternum, in doses as high as 30 minims. There are few cases, I believe, in which such large doses would be safe. After a chill sets in, hot bottles and blankets should be applied. On rare occasions it may be wise to give some stimulant in the form of brandy or strychnia, particularly if there is much cyanosis.

(3) A chart of the temperature and pulse should be carefully kept and observed, as it is the best guide as to the proper increase of the dose. The temperature should be taken morning and evening and two hours after the injection.

(4) After a few days it is safe in most cases to inject into the tumor itself, but if the tumor is highly vascular, or the patient is feeble from age, weakness of heart action, or other cause, it is best to continue making the injections outside of the limits of the tumor, until the susceptibility of the patient to the toxins has been ascertained and it is clearly safe to inject into the tumor. Also in cases in which the tumor is in a region where injections would be difficult or dangerous, *e. g.*, within the abdomen or pelvis, the injections should be all systemic, the most favorable sites being the buttocks and abdominal wall.

When the injections are given outside the limits of the tumor, it is desirable to give them as close to it as is consistent with safety and convenience.

When the injections are made into the tumor, only from $\frac{1}{4}$ to $\frac{1}{2}$ of the dose for injections outside the tumor is required to produce the same reaction. Sometimes the best results are obtained by giving the injections alternately into the tumor itself and remote from it, and in many cases successful results have followed from purely systemic injections remote from the tumor.

(5) If there is much depression following the reaction and the patient's general condition is not very good, it is best to give the injections every other day or three times a week. If the patient can bear the injections daily, the chances of success are greater. In no case should an injection be made until the temperature from a reaction has fallen to normal or practically to normal.

After an interval of more than a week's rest, the toxins, when resumed, should be given in smaller doses than the last injection. The dose should also be reduced during menstruation.

(6) A good tonic — preferably strychnine, quinine and iron — should be given during the treatment and careful attention should be paid to keeping the bowels free.

(7) In successful cases a marked improvement is usually noticed within one to two weeks, often within two or three days. The first signs of improvement are decrease in size, marked increase in mobility, diminution of vascularity. When the tumor is apparently hard, of bony or cartilaginous consistence, it tends to become softer under the treatment. If no improvement has occurred at the end of four weeks' vigorous treatment, the chances are that none will occur, and little is to be hoped for beyond a retardation of growth. It may be wise, in such event, to abandon altogether the treatment or lessen the dose to the point of not producing a chill. If, however, there is decided improvement, the injections should be continued until the tumor has wholly or nearly disappeared.

(8) Success depends very largely upon the careful and judicious determination of the suitable dosage for the individual case. There is often a very narrow margin between success and failure; and while, on the one hand it is important to guard against too large a dose, which may produce too rapid breaking down of the tumor, on the other hand it is necessary that the doses be sufficiently large and frequent to stop the growth of the tumor and eventually destroy it.

(9) The average duration of treatment in successful cases has been between two and four months. In some cases, however, the treatment has been continued in small doses for more than a year, and the patients have remained well up to date, many years after the cessation of the treatment. In one case, an eight times recurrent spindle-celled sarcoma of the chest-wall (soft parts), the toxins were administered, with occasional intervals of rest, for nearly four years. The

patient, a well-known physician, has had no treatment for over seven years. The long-continued use of the toxins is not productive of harm.

(10) In making the injections, any good hypodermic syringe will answer, but it is best to use one in which one minim can be accurately measured on the piston rod rather than upon the barrel of the syringe. The needle which should be of moderate fineness and at least one inch in length, should be sterilized by an alcohol flame before and after use, and boiling water should be passed through the syringe before and after use. In doses less than two minims the toxins should be diluted with boiled water; in doses of and above two minims, there is no need of dilution. The skin over the area in which the injection is to be made should be carefully cleansed with alcohol.

(11) In order to reduce the local pain caused by the injections, an equal amount of a 2% sterilized solution of hydrochlorate of cocaine may be added to the toxins. When the surface of the skin is much affected by the injections, applications of carbolic compresses, 1: 60, may be used as a relief; in some cases antiphlogistine gives even better results.

(12) While the patient is under the treatment the pain due to the tumor may be relieved by asperin, codeine, or morphine, administered in the usual ways.

(13) The injections should be made deeply, whether made into the tumor or outside the limits of the same, as the local irritation is then much less than if the injections are made merely subcutaneously.

2. Operable Cases, e.g., Cases Involving the Long Bones, when the Toxins are used in the Hope of Avoiding Operation.

The foregoing rules and suggestions apply except in so far as they are obviously inapplicable. If, however, the tumor increases during the treatment, I would not, as has already been stated, continue the treatment for the full four weeks, but would amputate or otherwise operate at once, and then, as soon as possible, use the toxins as a prophylactic against recurrence.

3. When the Toxins are Used after an Operation as a Prophylactic Against Recurrence.

It is unnecessary in these cases to use the large doses which are required in cases of inoperable sarcoma in order to give the patient the possibility of a cure. The patient need not be confined to the bed and may pursue the regular routine of life. Only sufficiently large doses should be given to cause a slight rise of temperature, from 99° to 100° F., and the toxins need not be given more than three or four times a week. There has not yet been sufficient experience to decide how long such treatment should be carried out. My own practice in these cases is to give two or three periods of treatment, each of from three to four weeks' duration.

Subject to these variations, the rules and suggestions under sub-head *1* apply, except when they are obviously inapplicable.

USE OF THE TOXINS AS A PROPHYLACTIC AFTER OPERATION FOR CARCINOMA.

13. The inhibitory action of the streptococcus of erysipelas upon carcinomatous growths, especially epithelioma, sometimes sufficient to prove curative, has been repeatedly demonstrated by clinical observations.

This inhibitory action has been confirmed by my own observations in the treatment of inoperable carcinoma by the mixed toxins. But the treatment has proved much less effective than in sarcoma, and so rarely curative that I have not advocated its general use. Yet, it has been sufficient, I think, to justify the routine use of the toxins after all primary operations, in the hope of lessening the number of recurrences or delaying them.

As examples of what the toxins have done in inoperable carcinoma and epithelioma, I cite the following cases:

I. *Inoperable epithelioma of the chin, lower jaw, and floor of mouth.* — The patient was referred to me by Dr. Geo. R. Fowler, of Brooklyn, who regarded the case as entirely inoperable. Microscopic examination, made by Dr. Wm. Belcher, pathologist to the Seney Hospital, Brooklyn, showed epithelioma. The tumor entirely disappeared under four months' treatment with the toxins, and the patient was perfectly well when last heard from, more than six years after the treatment.

II. *Inoperable carcinoma of the breast, three times recurrent.* Mrs. B., aged forty years. The third operation was performed by myself at the New York Cancer Hospital, in June, 1895. The disease was found so extensive, that it was impossible to make a thorough removal. The glands were distinctly carcinomatous as far as the clavicle. The patient was put upon the toxins, large and frequent doses being given, with the result that cicatrization of the carcinomatous ulcer slowly began to take place, and complete healing had occurred by January, 1896. The tumor in the axilla was no longer palpable. The patient gained ten pounds in weight and continued well until the summer of 1897 when a slight local recurrence was noticed. A little later, there was an enlargement of the supraclavicular glands. The toxins were then left off for five weeks, during which time the tumors grew with great rapidity, and abdominal metastases developed. The patient finally succumbed to the disease in December, 1897. Microscopical examination of the tumor showed it to be a typical carcinoma.

III. *Inoperable uterine tumor, treated by Dr. R. M. Stone, of Omaha, Neb.*[9] — The patient, Mrs. B., aged forty-six years, had lost fifteen pounds in weight; the right broad ligament was markedly infiltrated. The disease had progressed so far as to be beyond hysterectomy; three surgeons who had seen the patient in consultation regarded the case as absolutely hopeless. The toxins were begun on Dec. 6, 1895, and continued for two months, with the result that the tumor as well as the infiltration of the broad ligament disappeared, and the patient regained her former health. I reported the case in the *Journal of the American Medical Association*, in August, 1898. At that time, two and one half years after treatment, the patient was perfectly well. However, three years after recovery, she developed a local recurrence which finally proved fatal. An interesting feature about this case is that though reported as a spindle-celled sarcoma, specimens of the original tumor which were sent to New York and examined by a number of the leading pathologists there, including Dr. E. K. Dunham and Dr. B. H. Buxton, proved to be unquestionable epithelioma, and not sarcoma.

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[9] N. Y. Med. Rec., Nov., 1896.

NOTES OF THREE CASES TREATED WITH SUCCESS BY THE MIXED TOXINS.[10]

I. *Round-celled sarcoma of the dorsal spine.*— Mr. G., aged twenty years. Diagnosis confirmed by Dr. Harlow Brooks, pathologist of the Bellevue Hospital. The tumor was of enormous size, involving the lower dorsal and upper lumbar vertebræ. The patient had lost about fifty pounds in weight, and there was so much pressure upon the spinal cord that there was total paralysis of the lower extremities, bladder and rectum, and he was so weak that he was unable to turn over in bed. Seen in consultation with Dr. V. P. Gibney, of the Montefiore Home, in February, 1902. The mixed toxins of erysipelas and bacillus prodigiosus were begun and continued by the house staff under my direction; daily injections were given up to the following May, and severe reactions, temperature of 103° to 104°, followed most of the injections. Patient began to show improvement, local as well as general, almost at once. By September he was able to get out on crutches. In November he was shown before the New York Surgical Society by Dr. John Rogers. At that time he had regained nearly his normal weight and got about very well with the aid of a cane. In February, 1903, one year after treatment, he was able to walk perfectly well without support of any kind, and his general health had become perfect. He was able to resume his former occupation.

There can be no doubt as to the diagnosis, since not only was the tumor examined by well-known pathologists, but specimens of the tumor have been preserved. I have shown this patient before various medical societies including the New York Surgical Society and the New York Academy of Medicine. He remains in perfect health six years after treatment.

II. *Round-celled sarcoma of the femur, involving lower two thirds of the shaft, with extensive metastases in the pectoral and iliolumbar region.*—A. G., nineteen years of age; first noticed swelling in the lower portion of the left femur, in November, 1901. This gradually increased in size, being accompanied by loss of weight and deterioration of general health. The patient was referred to me by Dr. W. R. Townsend, and was admitted to the General Memorial Hospital on Feb. 5, 1902. At this time there was a large tumor, extending from the condyles of the left femur to the junction of middle and upper thirds. There was a fusiform enlargement of the lower two thirds of the femur. An exploratory incision under ether was made and a specimen of the tumor removed. Microscopical examination made by Dr. E. K. Dunham, of Carnegie Laboratory, and Dr. B. H. Buxton, of Cornell Medical School, showed the growth to be a round-celled sarcoma, not giant-celled. Amputation at the hip-joint was strongly advised, but refused. The patient was put upon the x-ray, which was continued for several months, with temporary improvement, both local and general. However, in December, 1902, there developed a large metastatic tumor in the left pectoral region, which grew with great rapidity and was highly vascular. It was partially removed under ether anesthesia. At about the same time there developed a much larger metastatic tumor in the right iliolumbar region, which grew to the size of a child's head. This was firm in consistence and, apparently, of retroperitoneal origin. At this time the mixed toxins of erysipelas and bacillus prodigiosus were given systemically, into the gluteal region, no local injections at all being given. A few weeks later the tumor of the iliolumbar region began to soften and break down, and when fluctuation became evident, it was opened and between a pint and a quart of necrotic tumor tissue evacuated. A large drainage tube was left in the iliolumbar region and the sinus remained open for more than a year. The patient recovered perfect health and is alive and well at the present time, more than five years later.

III. *Inoperable round-celled sarcoma of the upper jaw, with metastases, treated by Dr. O. K. Winberg, of Lake Park, Minn.*— The patient was a veterinary surgeon, forty years of age, operated upon by Dr. C. K. Wheaton, of St. Paul, on May 9, 1901. In describing the operation, Dr. Rogers, who assisted Dr. Wheaton, states: "There was found a large tumor, involving the antrum and almost the entire upper jaw. Ferguson's incision was made, but an attempt to remove the entire growth proved unsuccessful. . . . There was also a mass the size of a hen's egg underneath the ear on the opposite side. This was completely removed." The patient returned home after the operation, but the sarcomatous tumor began at once to increase in size, invading the nose and extending along the palate into the pharynx and also involving the parotid region. The patient continued to fail rapidly in general health. From Aug. 1 to 11, while under the care of Dr. Geo. D. Haggard, of Minneapolis, the patient's weakness steadily increased and he was hardly able to walk; his pulse was 130. Dr. Haggard then strongly advised the toxin treatment. The patient returned to his home at Lake Park, on Aug. 12. At this date the jaundice which had been present for some time became profound; the liver was enlarged; pulse rose to 140–150. This was the condition when the first injection of ½ minum was given on Aug. 12, 1901. The patient was treated by his local physician, Dr. Winberg, with increasing doses until Jan. 4, 1902, 103 injections in all being given. His weight at the time the treatment was begun, was 113 lb.; Sept. 4, he weighed 124 lb.; Jan. 4, 143 lb. On Jan. 12, 1902, he made a trip to New York solely for the purpose of showing me the result. I presented the case before the Surgical Section of the Academy of Medicine. In this case there was little doubt that the patient, in addition to having metastatic glandular recurrence, also had generalization of the disease in the abdomen.

The diagnosis was confirmed, not only by examination by the local pathologist, but also by a careful examination made by Dr. Wm. H. Welch, of Johns Hopkins University, who pronounced it round-celled sarcoma. Dr. Welch's full report is contained in Dr. Winberg's report of the case.[11]

The patient was well when last heard from, two months ago, or six years after treatment.

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[10] See paragraph 9 of above paper.

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DISCUSSION.

Dr. Horace Packard: I did not think of participating in this discussion, therefore I am not prepared to render a full report of my work in the toxin treatment of sarcoma.

Two cases stand out very clearly in my mind, however, which I am glad to report.

Case I. I was summoned in counsel over a case, in the Newton Hospital, of a woman in middle life who had been previously operated on by another surgeon for an abdominal tumor and who was now suffering from a recurrence. I opened the abdomen and at once came upon a large mass of atypical tissue which broke down readily under the touch, but was inseparably adherent to the adjacent abdominal viscera. Fragmentary masses were removed, but the futility of a continuance of the operation was at once recognized. The wound was closed with drainage and the case viewed as hopeless.

I regret that I cannot give data regarding the microscopical structure of the growth. I think examination was made but I have not been able to find record of it.[12]

As a last resort, but without much hope of benefit, she was given treatment with the erysipelas and prodigiosus toxins according to the method of Dr. Coley.

Much to the gratification of all connected with her case she quickly began to show improvement, both locally and in general. To briefly summarize the matter she fully recovered; and in a letter received from her six months ago she reported that she is earning her livelihood as a nurse, and the only reminder which she now has of her former trouble is a ventral hernia. Ten years have elapsed since she received the treatment.

Case II. A young girl, eighteen years old, was sent to me by Dr. O. W. Roberts, of Springfield, Mass., for treatment of an abdominal tumor. An indistinct, irregular mass could be felt in the left side on vaginal examination, but the abdominal enlargement was apparently caused by an accumulation of ascitic fluid. Abdominal section disclosed a small nodular tumor, evidently originating from the left ovary, with many small secondary nodes scattered about upon or beneath the peritoneum of the adjacent pelvic and abdominal viscera. Specimen was taken for microscopical examination. Report, endothelial sarcoma.

The patient was sent to her home as soon as she recovered from the immediate effects of the exploration, and her physician began the toxin treatment, making subcutaneous injections in the abdominal wall. The first effect was a reaction in the wound, which had healed by immediate union. It assumed a livid color which subsided, however, on stopping the treatment. After a few days the injections were resumed and continued faithfully with ultimate full recovery. At the time her illness began she was in school. After recovery she resumed her school work, completed her training, and taught several years. She has recently married.

Dr. John Bapst Blake reported the following case of an

OSTEOSARCOMA CURED BY OPERATION AND COLEY TOXINS.

A. C., female, thirty-one years old, came to the Boston City Hospital Dec. 22, 1897, for treatment of a painful lump below the left clavicle. One year before she had fallen down striking the right side of the body; three days later she noticed pain in the left shoulder which was increased by motion. The condition grew steadily worse, limitation of motion developed and in November, 1897, she was unable to use the arm. On examination an oval, slightly tender, rather elastic swelling, about the size of a small hen's egg, was found occupying the position of the left coracoid process; the skin over it was freely movable and normal in appearance; motions of the shoulder, particularly external rotation, abduction and extension, were limited, apparently by pain. In other respects physical examination was negative.

Operation was recommended and performed (by Dr. Blake) on Dec. 24, 1897. A curved incision was made, passing over the apex of the tumor and down the arm, corresponding roughly to the interval between deltoid and pectoralis major; upon separating these muscles, a bluish mass appeared, which seemed to have developed through the origins of the pectoralis minor and coracobrachialis; incision into the soft tumor was followed by profuse hemorrhage, and the mass was scooped out by the hand; it had apparently originated in coracoid process; had involved and destroyed the upper end of humerus, including both tuberosities, and almost the entire glenoid cavity. With the removal of the soft mass the hemorrhage diminished, and after irrigation with corrosive solution, was effectively controlled by packing with four wicks. Postoperative shock was moderately severe but yielded to appropriate treatment, and the wound healed with unexpected rapidity. An unfavorable prognosis was given, and an interscapulo-thoracic amputation was considered. In the meantime, a course of Coley toxin treatment was begun and, as improvement followed, was continued until August, 1898. The patient received 25 injections, of gradually increasing doses, the maximum being about 12 minims.

Since that time there has been no suggestion of return of the growth, and the patient's general health has steadily improved to its present normal state, in which she is doing the cooking and much of the general housework for a family of five, to the entire satisfaction of her mistress.

The motions of the shoulder joint are practically normal, she is 20 lb. heavier than at the time of operation, and considers herself entirely well. The head of humerus seems to a considerable extent to have reformed. The diagnosis was osteosarcoma of the giant-celled type.

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[12] On recent interview with Dr. George E. May, her physician, he assures me that examination of the tissue was made and the pathologist's report was sarcoma.

THE TREATMENT OF LEUKEMIA WITH THE MIXED TOXINS OF COLEY.*

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Some apology is perhaps needed for the following report, for the cases referred to are incomplete and treatment has not yet been carried out long enough to arrive at final results. Nor are the cases sufficient in number to warrant general conclusions. The encouraging nature of the results must be the writer's answer to the first criticism and the rarity of the disease his apology for the second. They are reported now in the hope that others will be led to try the method.

Two considerations lead to a hope for favorable results from the use of bacterial products in leukemia. The first is the close similarity of leukemia in many of its features to sarcoma, in which Coley [1] has obtained excellent results from the use of the mixed toxins of Streptococcus and Bacillus prodigiosus. A discussion of the vexed question as to the nature of leukemia and its relations to malignant disease would be out of place here. It is enough to say that in the marked hyperplasia of the tissues involved, in the fact that certain cells appear to have acquired the power of unlimited growth, and in the formation of metastases, there is a close resemblance between leukemia and malignant disease. (Banti.[2]) The analogy fails in the facts that the hyperplastic tissue consists of typical marrow elements instead of atypical cells, and that the leukemic tissue does not invade and destroy adjacent structures. (Sternberg.[3])

The second consideration which would lead one to expect benefit in leukemia from the use of bacterial products is the improvement frequently observed in this disease as a result of intercurrent infections. This fact is well-known and is admitted by hematologists generally. Sometimes an intercurrent infection produces no change, but in many, if not in most, instances, there is a well-marked decrease in the number of leucocytes. If recovery from the intercurrent disease takes place the spleen or lymph nodes may become smaller, and a corresponding improvement in the patient's general condition is frequently observed. The literature of this subject was exhaustively reviewed by Dock [4] in 1904, and in his concluding paragraph he suggested the use of bacterial products in the treatment of the disease.

It is somewhat remarkable that so few efforts have been made to take advantage of these facts in treatment. Tuberculin has been used by Heuck,[5] Pal,[6] Beitzke [7] and Pollitzer.[8] In most of their cases treatment was not continued very long and the results were, to say the least, not definitely encouraging. This is not surprising since it is probably true, as Dock points out, that chronic tuberculosis is not one of the diseases which distinctly influences the course of leukemia.

Various irritating substances have been injected, — spermin by Richter,[9] cinnamic acid by Richter and Spiro,[10] oil of turpentine by Gerhardt [11] and splenic extract by Jacob.[12] Temporary relief has followed such measures. Quite recently Capps [13] has injected a strongly leucolytic serum from a leukemic individual treated with the Roentgen rays into an untreated case of leukemia. Each of three injections caused marked but temporary decrease in the number of leucocytes.

Coley [14] has reported, along with many cases of sarcoma, two or three of Hodgkin's disease in which more or less temporary improvement followed the use of the mixed toxins of Streptococcus and Bacillus prodigiosus. In a personal letter to the writer, Dr. Coley states that in September, 1907, he and Dr. J. F. Lyons began the treatment of a case of leukemia with the same toxins.

The writer presents the following cases:

Case I. Female, age thirty-two, married. Patient of Dr. N. N. Levins, of Boston. Her illness began with indefinite gastric symptoms, severe frontal headache and increasing debility. In April, 1907, she was admitted to the Boston City Hospital with well-marked myelogenous leukemia. The lower border of the spleen was an inch above the level of the umbilicus and the liver edge was two inches below the margin of the ribs. The results of the blood examinations are shown in the table. She was given Fowler's solution in increasing doses. Between May 6 and July 12 she was treated with the Roentgen rays. Seventeen exposures were made over the splenic region, the duration being from twenty to twenty-five minutes. She improved somewhat, especially as regards the blood, but finally, after her discharge from the wards, she became unable to visit the hospital for treatment.

She was seen at her home on July 31. She was confined to the bed and the temperature had reached 105° daily for a week. She was cachectic and emaciated. The liver was three and one-half inches below the costal margin and the spleen three and one-half inches below the level of the umbilicus, its right border reaching the median line. There were a few small nodes in the groin and axilla.

Treatment with the mixed toxins of Streptococcus and Bacillus prodigiosus (Coley), prepared by Parke, Davis & Co., was begun by Dr. Levins on Aug. 6. The initial dose was a tenth of a drop. It was given in increasing doses, at first daily and then at longer intervals. Since Oct. 11, but one dose has been given.

The results in this case were most gratifying. The blood chart will speak for itself. The spleen decreased in size till only an area as large as the palm of the hand extended below the edge of the ribs. The most marked improvement was in the patient's general condition. She improved from the first. In four days her temperature was normal and the spleen perceptibly smaller. In a few weeks she was able to be up and about. Her color became normal and she gained in weight. She still expresses herself as feeling perfectly well.

Certain untoward incidents should be mentioned. A slight chill occurred after the twelfth dose (2 drops). After this, even though the dose was reduced to a drop, the local inflammation following the injections was so severe that the interval had to be increased. On Sept. 29, a new supply of toxins was obtained from Dr. Martha

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* Read before the Suffolk District Medical Society, Nov. 13, 1907.

Date.	Hemoglobin per cent.	Red corpuscles per cu. mm.	White corpuscles per ccm.	Polymorphonuclear neutrophiles.	Lymphocytes.	Large mononuclears and transitionals.	Eosinophiles.	Mast cells.	Neutrophilic myelocytes.	Eosinophilic myelocytes.	Unclassified.	Erythroblasts.	Treatment.
1907													
April 21			240,000	57	2	10	4		27	1		+	Arsenic.
May 21			525,000										X-ray (begun May 6).
June 22	70	3,179,000	269,200	67	1	1	1	2	28	0.2		0	X-ray.
July 5			349,600										Arsenic and x-ray (omitted July 12).
July 31	55	3,512,000	128,400	66	1.5	0.5	0.5	2.5	29	0		0	Arsenic.
Aug. 10	50		77,800	72	1	0.5	0.5	2	24	0	1	0	Arsenic and mixed toxins (begun Aug. 6).
Aug. 17	65		42,600	71	1	0	2	5	21	0		0	Arsenic and mixed toxins.
Aug. 24	75		68,600	68	4	1	0.3	6	21	0		+	Arsenic and mixed toxins.
Sept. 1	70	4,212,000	43,800	67	3	0.5	1	6.5	22	0.5		+	Arsenic and mixed toxins.
Sept. 14	80		20,900	71	6	1.5	5	10	6	0.4		0	Arsenic and mixed toxins.
Sept. 28			62,800	71	5	3	2	2	18	0			Arsenic and mixed toxins.
Oct. 11			340,000	88	2	0	0	1.4	9	0		+	Arsenic and mixed toxins.
Oct. 24	75		64,200	82	4	0	0.4	1.6	13	0			Arsenic only.
Oct. 31			65,600	64	5	3	0.6	5	22	0	0.6		Arsenic only.
Nov. 11	78	3,696,000	34,600	73	6	0.5	1	3	16	0		+	Arsenic and iron. Single dose of toxins, Nov. 2.
Dec. 2			73,600	66	4	0.5	1	5	24	0			Arsenic and iron.
1908													
Jan. 1	95	4,883,000	124,800	75	4	1	1	3	16	0		+	Arsenic and colon bacillus vaccine (begun Dec. 2).
Jan. 25	95	4,402,000	77,100	72	4	0	1	4	19	0		0	Arsenic and colon vaccine.

Case I. B. A.

Tracy, of the laboratory of the Huntington Cancer Research Fund.[15] The patient had been receiving three drops about twice a week. After a two-drop dose of the new preparation there was a slight chill which was repeated with each of four subsequent doses. Finally, on Oct. 11, after a dose of two drops, there was a very severe chill accompanied by a remarkable rise in the leucocytes to 340,000. This explosive outpouring of cells involved, as the table shows, chiefly the normal polymorphonuclear neutrophiles, the myelocytes sharing in the process only to a moderate degree. After this the toxins were omitted till Nov. 2, when an attempt was made to resume them in doses of a half drop. The first dose caused another very severe reaction and no further attempt to use the Coley toxins in this case has been made.

On Dec. 12, the administration of killed cultures of Bacillus coli communis furnished by Dr. T. Leary was begun. The initial dose was 50,000,000, and the maximum dose up to the present (Feb. 1) was one billion, the injections being made on alternate days. The treatment has proven much less painful than that with the streptococcus and bacillus prodigiosus toxins. The early doses caused a drop in temperature to 98° or 97°. Her general and subjective conditions remain excellent and the red corpuscles and hemoglobin have risen to normal. The influence on the blood would appear to be much less marked, or at least much less prompt than it was with the early injections of the Coley toxins.

Case II. W. V., male, married, age fifty-six, a barber. His illness began in September, 1906, with pain in the right hip, which increased in severity and soon was accompanied by stiffness and loss of power. In the first two months he lost twenty pounds. He was admitted to the Boston City Hospital in November, 1906. There was marked general glandular enlargement and the liver extended below the costal border to a distance of an inch and a half. The spleen was not enlarged. There was marked atrophy of the right lower extremity with limitation of motion in the right hip. There was considerable thickening about the trochanter, but no definite tumor. The leucocytes numbered 21,800. A radiograph of the right hip showed a diffuse shadow obscuring the normal appearance of the joint. At this time the case was extremely obscure, particularly as concerned the condition of the hip. A provisional diagnosis of malignant disease was made and an exploratory operation was performed by Dr. Bolles. Bits of tissue were removed and upon them the pathologist reported negatively. A few months later, when he was readmitted, the nature of his case was much clearer, the blood being that of a chronic lymphatic leukemia of mild grade.

He first came under my care on Aug. 19, 1907, in the Out-Patient Department. He had constant pain in the hip and was unable to stand without crutches. He was in good general condition. The tonsils were large. There were several large glands in the neck, especially near the angles of the jaw. On the left there was one mass about an inch in diameter and two inches in length. There were nodes about the size of chestnuts in the axillæ and groins. A nodular mass was felt deep in the central abdomen. The spleen was not enlarged. The edge of the liver could be felt nearly as low as the umbilicus. The muscles of the right leg and thigh were somewhat atrophied and flabby. There was slight edema. No abduction of the hip was possible and it could not be flexed beyond ninety degrees. There was one inch of shortening.

Treatment with the mixed toxins of Coley was begun Aug. 26, the initial dose being one-tenth of a drop. It was continued in increasing doses, at first daily, and then at greater intervals. The largest dose given was three drops.

Date.	Hemoglobin per cent.	Red corpuscles per cu. mm.	White corpuscles per ccm.	Polymorphonuclear neutrophiles.	Lymphocytes.	Large mononuclears and transitionals	Eosinophiles.	Mast cells.	Neutrophilic myelocytes.	Eosinophilic myelocytes.	Unclassified.	Erythroblasts.	Treatment.
1906													
Nov. 20	95	5,632,000	21,800										
1907													
Mar. 28	65	4,028,000	27,870	45	51	2	2	0.2	0	0		0	
Aug. 19	60	5,832,000	29,500		53								
Aug. 31			24,500									0	Mixed toxins (begun Aug. 26).
Sept. 12	70		39,400	30	66	3	1	0	0	0		0	Mixed toxins and arsenic.
Sept. 26	90		30,000	34	61	2	1	0	0	0	2		Mixed toxins and arsenic.
Oct. 9			30,200										Mixed toxins and arsenic.
Oct. 22			29,200	32	60	7	1	0.3	0	0	0.3		Arsenic only (toxins omitted Oct. 20).
Nov. 26			28,100	24	69	4	2	1	0	0		+	No treatment recorded.
Dec. 13	75		22,200	15	76	7	2	0	0	0			X-ray (begun Nov. 30) and arsenic.
Dec. 27	75		36,200	13	83	4	0	0	0	0			X-ray and arsenic.
1908													
Jan. 10	75	5,138,000	27,800										X-ray and arsenic.

CASE II. W. V.

This patient showed but little improvement. The hip remained the same except that the pain was lessened. The glands at the angle of the jaw disappeared almost completely. Those in the groin remained as at first. Those in the axilla appeared to be unfavorably affected by the toxins, for they were at their worst at the time the largest doses were being given. The injections were made into the right back, and the gland in the axilla of this side increased till it reached the size of a baseball. Finally the injections were stopped, owing to the pain which they caused and to the occurrence of severe reactions which persisted on decreased doses. About the only benefits derived from the treatment were a gain of eleven and one-half pounds in weight and perhaps some betterment of his general condition in other respects.

Since the toxins were omitted he has been treated by Dr. F. H. Williams, with the Roentgen rays, the exposures being directed chiefly to the hip. At the onset a radiograph showed extensive disease of the joint with dislocation of the head of the bone upward. No marked improvement can, therefore, be expected from this measure, at least as regards the hip, but he has gained five pounds more and local pain has been very decidedly improved. The glands in the axilla and groins have decreased to the size of robins' eggs. The blood shows no material changes.

CASE III. H. R., male, age fifty-nine, married. He was admitted to Dr. Monks's service at the Boston City Hospital in April, 1906, for the treatment of a number of small subcutaneous tumors which he said had existed for upwards of twenty years without ever causing the least annoyance. They were from a half inch to an inch in diameter, oval and elastic, situated mostly on the forearms. The lymph nodes in the neck, axillæ and groins were enlarged. The tonsils were much hypertrophied. The blood was that of a lymphatic leukemia (see table). The tonsils and one of the axillary lymph nodes were excised and the pathologist returned a diagnosis of "lymphoma."

In November, 1906, he returned to the Out-Patient Department, complaining of frequent micturition and of a trivial cough of a week's duration. The subcutaneous tumors on the forearms were unchanged, but the nodes in the neck, axillæ and groins had increased to the size of English walnuts. The edge of the spleen was about three inches below the costal margin and there was slight enlargement of the liver. During the winter he failed slowly. In March, 1907, he had pneumonia. Unfortunately the records of the hospital do not show the effect of this intercurrent disease upon the blood, but certainly when he next came under observation the tumors on the forearms had disappeared. In September, 1907, he came to the Out-patient Department in response to a letter. He was so ill that he reached the hospital with difficulty, and was wholly unable to come regularly for treatment. There was constant, dry cough and great dyspnea. There were masses of glands three inches in diameter in the axillæ and in the neck on both sides. Those in the groins were but little smaller. Masses of the same sort could be felt in the abdomen. There was an area of dullness about the size of the palm of the hand to the left of the upper end of the sternum, attributed to enlarged mediastinal nodes. There was dullness at the bases of both lungs, with numerous moist râles. The spleen was intensely hard and nodular. Its lower edge was at the level of the umbilicus. The edge of the liver was at about the same level.

Treatment with the mixed toxins of Coley was commenced on Sept. 17, and has been carried out continuously ever since, with the help of Mr. A. L. Brown, of Tufts College Medical School. The initial dose was a quarter of a drop of the toxin prepared by Parke, Davis & Co., more lately that prepared by Dr. Tracy. Daily doses were used at first, the intervals being lengthened later as, with the increase in the amount administered, the local reaction became severe. He is still (Jan. 13) under treatment, the largest dose being six drops.

The results, while not so striking as in case I, have been good enough to make the treatment distinctly worth while. During the first week of

Date.	Hemoglobin per cent.	Red corpuscles per ccm.	White corpuscles per cu. mm.	Polymorphonuclear neutrophiles.	Lymphocytes.	Large mononuclears and transitionals.	Eosinophiles.	Mast cells.	Neutrophilic myelocytes.	Eosinophilic myelocytes.	Unclassified.	Erythroblasts.	Treatment.
1906													
April 9	95		46,800		80								Arsenic.
Nov. 27	92	4,476,000	22,600	14	82	4	0.4	0.4	0	0		+	
1907													
Mar. 28	75		44,600	35	58	6	1	0	0	0		0	
Sept. 17			122,000	12	85	2	0.4	0	1	0			Arsenic and mixed toxins (begun to-day).
Sept. 23			172,800	14	85	1	0	0	0	0		+	Arsenic and mixed toxins.
Oct. 7			123,200	19	79	2	0	0	0	0		+	Arsenic and mixed toxins.
Oct. 25			69,400	14	85	1	0	0.4	0	0		+	Arsenic and mixed toxins.
Nov. 5	75	3,840,000	77,600	13	85	1	0.4	0	0.4	0		+	Arsenic and mixed toxins.
Dec. 5	80	4,080,000	75,500										Arsenic and mixed toxins.
Dec. 23		3,488,000	82,400										Arsenic and mixed toxins.
1908													
Jan. 15			87,200	10	87	5	1	0	0.4	0		+	Atoxyl and mixed toxins.

Case III. H. R.

treatment the patient continued to grow rapidly worse and did not seem likely to live more than a short time. On the seventh day he had a severe chill after a dose of a quarter of a drop. After this he improved rapidly for several weeks. The dyspnea and cough subsided. The spleen became much smaller. The nodes in the neck decreased in size and the area of dullness in the left upper chest, which was considered due to mediastinal nodes, disappeared. The nodes in the axillæ and groins remained the same. Of late, along with the increase in white corpuscles, there has been a general return of his unfavorable symptoms, though by no means to the original extent.

Case IV. N. B., male, forty-five years old. This case, one of myelogenous leukemia, started treatment but continued only for a week. Much pain was caused by the injections. No change in his condition was noticed.

Case V. C. F., male, age forty. This patient's symptoms began in October, 1907, after prolonged exposure to cold, and consisted of increasing weakness and dyspnea with occasional bleeding from the gums. He came to the Medical Out-Patient Department of the Boston City Hospital on the service of Dr. F. W. White in the latter part of November, and the diagnosis of acute lymphatic leukemia was made. He was admitted to the wards on Dr. Geo. B. Shattuck's service on Dec. 13. There was marked pallor. The heart was normal except for a soft systolic murmur at the base, probably hemic. The edge of the spleen could be felt on deep inspiration. The lymph nodes in the groin were barely palpable and there was one the size of a hazelnut in the left axilla. Elsewhere the nodes were normal.

On Dec. 2, the hemoglobin was 60%, the red corpuscles 2,200,000 and the whites 24,000. On Dec. 9, the hemoglobin was 40%, the reds 1,958,000 and the whites 13,000. On the 25th an examination of the blood was made by the writer with the following results: Hemoglobin 21% (Sahli). Red corpuscles 1,076,000. White corpuscles 19,500. Differential count of 238 leucocytes: polymorphonuclear neutrophiles 18.9%, lymphocytes 16.8%, large mononuclears and transitionals 64.2%. No nucleated reds were seen. The cells classified as large mononuclears had for the most part large, deeply stained nuclei, round or indented to a greater or less extent. The protoplasm of these cells was small in amount,— much less than in the large mononuclear basophilic cells of normal blood. It generally stained an intense blue color with Wright's stain, like that of the stimulation cell of Turk. Some had coarse, deep purple (azurophilic?) granules and were possibly myelocytes. In smears stained with the Ehrlich triple stain mononuclear cells with neutrophilic granules were present in limited numbers, but they were smaller than ordinary myelocytes and had small, concentric nuclei. The red corpuscles showed some achromia and polychromia. There were a few poikilocytes. The average size of the reds was apparently smaller than normal. Platelets distinctly reduced in number.

Treatment with the Coley toxins was begun on Dec. 25, the initial dose being a sixteenth of a drop. The dose was increased at the rate of about a sixteenth of a drop daily. A slight chill occurred on the sixth day, after a dose of a quarter of a drop and the injections were then omitted for three days. The total number of injections was eight.

This was doubtless a case of the very acute type of lymphatic leukemia, concerning which Grawitz,[16] who takes a hopeful view of the x-ray treatment in temporarily arresting other forms of the disease, says, "Nothing will retard the malignant course of this process." The treatment under discussion produced not the slightest effect and the patient died on Jan. 6, 1908.

To summarize: The mixed toxins of Streptococcus and Bacillus prodigiosus were used in four cases. One showed a degree of improvement amounting to symptomatic recovery, which has now lasted for upwards of four months. Another showed considerable temporary improvement. A third showed improvement in weight and general condition only. A case of the acute lymphatic type was uninfluenced. Although two are still under treatment there does not appear to be much hope of permanent cure.

In using the mixed toxins in the treatment of leukemia one should bear in mind that he has in hand a very powerful agent. Large doses, even as large as those often used in sarcoma, are, in the writer's limited experience, not tolerated. The initial dose should not exceed a tenth of a drop. It may be given daily at first, the dose being slowly increased. In the cases reported the interval was lengthened as soon as the reactions began to be severe, whether local or general. Severe chills sometimes occurred after a quarter of a drop, and in case I, the reactions were so severe as to cause considerable alarm. Certainly, in my cases, good results were obtained without such reactions, though it is possible that more lasting benefit might have been produced had the toxins been administered with greater boldness. If at any time in the course of treatment it becomes necessary to change the preparation or get a new supply, the dose of the new lot had better not exceed half that of the old, since different preparations differ greatly in the intensity of their effects. In the cases reported here a specimen obtained from Dr. Tracy proved much more active than one made by Parke, Davis & Co.

Considering the well-known effect of infections with streptococcus in producing anemia, the influence of the toxins on the red corpuscles and hemoglobin is surprising. Not only was there no increase in the anemia present at the beginning of treatment but in cases I and II there was decided benefit. Similarly as to fever: apart from the definite reactions following overdoses, none of the cases showed any fever during treatment, and in case I the toxins appeared to have a decided influence for good on the high temperature which existed when their use was begun. Moreover, the effect on the general condition and body weight was distinctly good.

In estimating the value of this treatment, so far as we are justified in doing so from the limited material at hand, we must compare it with other methods in common use, particularly with arsenic and the Roentgen rays. As to arsenic, it must be admitted that in some cases excellent results follow its use, though these results are never more than temporary and often fail entirely. In all of the cases under discussion arsenic had been used alone without definite results. In the writer's experience it is rare for arsenic to produce any such prompt and marked results as in two of the cases described.

With the truly marvellous effects sometimes obtained with the x-rays the writer is unable to say that toxins will compare favorably. Cases have been restored to complete health by the x-rays, and, though they always relapse sooner or later, some have remained well for months. One, reported by Grawitz, was still perfectly well after fifteen months. The toxins of Streptococcus and Bacillus prodigiosus are decidedly more painful and, in the writer's opinion, decidedly more dangerous. It is possible that their effects will prove more permanent and my first case gives hope that they may prove effective in some cases where the Roentgen rays fail. Their great advantage at present is that they can be used in many cases where radiotherapy is not available. The toxins can be administered by any physician or nurse of ordinary skill. They need no costly apparatus and do not require the patient to leave his bed.

In concluding it may be stated that the results have been encouraging enough to justify further trial. It is in the hope that such further trial may be obtained that these cases are reported in their present incomplete state.

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GENERAL PARALYSIS AS A MENACE TO PUBLIC SAFETY IN TRANSPORTATION.*

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I recently undertook to tabulate the symptoms observed in cases of general paralysis in preparation for a discussion of the subject at a meeting of the Psychiatrical Society of New York. As I went over the case records I was led to note the occupation in certain cases. In consequence of this I investigated the occupation of fifty cases in male adults who had come to the out-patient department for nervous diseases at the City Hospital. The cases were not selected but were taken as they came in alphabetical rather than in chronological order from those observed in the last six years.

Five of these fifty men were in the employ of public transportation companies: one as a railway clerk, one as a station-agent, one as a locomotive engineer, one as a motorman and one as a conductor. Four others had to do with traffic in the streets as teamsters or coachmen. One was a boatswain in the merchant marine service. Two others were stationary engineers.

It may be that the proportion of general paralytics who are employed in transportation, as compared with other general paralytics, is somewhat too great. The exact proportion is of little consequence. Through the kindness of the superintendents of the various hospitals for the insane in Massachusetts, I have learned that, out of about 263 general paralytics in the institutions in April, 1907, there were nine railway employees. The essential point is that there are a number of persons in the early stages of general paralysis who are still in active service in more or less responsible positions on our steam railroads and trolley lines. There are also persons in the early stages of other chronic diseases of the brain attended with mental impairment who are also in active service in similar positions. Without making any search of case records of other diseases I remember patients with disseminated sclerosis, cerebral arteriosclerosis, and brain tumor who were holding such positions, and every neurologist has probably had a similar experience.

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* Read at a meeting of the Boston Society of Psychiatry and Neurology, Jan. 17, 1907.

A recent Accident Bulletin (No. 20) of the Interstate Commerce Commission tells us that 4.225 persons were killed and 66,709 persons were injured in railway accidents during the year ending June 30, 1906. This applies only to actual passengers and employees on duty, and excludes the very considerable number of persons killed at grade crossings, at stations, etc. The *World Almanac* for 1907 states that the total number killed was 9,703 and the total injured 86.008, for the year ending June 30, 1905. We must consider also the killed and injured in street railway accidents, concerning whom no general data are available, although the number is certainly considerable.[1] It is perhaps safe to say that 10,000 persons were killed and 100,000 injured by accidents on steam railroads and trolley lines during the year, ending June 30, 1906, in the United States. It is furthermore an alarming fact that this mortality is increasing in comparison to the number of persons carried. The *World Almanac* for 1907 shows that, whereas in 1897 one passenger was injured out of 175,118 carried, in 1905 one passenger was injured out of 70,654 carried, and in 1897 one passenger was killed out of 2,204,708 carried, while in 1905 one passenger was killed out of 1,375,856 carried. The total loss in killed and wounded in the Northern army during our Civil War was 67,058 killed and 318,187 wounded, — an annual average of 16,765 killed and 79,547 wounded.[2] "Truly peace hath her victories no less" bloody "than war."

It is as much the duty of the physician to prevent death or disability from avoidable accident as it is to prevent death or disability from disease. If ten persons had died of bubonic plague in the United States in the last year we should have elaborate essays and exhaustive discussions on the plague at the two great meetings of the medical profession at Washington and Atlantic City. Was anything said about the ten thousand dead from railway accidents?

That many railway accidents are due to directly preventable causes is beyond question. Out of 3,103 derailments and collisions on steam railways during the months of April, May and June, 1906, 291 were due to defects of roadway; 664 to defects of equipment, and 87 to negligence of trainmen, signal men, etc. Even with the most perfect equipment and with the latest and surest mechanical devices for preventing accidents, much must still depend on the care and intelligence of the individual. The Boston Elevated Railway has, I understand, a block system so perfect as to render it impossible for a train to run forward into the next block until the track is clear; but the other day a careless motorman backed a train into the block behind with unfortunate results. In Accident Bulletin No. 20 of the Interstate Commerce Commission, I find, among others, the following notes as to the causes of accidents: "Too high speed in fog. Engineman did not see flagman. Engineman, who was killed, had been on duty, seventeen hours and thirty minutes." "Operator omitted two words in writing a meeting order." "Pilot misinterpreted dispatcher's order." "Operator failed to deliver order." "Engineman, 27 years' experience, ran past automatic signal indicating stop." "Engineman ran past automatic signal indicating stop." "Conductor, engineman and whole crew (on duty sixteen hours) overlooked meeting orders." "Engineman disobeyed rule to stop at head of grade."

The Baker Bridge accident on the Boston & Maine road, on the 26th of November, 1905, in which seventeen persons were killed and about fifty were injured, was due to similar negligence. An express train ran into an accommodation train on a clear night and on a straight track. The engineer "felt competent to take the train, and was in good condition, *notwithstanding a headache of which he spoke to nobody.*" [3] He saw two green lights and two red fuses and "knew the meaning of these lights and the rules governing them; . . . but disregarding the rules that required him to reduce speed so as to proceed cautiously and so that he could stop within seeing distance, rules with which he was familiar, he proceeded on his way at high speed until collision was unavoidable." [4]

Such reports indicate that in some cases there is a temporary failure of the brain to work with its normal accuracy. For some reason the man, although he knows the meaning of the signal, and has the visual power to see it and knows what he ought to do in response to that signal, fails to act. In some cases this failure is due to the fact that the man has been obliged to work an excessive number of hours on a stretch, as some of the quotations given above show. It is well known that indulgence in alcohol will cause such a failure, and therefore most railroads demand that their employees shall abstain totally while on duty if not altogether. We also know that, in the early stages of general paralysis and certain other chronic diseases of the brain, perception and memory are impaired, comprehension becomes more difficult, judgment is enfeebled and action is less prompt. A railway employee with one of these diseases may therefore fail to understand his orders quickly and correctly and act intelligently according to his directions. In other words, as a consequence of his disease, he may be guilty of just such negligence as is recorded.

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[1] In the year 1905, 86 passengers and employees on duty were killed in railroad accidents in Massachusetts and 487 injured; 178 other persons were killed and 90 injured at grade crossings, walking on tracks, etc.; 85 persons were killed and 5,681 were injured in accidents on trolley lines. Thirty-seventh Annual Report of the Board of Railroad Commissioners of Massachusetts.

[2] Livermore: Numbers and Losses in the Civil War in America, 1861–65.

[3] Italics mine.

[4] Thirty-seventh Annual Report of the Board of Railroad Commissioners of Massachusetts.

In how many instances the negligence of railway employees has been due to disease, I cannot say. That it is sometimes due to disease is proven by the histories of two cases, kindly sent me by Dr. H. W. Mitchell from the records of the Danvers Insane Hospital.

A railway engineer entered the hospital with well-marked general paralysis. He had been complained of for some peculiarities of conduct over a year before, but he had worked up to twelve weeks before admission. He was discharged from his position on account of an altercation with another employee. A few days before discharge he had made a run several minutes faster than he should have done.

A switchman had well-marked general paralysis. A year before admission he showed undoubted symptoms of mental disease, but kept at work for three months before he was dismissed. After six months at home he improved slightly and returned to work, remaining at work until a few days before commitment. His last work was leaving a switch open which caused an engine to run off the track.

We see, therefore, that general paralysis and other chronic diseases of the brain attended with mental disturbance are not infrequently found in railway employees. We know that such diseases may cause sufficient disturbance in their early stages to occasion a failure to understand directions and act promptly in emergencies, and we have found actual instances in which general paralysis has caused negligence great enough to cause a most serious accident, although by mere chance, in the instances given above, there were no serious consequences. It is certainly possible that in other cases negligence due to disease has given rise to accidents of a fatal character.

These diseases, as we know, are of insidious onset, and the family often think at first that they are of trifling consequence. The patient feels unable to give up his work and the attendant physician fails to recognize the real gravity of the trouble, long after it is evident to the skilled neurologist.

There can be little doubt that if men in responsible positions on our railroads were subjected to thorough examination by competent neurologists at regular intervals many of these cases of general paralysis and other brain diseases would be detected and the dangers attendant upon them would be averted. Many railroads demand a careful examination of all applicants for employment, but when this examination is once passed, the man is not examined again unless some striking disturbance is noted. The average railway surgeon, however, will inevitably overlook the slight but significant symptoms that reveal grave brain disease to the neurologist, and, even if he were capable of detecting them, it is only by examinations repeated at regular and rather frequent intervals that the onset of these diseases can be detected, and the danger averted. These affections are not responsible for all the cases of negligence that cause railway accidents, but they form one factor which can be eliminated. The state requires that certain railway employees shall pass examinations to prove that they can tell red from green. Is it too much also to require them to pass periodical examinations to prove that they can instantly understand the different meanings of red and green and act promptly on that knowledge?

THE DIRECT EXAMINATION OF THE LARYNX AND OF THE UPPER END OF THE ESOPHAGUS BY THE LATERAL ROUTE.*

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

THE exposure of the pyriform sinuses and of the upper end of the esophagus according to Jackson is always easy. This has not been my experience. I have tried all the instruments which have been devised for the direct inspection of the larynx and of the upper end of the esophagus but have found no one instrument suited to all cases. The instrument which is successful most often is the tube spatula. The drawback to the use of this instrument, however, is that it gives a very restricted field.

The character of the patient's neck determines the ease or the difficulty of the examination and the kind of instrument which should be used. Four recent and consecutive cases, two examined by Dr. Cobb and two cases of my own, illustrated this point strikingly. Two of the patients were sturdy men with short, stout necks; the other two, one a man and one a woman, had thin necks. The woman's neck was extremely thin as she had kept herself, owing to mental unbalance, on almost a starvation diet for three years. I examined her with the large bivalve speculum. Her neck was so thin and relaxed that it was like working upon the cadaver. With the greatest ease I was able to expose the full length of the cords and both pyriform sinuses. On placing the tip of the speculum behind the cricoid cartilage the cartilage was readily pushed forward. As this was done the upper end of the esophagus opened like a funnel for some two and a half inches. This allowed me to pass by the cricoid an oval tube three quarters of an inch in diameter, showing that we can use larger tubes in the esophagus than we are at present using. Of late the tendency has been to make all tubes, including tubes for the esophagus, smaller rather than larger. The advantage of the small tube is the ease with which it can be introduced. The larger the tube, however, the better the view. This case shows that in thin, pliable necks, the cricoid cartilage is easily lifted by the bivalve speculum so that a large tube can be passed into the esophagus. In suitable necks, therefore, this speculum is to be preferred for examining the upper end of the esophagus, for passing tubes into the esophagus, for the direct examination of the larynx under ether and for passing tubes between the cords into the trachea.

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* Read at the Clinical Meeting of the Throat Department of the Massachusetts General Hospital, Nov. 30, 1907.

It has been my routine to try the bivalve speculum first; and when it did not give a sufficient view, to replace it by the self-illuminated tube spatula. To return to the remaining cases of the four: In one a small tube was passed into the esophagus with the bivalve speculum with some difficulty. This patient had a stout, thick neck. In the remaining two cases the bivalve spatula was not tried. In these cases, the first an examination of the trachea and the second an examination of the esophagus, the tube spatula gave a quick and good view in one, in the other a difficult and partial view. In a thick neck, therefore, even the exposure of the arytenoids is not always easy with the tube spatula.

These four cases were examined under ether with the patient's head extended over the end of the table. The method of holding the head was the one employed by Jackson. In one of the examinations I found that there was enough strain upon the operator's hand to tire it quickly even when using the tube spatula. Without doubt this was due in part to the short training of the assistant who held the head.

At the last monthly meeting of this department I showed a speculum designed for use in the lateral position. During the past four weeks I have been experimenting with it and I find that it has marked possibilities. The object of placing the patient's head in the lateral position is to do away with the difficult and tiresome holding which is necessary if the extended position is used. In the newer position the patient's head and shoulders are supported by the table instead of by the arm of an assistant. This, however, is not the only advantage of the lateral position. In the extended position the tissues of the neck are put on the stretch and the larynx and the esophagus are at their greatest distance from the teeth. On the contrary if the patient is laid flat on the table, the head turned on the left cheek, and the chin flexed slightly the muscles which hold the larynx are not put on the stretch, the ligaments at the base of the tongue are loose, the larynx remains movable, and the distance to the larynx is very materially shortened. In the extended position we tend to push the larynx forward and out of view. This happens far less in the lateral position. In fact, in the lateral position the larynx is so movable that it can be pushed backward into the field of the speculum. This manœuver makes it possible to get a view of the anterior commissure of the cords in a greater percentage of cases in the lateral position of the head than in the extended position.

In order to take advantage of the possibilities of the lateral position I devised this speculum. (See Figs. No. 1, 2.) It is a combination of tongue depressor and mouth gag. It is made for use on the left side so that the operator can have his right hand for the manipulation of instruments. There is no hood so that the whole posterior wall of the pharynx is seen and the operator's eye does not get the cramped feeling which comes from looking long through the tube spatula. The speculum obtains its leverage for the force necessary to hold the mouth open and to push the tongue forward by resting against the left upper bicuspid teeth. When one is used to the instrument the force required to manipulate the speculum is not great. The more that I use the instrument the more I find that proper manipulation, not force, is what gives a good view.

In order to carry out the examination in the lateral position, the patient is placed flat on his back and the head is turned upon the left cheek. The jaws are spread a little by a mouth gag. The operator kneels at the head of the patient on the left side. Either reflected light from a head mirror or the Kirstein forehead light is used. The speculum is introduced between the teeth at the left angle of the mouth and pushed straight back until the base of the tongue is passed. At this point the mouth gag must always be removed, If it is left in it interferes greatly with obtaining of a good view. When the base of the tongue is passed the upper flange of the speculum falls naturally into place against the bicuspid teeth. The speculum is now pushed further in and at the same time the tip is carried forward by elevating the handle. In this way the epiglottis is brought into sight and the end of the speculum carried down behind it. At this point the arytenoids and the posterior half of the cords come into view. (Fig. 3.) In order to bring the anterior commissure into the field the assistant is told to push backward on the larynx; as he does so the anterior part of the cords can be seen. I was surprised to find how much the larynx could be manipulated. Further, I was surprised at the apparent nearness of the arytenoids. This is due to the flexing of the head. After inspecting the cords and the pyriform sinuses the tip of the speculum is allowed to fall behind the arytenoids and then is carried down back of the cricoid. On raising the handle of the speculum again the cricoid cartilage is carried forward. Following this last manœuver the upper inch and a half of the esophagus opens up into a funnel. (Fig. 4.) The importance of this is evident when we remember that foreign bodies so often lodge behind the cricoid cartilage and that cancer of the esophagus often begins at this point. In thin necks the bivalve speculum used with the extended position of the head will balloon the esophagus equally well or better than the new speculum, but in thick necks the large speculum often fails.

In one of the four cases of the series just described the bivalve speculum exposed the arytenoids with difficulty. By its aid a small tube was passed into the esophagus. At the end of the examination the patient was placed in the lateral position. By using the new speculum not only was the larynx readily seen but the speculum passed easily behind the cricoid cartilage and held the upper inch and a half of the esophagus open. Owing to this a much larger tube than the one which had just been used was engaged in the

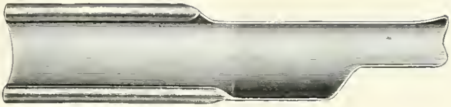
Codman & Shurtleff.

FIG. 1.

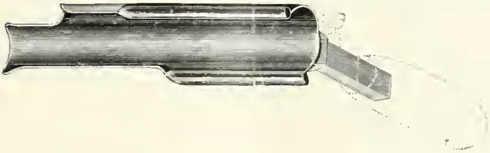
Codman & Shurtleff.

FIG. 2.

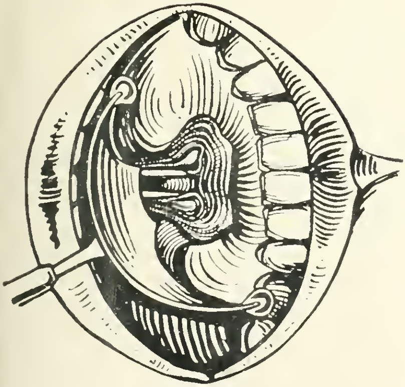
FIG. 3.

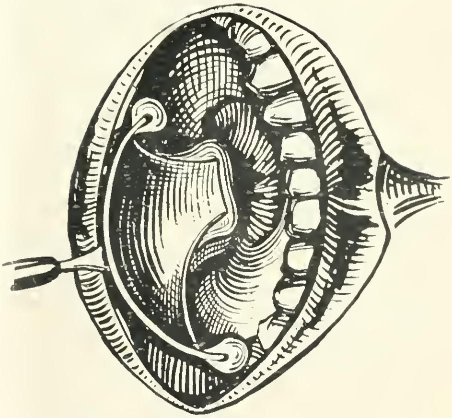
FIG. 4.

Speculum for the direct examination of the larynx and the mouth of the esophagus by the lateral route.

The speculum is made in four sizes, one for infants and children, and three sizes for adults. One adult speculum is made extra wide for patients with no teeth and one is made extra long for reaching well below the cricoid cartilage.

esophagus. Then the head was straightened out and extended and the tube pushed down.

From this finding I feel that the lateral position is the position which probably will be adopted for exposing the cords and the esophagus for the first step in passing tubes.

For work about the arytenoids and the upper end of the esophagus the lateral position is the best position which has yet been found. By proper manipulation the whole of the cords can be seen and operated upon. The speculum designed for use in the lateral position should become a strong rival of the tube spatula. I think that in many instances it will replace it. As a rule the speculum must be used with the patient etherized. On one very tractable patient, however, I used it satisfactorily with cocaine. The advantages of the instrument are that it has no hood and so gives the largest field, it can be removed with one hand while the other steadies the tube, it requires the least strain upon the hand to manipulate, and it utilizes the shortest anatomical route to the larynx and to the esophagus.

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Reports of Societies.

CLINICAL MEETING OF THE THROAT DEPARTMENT OF THE MASSACHUSETTS GENERAL HOSPITAL, NOV. 30, 1907.

THE BACTERIOLOGY OF AN EPIDEMIC OF ACUTE "COLDS."

Dr. R. C. Larrabee: A series of acute colds has recently occurred among those working in the Pathological Laboratory of Tufts College Medical School, and Dr. Lawrence Strong has been studying the microorganisms in the sputum and nasal secretions. Seven cases were observed, of which six were studied bacteriologically. In all six micrococcus catarrhalis was present and it was the predominating organism in all but one. This organism was observed in smears, and in three cases was also found in cultures. It is a biscuit-shaped, Gram-negative diplococcus, occurring outside and inside of cells. It is difficult to distinguish from gonococcus and diplococcus meningitidis in smears, but is easily differentiated by culture. It probably occurs only to a slight extent in normal individuals. During this study micrococcus catarrhalis was sought for in a number of cases occurring outside of the laboratory, with positive results in but one case. We have attempted to study the opsonic index, without, as yet, very definite results, owing to the occurrence of well-marked spontaneous phagocytosis. A vaccine was made from the organism isolated from one of the first cases and it has been used in doses of fifty million in three subsequent ones. In one there was a marked general reaction and no definite effect on the infection. In the second the influence was favorable. The third received some temporary relief.

The micrococcus catarrhalis in the cases studied was not found in pure culture, but only as the predominating organism, though in early stages the number of these diplococci and the rarity of other forms was most striking. Later in the attack other organisms, such as pneumococcus or streptococcus, increased in numbers. In one case there appeared to be a definite incubation period of four days. The laboratory telephone may have been instrumental in spreading the infection. Some of the cases were severe, but in none was there any fever, except in the one mentioned, where a vaccine was used.

Dr. F. T. Lord: My acquaintance with the micrococcus catarrhalis began during the study of a series of 186 cases of acute and chronic respiratory infection from 1902 to 1904. The patients for the most part had bronchitis, and those showing tubercle bacilli in the sputum were excluded from the investigation.

Of the various organisms in the sputum of these cases, the influenza bacillus was the most frequent finding, occurring as a practically pure infection in 47 cases (25%) and including cases in which it was present as a mixed infection in about 60%. The pneumococcus was found as a practically pure infection in 8 cases (4.3%) but was mixed with other organisms in about 70%. The micrococcus catarrhalis was in overwhelming numbers in only 5 cases (2.6%); present with other bacteria in nearly as large a proportion as the influenza bacillus. Isolated examples of practically pure infection with other organisms were found. Mixed infection with two or more organisms was noted in a majority (64%) of the cases. In the interval during the investigation, there was no epidemic of acute respiratory infection in this vicinity and the 186 cases merely represent the normal number with respiratory symptoms constantly seeking admission to the Massachusetts General Hospital.

In general, acute respiratory infection with the different organisms presents a clinical complex of symptoms which may be classed as influenza. The clinical and pathological picture of the different groups of infection, however, seems to be practically the same. The same symptoms of onset and course, a like degree of prostration and similar pulmonary sequelæ are common to them all. To judge from our cases, the disease, influenza, in this interepidemic period may be regarded as due in a considerable proportion of cases to the influenza bacillus. In other cases the disease may be due to other organisms, such, for example, as the micrococcus catarrhalis. The disease, influenza, thus lacks etiological unity for all the cases which, from a clinical point of view, should be classed in this group.

During the pandemic of influenza in 1892, R. Pfeiffer demonstrated the influenza bacillus as the cause of a series of cases of this disease. Pfeiffer's belief in its etiological relation with epidemic and pandemic influenza needs the confirmation of its discovery in later outbreaks. The organism is a common cause of respiratory infection during an interepidemic period and may persist for years in the expectoration of patients with chronic cough. For the present, the most plausible explanation seems to be that the great prevalence of influenza bacilli in interepidemic periods serves to maintain the organisms for recurring epidemics and pandemics of influenza. It may be, however, that other common respiratory organisms, such as the micrococcus catarrhalis, are capable of causing epidemic and pandemic as well as endemic infection. We must otherwise assume some biological peculiarity of the influenza bacillus, enabling it alone to reach epidemic and pandemic prevalence.

The biology of the micrococcus catarrhalis has been most carefully studied by Ghon, H. Pfeiffer and Sederl (Zeit. für. klin. Med. 44, 1902, p. 277) who found it in (59%) of 132 cases with respiratory infection. In one case, fatal from bronchitis, it was found alone, but in five other cases, from its presence in overwhelming numbers, it was regarded as the cause of the process. It resembles the gonococcus and meningococcus in morphology and staining reaction, but may be distinguished by its growth on culture media. A striking cultural peculiarity is the development, after several days in the incubator, of large, flat colonies with an irregular margin and a raised central part.

The micrococcus catarrhalis has been demonstrated as the apparent cause of small local epidemics of respiratory infection with the clinical picture of influenza by several observers. Among others, Kleineberger (Deut. med. Wochenschr., 1905, April 13) reports a local outbreak at Frankfurt-am-Main. The micrococcus catarrhalis predominated in almost all of 27 cases investigated for bacteria, while influenza bacilli were present in less than a third of the cases.

One of the most important features of the acute respiratory infections is their contagious character. This was conclusively proved for the pandemic of influenza in 1889–90 and is equally true of less extensive local and even house epidemics. The transference of the disease from one individual to another is doubtless by air-borne and by contact infection. Fortunately, in a large proportion of cases, the infection spontaneously subsides, without serious complications or sequelæ. The usual temporary disability and occasional serious and disabling complications, however, demand all possible precautions against the spread of the disease, and similar measures should be taken as with the secretions of patients with pulmonary tuberculosis. By a lack of these precautions the endemic disease is kept alive and epidemics and pandemics are started.

Dr. H. P. Mosher: We know so little about the etiology of the common cold that it is very satisfactory to have it traced to a definite organism, as has been done in the series of cases which Dr. Larrabee has just reported. We are under obligations to Dr. Larrabee for the enthusiasm with which he has followed out this little professional epidemic. We are also under obligations to him for trying the most modern form of treatment. The vaccine made him very uncomfortable and did him no good. It did the rest of us, however, a great deal of good, because Dr. Larrabee established what is the maximum dose. The rest of us surely will begin with a smaller one.

It is a bit startling to find that this organism belongs to such an old and well-known family. When one realizes that it is the brother of the meningococcus and of the gonococcus it is hard not to be somewhat too facetious. There are very marked similarities in this family group. They all infect in about the same time, four days; they are of little virulence for animals and of great virulence for man; one attacks a serous membrane and the other two attack mucous membranes. And the chief symptom produced by two of them, to use the phraseology of the laity, is a running.

The term "acute coryza" is inexact. The nomenclature could be made more uniform by calling a cold a rhinorrhea. A number of pleasantries along this line might be mentioned but they are better left unsaid.

I was a bit disappointed that Dr. Lord did not tell us more about the animal experiments with this organism. My experiments were done for the sake of completeness. They are insignificant in number compared with the large number of experiments carried out by the men who have studied this bacterium exhaustively. Such experiments show that the organism has very little virulence for animals and that of the animals experimented with, the guinea pig is the most susceptible. In the expert inoculations carried out for me by Dr. Richardson one guinea pig received an intraperitoneal injection and the other an injection in one side of the nose. It is now four days since this was done. This morning both animals are well.

Some years ago one of the members of the throat staff came down with a hard catarrhal cold. The meningococcus was found in his sputum and in the nasal secretions. A year later one of the staff in the pathological laboratory had a hard head cold. He found that his nasal secretions contained the meningococcus abundantly. This raises the question as to how many colds are due to this other member of the family of bacteria which we are considering to-day. There is a chance for further work to be done on this point.

It is a very great satisfaction to have at last the knowledge of at least one organism which can cause a common cold.

Dr. A. Coolidge, Jr.: The question of the cause of so-called "colds" is one of the greatest possible importance to the community. From a clinical standpoint it is not difficult to collect evidence that colds in the head and other acute disturbances of the upper air passages appear as epidemics, or at least often spread between persons in close contact with each other. I have notes of cases where isolated communities have been infected with colds in the head by a definite case which has come among them. Instances where they have remained free when there has been no such introduction, as that just quoted of Nansen's crew, are also not uncommon. As the community and even a majority of the medical profession insist on seeking some recent exposure to weather as the cause of each case as it arises, the sometimes obvious contagion is overlooked. We should recognize more definitely than is commonly done those colds which are due to vasomotor disturbances and those which are probably infectious. Symptoms of vaso-motor origin generally come on very nearly at the time of the exposure. They do not run a definite course, spreading from one region to another. Their duration is often dependent upon external conditions. It is commonly believed that exposure frequently gives a chance to some pathogenic organism which is waiting for the opportunity. While this is apparently sometimes true, as perhaps in rheumatism, or in an already existing bronchitis, I believe that for typical "colds" it is an uncommon factor. The typical cold, as I have studied it, has an incubation period of from two to four days. It starts slowly in one place, often the naso-pharynx, occasionally the larynx or tonsil. It spreads to other regions, but the extent of its spread varies. It may involve the nose, the sinuses, the larynx, trachea and bronchi, rarely the stomach, but it may spare any of these parts. There is seldom any temperature except when there is secondary involvement with other organisms, and it is these which may cause serious trouble in the sinuses, the ear or the lungs. There are various forms of inflammatory diseases of the air passages and there are different bacteria which are found in these cases. A careful comparison of the bacteriology with the clinical history of these diseases is of the greatest importance and will give authority to all attempts to control the spread of one of the most common nuisances, if not dangers, of the community.

Dr. H. P. Towle reported a case of

LEPROSY.

The clinical symptoms in this case were so unusual that they were not recognized as leprous, although the case was seen by a number of men from various parts of the world who have had a large experience in various cases of leprosy. On entrance to the hospital the patient presented upon the arms and legs lesions which were typical of erythema multiformi and which cleared up rapidly. In addition she presented lesions which appeared to be syphilitic. The diagnosis of syphilis was further supported by the fact that there was a definite history of a primary lesion a year before which healed rapidly under injections of mercury. The only symptoms which suggested leprosy were a not very marked thinning of the eyebrows and three or four small indurated nodules on the arms and body. These nodules were excised and found to be crowded with the lepra bacilli. At first there was scarcely any nasal secretion and diligent search for the lepra bacilli always failed. Later on, however, there was greater secretion and the bacilli were found. During the patient's stay in the hospital small nodules developed in the nose. One of these was excised by Dr. Coolidge and, like the nodules in the skin, was found crowded with bacilli.

Dr. Coolidge: In this case the nasal cavities appeared normal except for five yellow spots, each about the size of the head of a pin, four of them on the septum and the fifth on the anterior part of the lower turbinate. They were very superficial except that they appeared to be covered by an unbroken epithelium and they were apparently not elevated. I removed the one on the lower turbinate with punch forceps, which Dr. Richardson reported to be filled with lepra bacilli. In two other cases of leprosy which I have seen, the septum was covered with a dark hard crust. This case probably represents an early condition. If the infection of leprosy takes place through the nose, as is stated, an early diagnosis may possibly be made by searching for these small foci and examining their contents.

Dr. Oscar Richardson: This case which Dr. Towle has just called to your attention is one of decided interest. In the early part of last summer a case which presented clinically and pathologically a typical picture of leprosy was in the skin ward during the service of Dr. White.

Shortly after this, in the latter part of the summer, a piece of tissue, which had been removed from the margin of an ulcer of the leg of a patient who had just been admitted to the skin ward, was received from Dr. White. On microscopical examination, the tissue was reported as showing conditions comparable in all respects with sections of tissue removed from typical cases of leprosy. The report of the microscopical examination of the tissue from this case necessitated an exhaustive study of the pathological conditions, because clinically the case was decidedly not one which would be diagnosed as leprosy. With Dr. White's kind co-operation, portions of tissue from various places were examined and bacteriological investigation and animal experimentation were made. The results of these investigations were as follows:

Sections of tissue from the arms in the region of the epitrochlear glands and from a healed portion of the skin where an ulcer had previously existed and, finally, from the mucous membrane of the nose, all showed on microscopical examination, after hardening and staining, a chronic inflammatory tissue with numerous so-called lepra cells and innumerable acid-fast bacilli scattered through the tissue and present in large numbers in the lepra cells. Aërobic and anaërobic cultures were made on various kinds of media, including media suitable for the tubercle bacillus and neutral 2% glucose agar, in which medium an Italian investigator claims to have been able to obtain a growth of the lepra bacillus. The material planted in the various kinds of media was obtained under aseptic precautions, and the cultures were made by Dr. J. H. Wright. That the tissue used for inoculation of the media actually contained the acid-fast bacilli was demonstrated by hardening and staining sections of portions of the tissue that were used for inoculation purposes. This was also done with the portions of the tissue with which a guinea pig was inoculated. The animal never showed any symptoms after the inoculation and was allowed to live eight weeks and one day when it was killed. The autopsy showed a normal animal, and it was with difficulty that the scar of the inoculation wound could be found. The inoculated material had evidently been absorbed. The various cultures mentioned above were under observation over a long period of time, but no growth was ever obtained. Properly hardened and stained sections were made to demonstrate as to whether the spirocheta pallida was present or not. Much search failed to reveal its presence. The tuberculin test was negative.

The patient improved considerably under specific treatment. Late in the history of the observation of this case acid-fast bacilli were found in the nasal secretion. The earlier examinations, however, were negative. This is unusual, according to the records of many investigators who state that the nose is one of the first places to find the bacilli. The result of our investigation confirms the diagnosis of leprosy, and apparently in quite an early stage.

Dr. Coolidge has called your attention to the slight lesions in the nose and particularly referred to the apparently intact epithelium over the lesion. This is well corroborated by examination of the section of one of these lesions under the microscope where the intact epithelium is well seen extending over the corium which is studded with masses of red bacilli. This underlying condition in the corium sooner or later affects the integrity of the epithelium and, together with the stress of external conditions, causes ulceration. Again, an ulcer may heal and the skin outwardly appear normal, but microscopical examination of a section through the healed area will show numerous bacilli and lepra cells in the corium.

Dr. Lord: Does apparently normal epithelium contain bacilli?

Dr. Richardson: Occasionally in a section the bacilli may be seen resting apparently in epithelial cells, but as a rule the epithelium is free from them. The bacilli that get into the epithelial cells probably reach them either by the lymph stream or are carried to them by the leucocytes.

Dr. H. P. Mosher read a paper on

THE DIRECT EXAMINATION OF THE LARYNX AND OF THE UPPER END OF THE ESOPHAGUS BY THE LATERAL ROUTE.[1]

Dr. A. Coolidge, Jr., reported two cases of

DISEASES OF THE ANTRUM.

In these two cases the prominent symptoms were those of vaso-motor disturbance of the side affected, swelling and pallor of the mucous membrane of the whole of one nasal cavity, abundant watery secretion and paroxysmal exacerbations, with thick, tenacious secretion. The first case, a school-teacher, began to have periodic unilateral obstruction on the left side, over a year ago, an attack lasting several days. Last spring she entered the hospital and a large part of the middle turbinate was removed and some ethmoid cells opened by Dr. Mosher. The symptoms gradually improved until midsummer when they returned again with severity enough to affect her general health. She again entered the hospital in October when I opened the antrum through the canine fossa and found it filled with a thick, tenacious mass which, unfortunately, was not examined. There appeared to be no pus either in the antrum or ethmoid. After a slow convalescence she is now apparently well.

The second case, a man of sixty, began to have similar symptoms on the right side two weeks before I saw him.

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[1] See page 189.

The unilateral obstruction, watery secretion, pallor of the mucous membrane, were well marked, subsiding one day and increasing another. They increased for ten days and then gradually began to subside. During these worst attacks a large amount of tenacious secretion was blown from the nose, generally followed by temporary relief. The interesting point in this case is the examination of this secretion by Dr. J. H. Wright who reports that the mass consisted of fibrin and immense numbers of eosinophilic leucocytes and a few eosinophilic myelocytes, but with no micro-organisms. The blood showed a marked increase of eosinophilic leucocytes. Transillumination and x-ray showed dullness in the right antrum. The patient steadily improved, and in three weeks had no symptoms left. As all attempts at treatment increased the symptoms, I abandoned them. After the symptoms had disappeared an examination of the blood showed a diminution in the eosinophilic leucocytes although they were still above normal.

Dr. J. P. Clark spoke of a similar case which he saw first four years ago. The patient, Miss H. H., thirty years of age, gave a history of frequent colds(?) for years. Vaso-motor symptoms, nasal obstruction and profuse watery discharge were marked during these attacks. Examination disclosed marked deviation and thickening of the septum, obstructing the left nostril, hypertrophy of the turbinates and polypoid tissue in the left middle turbinate region, but no pus. A thickening at the base of the septum was removed and the septum straightened by the Watson operation. Portions of the hypertrophied turbinates were removed, also the polypoid tissue in the left ethmoid region so that, two months after beginning treatment, nasal breathing was excellent. In January, 1905, she came to me with the history of a cold (?) for several weeks. The left nostril was obstructed by swollen edematous mucous membrane. She complained of pain in teeth of left upper jaw. Right nostril was clear. Both antra dark on transillumination. A puncture was made in the left inferior meatus and the left antrum washed with boric acid solution, bringing out in one mass a large lump of jelly-like mucus of a yellowish pink tinge. The antrum was washed three times in the next fortnight, bringing out a smaller clump of thick mucus the first two times and the third time the solution coming out clear. The nostril became clear and the symptoms were entirely relieved. Twice since, in November, 1905, and in June, 1907, she has had a similar attack which was relieved in the same way. I regret that no bacteriological examination of the mass was made.

Dr. Mosher showed a case of

FIBROMA OF THE NASO-PHARYNX.

This young man is about twenty-five years old, a marine in the navy. He came to the Eye and Ear Infirmary with the history of seven or eight very severe attacks of bleeding in the last few years. The examination showed a bluish white tumor half the size of the last phalanx of the thumb. Owing to the fact that he had reached the age when a tumor of this kind naturally begins to disappear I did not tie the external carotid. The tumor was so flat that a snare would not engage about it. I removed it piecemeal after a method which Dr. Coolidge taught me. This method is to pass a stout ring punch straight back through the nose to the vault and to guide it with the tip of the finger, the finger reaching the vault through the mouth. The tumor sprang from the base of the sphenoid and from the right fossa of Rosenmüller. It was very hard, the attachment being almost bony.

Dr. Mosher showed a case of

EMPYEMA OF THE FRONTAL SINUS.

This is also a case which I operated upon last summer at the Eye and Ear Infirmary. The patient came to the hospital with a fistula of two months' standing in the middle of the upper lid of the left eye. He gave a history of sinus symptoms for two years. I did the modified Killian operation leaving an overhang round the opening in the front wall in order to minimize the subsequent falling in of the skin of the forehead. The object of the modified operation is not to obliterate a large sinus like the one in this case, and so have marked deformity, but to make the sinus a cavity which freely connects with the nose. This communication is made as large as possible by removing the floor of the sinus in the usual way. The point of the operation is that the whole of the front wall is not removed. An opening is made in the front wall sufficiently large to allow thorough cleasing of the sinus; but about this, as a rim or overhang, a part of the front wall is left. This overhang acts as a bridge to hold the skin from excessive sinking. This form of operation has been criticised on the ground that it is not possible to keep the opening into the nose patent. I have watched five of my cases sufficiently long to satisfy myself that the opening from the sinus into the nose does remain open. It is important, in order to get as large an opening into the nose as is possible, to remove the internal angular process of the frontal bone up to the level of the rim of the orbit. This is higher than most operators go.

In a small sinus I use the obliterating operation of Killian. In a large sinus the modified operation. If the modified operation fails the obliterating operation can be used as a last resort. So far my percentage of cures with the modified operation has been satisfactory.

I met with one thing in this case which was new to me. The pus in the frontal sinus pulsated. I thought at first that the posterior wall was perforated and that the pulsation was transmitted from the brain. The posterior wall, however, was found to be intact. The only explanation which I have is that the pulsation came from the ethmoidal vessels, as the floor of the sinus and the anterior half of the os planum had been eaten away by the necrosing action of the pus, turning the ethmoidal labyrinth and the frontal sinus into one cavity. The packing in the nose dammed back the ethmoidal circulation, and caused the pulsation of the ethmoidal vessels to be transmitted by the pus. Another explanation is that the pulsation came from the anterior ethmoidal artery which was lying free in the abscess cavity.

Since the operation the patient had had scabs come from the nose as large as the little finger. They are like the scabs which are found in atrophic rhinitis except that they have no odor. Owing to the extensive destruction of mucous membrane in the Killian operation it is but natural that it should take a considerable time for the raw surfaces to become covered again with normal mucous membrane. Until this occurs there is crusting and scabbing.

DEMONSTRATION OF INSTRUMENTS.

Dr. Mosher showed his modification of the safety-pin closer. The modification consists in making the ring movable so that it can be introduced flat until the pin is passed and then brought up to a right angle. Jackson has modified this instrument introducing the same principle.

Also a small bivalve speculum for examining the upper end of the esophagus in children. This instrument is a smaller size of the same instrument for the examination of the upper end of the esophagus which was designed a year ago. The smaller instrument should be of use in removing foreign bodies lodged back of the cricoid cartilage in children.

Also a speculum for the direct examination of the larynx and the upper end of the esophagus in the lateral position. In order to examine the larynx in the lateral position the patient is placed on his back with both shoulders touching the table. The head also rests on the table. The head is turned on the left cheek and the chin is somewhat flexed on the neck. This does away with the strain of holding the head, the continuous strain which comes on the hand and arm of the assistant and the occasional strain which comes on the hand of the operator. The flexed position of the head materially reduces the distance from the teeth to the larynx. The speculum used in the lateral position has no hood so that the whole posterior wall of the pharynx is in view. Very little force is necessary in order to manipulate the speculum.

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Book Reviews.

Elements of Physics. For Medical Students. By Frederic James M. Page, B.Sc. (London), F.I.C., Associate of the Royal College of Mines. Illustrated. Chicago: W. T. Keener & Co. 1907.

This small book of 288 pages, including an index, is designed for a special purpose, namely, as a preparation for certain London examinations. It should, however, have a circulation elsewhere, as stating in succinct form the elementary principles of physics with which students of medicine should certainly be familiar. The book is small in size, excellently printed and amply illustrated.

Cancer of the Womb: its Symptoms, Diagnosis, Prognosis and Treatment. By Frederick John McCann, M.D. (Edin.), F.R.C.S. (Eng.), M.R.C.P. (Lond.), Physician to In-Patients, Samaritan Free Hospital for Women, London; Lecturer on Gynecology, Medical Graduates' College and Polyclinic, London; Honorary President, Section of Obstetrics and Gynecology Fifteenth International Congress, Lisbon, 1906. London: Henry Frowde; Hodder & Stoughton. 1907.

This is a brilliant scarlet volume of 172 pages. It contains many excellent illustrations made from photographs for the most part, and one colored plate. There are twelve chapters, taking up not only cancer of the cervix, cancer of the body, and the etiology, diagnosis and treatment of these affections, but, as well, sarcoma uteri, deciduoma malignum, and a list of cases.

One compares this book at once with the monographs of the Englishman, A. H. N. Lewers, published in 1902, and the American, T. S. Cullen, issued in 1900, with the result that it appears to be sketchy and lacking in new material. Cancer of the cervix is not differentiated sharply from cancer of the body, as is customarily done in writings on the subject. The author's operation of vaginal hysterectomy, which he advocates in preference to the radical abdominal operation for the removal of uterine cancer, shows nothing new and not enough of the points of the established operations to qualify it as a competent description. The chapter on deciduoma malignum is hardly full enough to be satisfactory, too much space being devoted to reports of cases and not enough to the account of the disease. The redeeming feature of the book is the photographs of pathological specimens.

Oxford Medical Publications. Manuals by various authors. London: Henry Frowde, Oxford University Press; Hodder & Stoughton. 1907.

Under the general heading of "Oxford Medical Publications," a series of manuals, eleven of which are in our hands, have been published. The design of these books, as the term "manual" implies, is to give the reader an outline of the essential anatomical and clinical bearings of the various branches of medical science. To this end the books are printed in small octavo volumes, for the most part amply illustrated and bound in flexible covers. The subjects thus far discussed are as follows: The Skin Affections of Childhood, by Dr. H. G. Adamson; Practical Anesthetics, by Mr. H. Edmund G. Boyle; Diseases of the Larynx, by Mr. Harold Barwell; The Treatment of Disease in Children, by Dr. G. A. Sutherland; Heart Disease and Thoracic Aneurysm, by Dr. F. J. Poynton; Diseases of the Nose, by Mr. Ernest B. Waggett; Auscultation and Percussion, by Dr. Samuel J. Gee, a fifth edition; Surgical Emergencies, by Mr. Percy Sargent; Diseases of the Male Generative Organs, by Mr. Edred M. Corner; A Manual of Venereal Diseases, by the following officers of the Royal Army Medical Corps: Sir Alfred Keogh, Lieut.-Col. C. H. Melville, Lieutenant-Colonel Leishman and Major C. E. Pollock; and Diseases of the Ear, by Dr. Henry Tod. Each of these small volumes is a straightforward statement of the main points connected with the various topics discussed. They represent far more than a mere students' compend, and should be particularly valuable to the physician who finds his practice running in some one direction, and whose knowledge of collateral branches continually needs refreshing. There can be little question that it is more difficult to write an acceptable small book than a satisfactory large one. The difficulty of choice is such that only men of wide experience and knowledge are capable of producing a really satisfactory epitome of a medical subject. This series of books represents excellent judgment in this respect. They are for the most part unincumbered with references and elaborate discussions of disputed points. It is to be hoped the series will be still further amplified so that practitioners may have in this brief and satisfactory form and in separate volumes a discussion of the most recent attitude toward the diversified problems which medicine now presents. We cordially recommend the individual volumes as well as the series as a whole.

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REPORT OF THE MASSACHUSETTS STATE BOARD OF HEALTH.

THE public has come to regard the annual publication of the Massachusetts State Board of Health as an authoritative statement regarding the prophylaxis of disease and the maintenance of the public health. For many years past the work of this board has been considered a model of its kind; it is hardly necessary, therefore, to say that this latest report, covering the year ending Nov. 30, 1906, is no exception to this established reputation. The number of facts covered is far too great to permit of detailed reference in the space at our command. It is, however, a satisfaction to draw attention to certain aspects of the report which are of general public interest. Most of these facts, comprising about 650 pages, are contained in a supplement to the general report alone signed by the members of the board.

Under the general report considerable space is given to a detailed discussion of the tuberculosis exhibition which was held under the auspices of the board from Dec. 28, 1905, to Jan. 7, 1906, in Boston. This will be found of interest to those contemplating such exhibitions in the future. Other matters considered in the general report are recommendations concerning pesthouses, the investigation of factories and workshops and of the sanitary conditions of barber shops. The examination and purification of water supplies is discussed, together with the pollution of certain streams. A matter of interest is the condemnation of shellfish taken in Boston Harbor and certain tributary bodies of water. The general report closes with a statistical table of the routine work of the board and of appropriations and expenditures.

By far the larger part of the volume, as already indicated, is taken up with supplementary and special reports. Under the heading, "Water Supply and Sewage," upwards of one hundred pages are devoted to the correspondence in the nature of advice to cities, towns and persons regarding various matters presented to the board for its consideration and for its suggestions. Public water supplies in use during the year 1906 numbered 260. Practically all of these sources of supply have been chemically examined and of many of them a bacterial or microscopic examination has also been made. The results of these examinations are contained in tables which should be of the greatest value, not only for reference, but also as a means of the comparative study of the water in various parts of the state. Many rivers have also been examined with special reference to pollution since 1902, and it has been found that during the year 1906 the streams had not changed materially from preceding conditions. A valuable and very detailed report by H. W. Clark, chemist of the board, on "Experiments upon the Purification of Sewage and Water at the Lawrence Experiment Station," is published. Already much of practical value has come from such experiments, and it is not to be doubted that the problems underlying filtration and economy in sewage purification are rapidly reaching solution. This section is well illustrated by halftones of various filters, both before and after use. The subject of water filtration also received attention during the year, particularly its purification by means of sand. Mr. Stephen DeM. Gage, biologist at the Lawrence Experiment Station, presents a report of interest on "The Significance of the Numbers of Bacteria in Water and Sewage Developing at Different Temperatures." This investigation, among others, determined that the proportion of B. coli in the Merrimac River is greater when the water is warm than when it is cold, and that the effect of heavy rains or melted snow leading to floods produces a diminution both in the number and in the proportion of this bacillus. Such studies as this are manifestly of very great practical significance. Much work has also been done in the department of food and drug inspection, the details of which, with the offending firms, are published. Dr. Charles Harrington, secretary of the board, presents some telling statements and statistics on the "Inspection of Dairies," amplified by an excellent series of photographs illustrating proper and improper conditions. The public is already familiar with this admirable work of Dr. Harrington, which unquestionably has done much to raise the standard of milk in this state and to call to public attention many avoidable conditions in the production of this most essential commodity. A section of the report, also written by Dr. Harrington, on "The Sanitary Condition of Factories, Workshops and Other Establishments," will be read with great interest. We have also, from time to time, commented on this work as it has progressed, but its complete and systematic summary, as found in this report, will be welcome to all students of social conditions. Statistical summaries of disease and mortality throughout the state and an admirable index conclude this always stimulating report. It should, like its predecessors, have a wide circulation beyond those to whom it is officially sent. The facts it contains are of vital interest to all our citizens.

DEMENTIA PARALYTICA AMONG RAILROAD EMPLOYEES.

In this issue of the Journal we publish a very useful and practical investigation by Dr. P. C. Knapp, on the danger to the community from dementia paralytica among employees of railroads. It appears from a reading of this paper that Dr. Knapp finds the danger not an imaginary one, but rather one which should be most seriously taken into account in consideration of the possible and actual causes of accident. Paralytic dementia is not an uncommon disease. It is, therefore, inevitable that among a great number of persons, as, for example, represented by the employees of a railroad corporation, certain cases must inevitably arise. The peculiar insidiousness of the disease is also a matter of much moment. It is evident that a man's responsibility may go long before he shows objective and definite signs of the disease to those with whom he may be associated. For all these reasons it is desirable that those ultimately responsible for the safety of the traveling public should be informed on the possible dangers arising from this source. To this end Dr. Knapp has written his paper, which should have a wide reading and be given most careful consideration.

In view of the importance of the entire question, a committee, composed of Drs. P. C. Knapp, C. G. Dewey and G. A. Waterman, was appointed by the Boston Society of Psychiatry and Neurology to inquire into the possible danger to the community from the employment by railroads and other transportation companies, of men suffering from the early stages of general paresis and other brain diseases. This committee, after making a careful inquiry, reported that in its opinion the employment of such men is a distinct danger to the community. The committee's investigation furthermore showed that at the time of their inquiry, April, 1907, there were no less than nine men suffering from general paresis in the insane hospitals of the Commonwealth who had formerly been in the employ of the railroad companies. A railway accident had been caused by the negligence of one of these men while suffering from the disease. Another man, while suffering from the disease, had run his train ahead of the schedule time. Various cases of paresis seen in the out-patient departments of our hospitals among railway employees show that there have been various instances in which such patients were employed in responsible positions. From these facts it is apparent that suitable and repeated examination by competent specialists of all railway employees in responsible positions at intervals of from six to twelve months would do much to avert the danger. The committee, therefore, recommended that a committee be appointed by the society with full powers to confer with the Railroad Commissioners of the Commonwealth and the heads of the various transportation companies, and to take such other action as they may consider necessary to guard against this danger.

We are in entire accord with these recommendations. It is naturally not only the duty but the privilege of railway corporations to take every available means of averting accidents which of late years, particularly in this country, have become alarmingly frequent and destructive of human life. Such examinations as advised by this committee of the Society of Psychiatry and Neurology would do much to prevent one significant source of danger, and would also tend to restore the sometimes waning confidence of the people in the methods of conducting great railway systems.

PHYSICAL THERAPEUTICS.

We have from time to time commented on the broadening of the therapeutic outlook, particularly with relation to the use of various physical means of treatment. It is probably true of this country more than of others that such rational means of treating the sick have received less attention on the part of prominent men in the profession. Massage, hydrotherapy and the use of electricity have all had devoted students in

Europe among men prominent in medicine. Here in America this has rarely been the case, and we have undoubtedly suffered in consequence. A change is now apparent, however. Everywhere increasing enthusiasm is being shown for physical methods, and it is not to be doubted that before many years have passed this country will rank well with others in its attention to such methods. For some years an institution known as the Medical Baths has been established in this city under the sole direction of physicians, and with no other object than to bring before the profession modern hydrotherapeutic methods. The enterprise, begun with some misgiving and doubt of its success, has amply demonstrated its usefulness, and may now be said, at least provisionally, to stand on a firm basis. This success has unquestionably been very largely due to the careful study of the whole subject made by Dr. J. H. Pratt and by his unselfish efforts in its behalf. It is furthermore gratifying that this hydrotherapeutic establishment has been most favorably noticed by the profession in other cities. For example, Philadelphia is about to establish a similar institute under the directorship of ten leading physicians, several of whom have given large sums of money to further the plan. Evidently the success of any such venture must depend, in the first place, upon the demonstration of its usefulness to the profession at large, and, in the second place, upon the active and cordial co-operation of the leaders of medical progress. Could such unqualified endorsement be obtained, there is small question that, within a relatively short time, useful therapeutic agencies of this and similar sort could be established, controlled by the medical profession, which would undoubtedly tend to raise the standard of such means of treatment, too often heretofore left in the hands of unskilled, if not unprincipled, persons.

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MEDICAL NOTES.

Officers of the American Physiological Society. — At the twentieth annual meeting of the American Physiological Society, recently held at the University of Chicago, Dr. W. H. Howell was elected President, Dr. Reid Hunt, Secretary, and Dr. W. B. Cannon, Treasurer.

Needs of the Johns Hopkins Medical School. — It is stated, according to the report of the Dean of the Johns Hopkins Medical School, that the most urgent present need of the school is enlargement and improvement of the pathological laboratories.

A Possible Visit from Professor Koch. — It is announced that Prof. Robert Koch, of Berlin, is intending to take a year in travel and that among the countries he proposes to visit is the United States. For upwards of a year past, he has been engaged in the study of sleeping sickness in Central Africa.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 5, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 45, scarlatina 60, typhoid fever 11, measles 76, tuberculosis 56, smallpox 0.

The death-rate of the reported deaths for the week ending Feb. 5, 1908, was 21.74.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Feb. 1, 1908, was 247, against 261 the corresponding week of last year, showing a decrease of 14 deaths and making the death-rate for the week 21.14. Of this number 126 were males and 121 were females; 238 were white and 9 colored; 158 were born in the United States, 82 in foreign countries and 7 unknown; 47 were of American parentage, 174 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 48 cases and 3 deaths; scarlatina, 71 cases and 0 deaths; typhoid fever, 7 cases and 1 death; measles, 90 cases and 2 deaths; tuberculosis, 52 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 52, whooping cough 0, heart disease 32, bronchitis 6, and marasmus 3. There were 7 deaths from violent causes. The number of children who died under one year was 39; the number under five years 69. The number of persons who died over sixty years of age was 66. The deaths in public institutions were 67.

There were 3 cases and 2 deaths reported from cerebrospinal meningitis during the week. There were also 12 deaths from "La Grippe" reported during the same period.

A Centenarian. — The death of John Burroughs, of West Stockbridge, Mass., at the reputed age of one hundred and six, is announced. He never used spirituous liquor during his life and was a moderate smoker. As a daily contemporary puts it, "This may be said to rank him with the average citizen."

Massachusetts Medico-Legal Society. — The spring meeting was held in Sprague Hall, Medical Library, Boston, on Wednesday, Feb. 5, 1908. The following papers were read and discussed: "What are the legal responsibilities of the employer in case of 'accidental' death of the employee?" Dr. J. C. Fraser, of East Weymouth. "A report of two cases of poisoning by wood alcohol," Dr. A. H. Pierce, of Leominster. "The murder of Ludwik Kubeak," Dr. Horace K. Foster, of Peabody. "A Polish murder," Dr. C. A. Atwood, of Taunton.

NEW YORK.

A New Charitable Institution. — A new charitable institution, to be known as the Brooklyn Home for Blind, Crippled and Defective Children, was incorporated on Jan. 25 in the New York Supreme Court.

Officers, Medical Society of County of Kings. — At the annual meeting of the Society of the County of Kings, held in Brooklyn on Jan. 21, Dr. Onslow A. Gordon was elected president and Dr. Joshua M. Van Cott, vice-president.

Money for Hospitals. — By the annual German charity ball, which was held at the Waldorf-Astoria on Jan. 23, the sum of $11,000 was raised. This will be divided among six institutions and societies, among which are the German Hospital and Dispensary, St. Francis's Hospital and St. Mark's Hospital.

Literary Executor of Edmund Clarence Stedman. — By the will of Edmund Clarence Stedman, the poet and critic, his cousin, Dr. Thomas L. Stedman, editor of the *Medical Record*, is named as his literary executor, to act in that capacity in association with Mr. Stedman's granddaughter, Laura Woodworth Stedman.

Stony Wold Sanitarium. — The annual meeting of the Stony Wold Sanitarium Corporation, which maintains a sanitarium in the Adirondacks for incipient pulmonary tuberculosis in women and children, was held on Jan. 22. It was reported that a mortgage of $53,178 on the property had been paid, but that there was a deficit of $25,491 for the last year. During the year 200 patients were treated at the sanitarium, and 128 inmates were returned to their homes.

Opening of Red Cross Hospital. — The new Red Cross Hospital was recently opened, through the liberality of Messrs. Wardwell and Hyler, at the corner of Central Park, West, and 100th Street. Among those on the medical board of the hospital are Drs. William H. Thomson and Thomas E. Satterthwaite, associate physicians; Louis K. Neff, attending physician; Herman A. Haubold, attending surgeon; Samuel J. Kopetzky, otologist.

Physical Welfare of School Children. — In the annual report of the New York Association for Improving the Condition of the Poor, just issued, the Committee on Physical Welfare of School Children states that a striking growth of public interest in this subject which is most gratifying has taken place during the past year. It reports, however, that, notwithstanding the comparative neglect which had previously prevailed, a careful examination showed that the condition of the public school children was not worse than formerly. "Physical deterioration, when applied to America's school children," the committee asserts, "is a misnomer. No evidence whatever has been given that the percentage of children suffering from physical defects in 1907 is greater than the percentage in 1857."

Sydenham Hospital Training School for Nurses. — The annual graduation exercises of the Sydenham Hospital Training School for Nurses were held on Jan. 28, when diplomas were presented to seven graduates by Isaac Guggenheim, a generous benefactor of the institution. Mr. Guggenheim not only gave the hospital building, but last year donated $250,000 for its maintenance.

Tuberculosis. — In connection with the annual meeting of the Medical Society of the State of New York a public meeting on tuberculosis was held in Albany on Jan. 27, under the auspices of the State Charities Aid Association and the State Department of Health. The Hon. Joseph H. Choate presided, and addresses were made by Governor Hughes, Lieutenant-Governor Chanler, Prof. William H. Welch, of Johns Hopkins University, and others. A letter was also read by Homer Folks, secretary of the State Charities Aid Association, from President Roosevelt, in which he expressed special interest in the plan of organizing local effort throughout the state for the suppression and prevention of tuberculosis.

Mount Sinai Hospital. — The annual meeting of the managers of the Mount Sinai Hospital was held on Jan. 26. The reports showed that the total income of the hospital in 1907 was $351,837, while the expenses amounted to $383,057. During the year 6,173 patients were admitted (not including the out-patient department), and there were 620 deaths. Four thousand and seventy-eight patients were discharged cured, 1,067 relieved, and 439 unrelieved. Adolph Lewisohn donated $6,000 to the endowment fund, and other gifts during the year amounted to $18,892. At the close of the meeting a bust of the late president of the hospital, Isaac Wallach, was unveiled in the main corridor.

Nassau Hospital not to be Closed. — As the result of a meeting held in New York on Jan. 28, it was announced that sufficient funds had been promised to prevent the closing of the Nassau Hospital. This institution which is located at Mineola, Long Island, the county town of Nassau County, and which has an efficient medical and surgical staff, has been doing excellent work in a neighborhood where there is real need of such an institution. It has ample and admirable buildings, thoroughly equipped with the best modern appliances which have been donated by generous friends, but its endowment is inadequate, and as the usual subscriptions towards its support had fallen off of late, it was feared that the hospital would have to be closed, at least for a time. The plan agreed upon to put it upon a sound financial footing is to ask for the endowment by Long Island residents of fifty beds at $3,000 each, and it is now stated that already ten such endowments have been assured.

Advisory Board on Tuberculosis. — An advisory board on tuberculosis has recently been appointed to aid the State Health Department, and among its ten members are Drs. Thomas Darlington and Alfred Meyer, of New York, E. R. Baldwin, of Buffalo, W. G. MacDonald, of Albany, George W. Goler, of Rochester, N. H. Watson, of Utica, and E. R. Baldwin, of Saranac Lake. The State Commissioner of Health, after consultation with this board, has determined upon a program of immediate work which includes (1) the elaboration of the state's tuberculosis exhibit; (2) the preparation of a state exhibit for the International Congress on Tuberculosis at Washington in September; (3) district investigation throughout the state, with the distribution of literature on the care and prevention of the disease; (4) the securing, if possible, the compulsory registration and notification of all cases of tuberculosis in the state. A bill providing for such registration and notification is to be at once introduced in the legislature.

Bequest to American Museum of Natural History. — By the will of the late Morris K. Jesup, one of the most public spirited citizens of New York, the sum of one million dollars is bequeathed to the American Museum of Natural History, without doubt the most considerable benefaction as yet made to an institution of this kind. He states that since 1882, when he became president of the Museum, he has devoted a great part of his life, his thoughts, and his attention to its interests, and it is estimated that his gifts to it during his life aggregated fully another million dollars. Largely owing to his generosity, its specimens and exhibits are now sufficient in mere number to give it a foremost place among the world's museums of natural history, while in respect to the scientific knowledge and the artistic and practical skill with which they are displayed, it stands, it is believed, quite without a rival. The following tribute to Mr. Jesup's memory was made by Dr. H. C. Bumpus, the curator of the museum, in speaking of his intelligent labor and munificence: "When we remember that through his agency the American Museum has become the leading scientific institute of the world, he must be considered as one who stands alone in the educational development of the city." A prominent feature of the educational work of the Museum is the numerous courses of lectures, free to the public, which are given throughout a great part of the year.

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Current Literature.

Medical Record.
Jan. 4, 1908.

1. *Berg, H. W. *Poliomyelitis Anterior as an Epidemic Disease.*
2. Boldman, C. *Bacterial Vaccines and Curative Sera.*
3. Pryor, J. H. *Early Diagnosis and Treatment of Pulmonary Tuberculosis.*
4. Michailovsky, B. *Some Points in Medical Education Considered from the Standpoint of the Student.*
5. Allen, A. R. *The Term "Stauungs Hyperemie."*

1. From a study of the group of cases of anterio-poliomyelitis occurring in New York in the year 1907, of which the author saw twenty-five, the conclusion is drawn that epidemic poliomyelitis is a distinct disease, and should not be classified with the sporadic poliomyelitis. The author gives the following reasons for this conclusion: (1) The clinical symptoms and course are different, for in the epidemic form we find higher and more protracted fever, more marked meningeal symptoms, with at times symptoms of bulbar involvement, and more diffuse paralyses, which may clear up entirely in the milder cases; and in the more severe death may occur after illness of only a few days. (2) The epidemic form occurs only in the summer months, and especially in years of great drought. (3) The morbidity of the epidemic form varies much more as to age of person affected. And (4) there is evidence of its

infectious nature. Finally, (5) the pathological findings are very different, the diffuseness of the lesions of the epidemic form entitling it to the name of epidemic meningo-myelo-encephalitis, while the sporadic cases show only classical lesions. [The author cannot be considered to have proved his point. W. B. R.]

New York Medical Journal.

Jan. 4, 1908.

1. Piffard, H. G. *A Study of Sour Milks.*
2. *White, W. C., and Proescher, F. *On the Presence of Spirocheta in Pseudoleucemia, Acute Lymphatic Leucemia, and Lymphosarcoma.*
3. Erdman, J. F. *Surgical Technic in Diseases of the Gall Bladder and Biliary Passages.*
4. Ware, M. W. *The Diagnosis of Unilateral Tuberculous Nephrocystitis, with a Report of Six Operative Cases.*
5. Gordon, A. *Pathogenesis of Stump Hallucination.*
6. Walker, J. M. *Potassium Iodide in Mental Diseases.*
7. Veasey, C. A. *Glaucoma in the Young.*
8. Merrill, G. V. R. *Typhoid Fever and Tetanus.*

2. Essentially the same article appeared in the *Journal of the American Medicol Association*, Dec. 14, 1907, and was abstracted under that date.

The Journal of the American Medical Association.

Jan. 4, 1908.

1. Welch, W. H. *Medicine and the University.*
2. Schamberg, M. I. *Dentistry as a True Specialty of Medicine.*
3. Register, H. C. *The Inter-Relationships of Medicine and Dentistry.*
4. McManus, J. *Dental Education and the Public.*
5. *Coggeshall, F., and MacCoy, W. E. *Headache as a Symptom of Local Disorders.*
6. *Mewborn, A. D. *Trichopathophobia.*
7. Hill, I. L. *The Frequency, Mortality and Treatment of Placenta Previa.*
8. *Williams, W. W. *The Effects of Hydrastis and Its Alkaloids on Blood Pressure.*
9. Hatcher, R. A. *The United States Pharmacopeia.*
10. Fridenberg, P. *Evacuation and Deflection of the Tympanic Cavity as Aids to Drainage in Acute Middle-Ear Suppuration.*

5. From a study of 1,700 cases of headache, the writers come to the following conclusions: (1) That a neuropathic diathesis is an essential condition of the occurrence of almost all chronic headaches. (2) That the great majority of cases have, in addition to a neuropathic diathesis, some source of local irritation to the nervous system, which often manifests itself in no other subjective symptom. (3) That a minority of the cases are suffering from anemia, or a toxemic condition, which, as before, occurs in a person of neuropathic diathesis and may manifest itself in no other subjective symptom of importance. (4) That in some cases a local irritation of the nervous system is reinforced by a toxemia. The classical type of migraine is regarded as a headache, due to the presence of a local irritation practically invariably eyestrain, in an individual of markedly neuropathic diathesis, in which the immediate occurrence of the attacks may be due to the special irritability of the nervous system, caused by transient, but frequently recurring, conditions of toxemia, which in a less neurotic individual, or one who was not constantly subjected to the nervous wear and tear of eyestrain, would be incapable of producing any such effects. They have found relief of migraine in most cases by extremely painstaking correction of eyestrain. In the drug treatment of headaches, they speak enthusiastically of the systematic use of quinine sulphate, 2 gr., combined with nitrate of aconitin, 1-400 of a grain, every two hours, and of cannabis indica in ⅛ to ¼ gr. doses of Hering's extract, three times a day. Of the coal tar analgesics they prefer antipyrin guarded with caffein.

6. Trichopathophobia is defined as fear of disease of the hair, and includes cases of mental worry in regard to the hair, such as worry over loss of hair, or change in color, or excessive growth, etc. It very often has no actual foundation, but is entirely a neuropathic condition. The treatment is directed entirely towards the nervous condition.

8. In contradiction to the clinical opinion concerning hydrastis, Williams found that hydrastis experimentally given to dogs, either by mouth or hypodermically, causes no change in the blood pressure, heart-rate or respiration. [R. I. L.]

The Lancet.

Jan. 11, 1908.

1. *Box, C. R. *Lecture on Certain Bacterial Infections of the Urinary Tract in Childhood.*
2. Brand, A. T. *Remarks on the Infectivity of Cancer.*
3. *MacLean, H. *Anomalous Reactions Obtained in Testing Urine for Sugar with Fehling's Solution.*
4. Ransome, A. *Ferments and Their Mode of Action.*
5. Warrington, W. B., and Monsarrat, K. W. *A Case of Paraplegia Due to an Intramedullary Lesion and Treated with Some Success by the Removal of a Local Accumulation of Fluid.*
6. Nias, J. B. *Further Observations on Salts of the Alkaline Earths which Affect the Coagulability of the Blood.*
7. Sorabji, Alice M. *A Case of Echinococcus Disease.*
8. Maude, A. *Sudden and Complete Inversion of the Uterus; Its Probable Causation.*
9. Fox, R. H. *Blood Coagulability in the Puerperal State.*

1. Box writes on descending and ascending infections of the urinary tract in childhood. In descending infections, even in cases of typhoid fever, scarlet fever, measles and diphtheria, the infecting organism has been found to be the bacillus coli communis. A descending infection he defines as one carried to the kidney by the blood stream, and it is often termed hematogenous for this reason. He believes that infections of the urinary tract in childhood are due to an ascending infection much more often than is generally supposed. The actual track of an ascending urinary infection has been much discussed, and no definite conclusion arrived at. The lymphatic connection between the bladder and the kidney appears to be neither free nor direct; experimental injection is difficult and uncertain. He believes the ureter is rightly looked upon as the highway of infection. Here again the colon bacillus is the organism most often found. He discusses the clinical manifestations, prognosis and treatment of pyelitis and cystitis, and describes some cases in which the anti-bacillus-coli serum was tried with variable results.

3. MacLean gives a somewhat detailed article on anomalous reactions obtained in testing urine for sugar with Fehling's solution, which is largely in answer to criticisms of his ideas by Pavy. The writer believes that creatinin is responsible for the anomalous reaction in a great majority of cases, and presents his reasons for this belief. [J. B. H.]

The Practitioner.

January, 1908.

1. Mott, F. W. *The Diagnosis of General Paralysis.*
2. *MacLeod, J. M. H. *Lupus Erythematosus; Observations on its Etiology and Treatment.*
3. Jenkins, G. J. *Anatomy of the Urethra.*
4. Edmunds, A. *Causes and Varieties of Urethral Stricture.*
5. Lett, H. *Treatment of Stricture by Bougie.*
6. Pardoe, J. *Treatment of Acute Gonorrhea.*
7. Gibbs, C. *Gleet: Some Points in its Diagnosis and Treatment.*
8. *Ker, C. B. *Review of Recent Work on Epidemic Cerebro-Spinal Meningitis.*
9. Brock, J. H. E. *The Arrest of Hemorrhage after Labor.*
10. Tubby, A. H. *Orthopedic Surgery.*
11. Yearsley, M. *Subacute and Chronic Middle Ear Deafness.*
12. Mayou, S. *Ophthalmia Neonatorum.*
13. Rose, F. A. *Membranous Rhinitis.*

2. MacLeod in an article on lupus erythematosus describes the history of this somewhat rare condition, the work which has been done on it up to the present time, and the views which are held as to its etiology. He gives the arguments in favor of its being a tuberculous infection, but he believes that this evidence is at present far from complete, and that it is equally convincing to argue that

its connection with tuberculosis is a purely casual one· Some writers have stated that this disease is not a specific condition, but one which is brought about by a number of causes in a predisposed individual. The writer believes that there is a definite connection between lupus erythematosus and defective circulation, and that the disease is allied to other circulatory disorders, such as chilblains and Raynaud's disease. The condition is certainly connected with erythema multiforme. Treatment is constitutional and local. The latter is most important, and consists in protecting the skin from such harmful influences as cold, exposure to wind, etc. In treatment with light and rays of various kinds, the Finsen lamp has proved to be by far the most effective, and occasionally gives encouraging results.

8. Ker gives a careful *résumé* of the work which has been done on serum treatment of epidemic cerebrospinal meningitis, especially that of Wassermann, Weichselbaum and Flexner. He presents no original work. [J. B. H.]

THE EDINBURGH MEDICAL JOURNAL.
JANUARY, 1908.

1. JAMIESON, W. A. *Clinical Observations on Some of the Rarer Varieties of Vesicular and Bullous Affections of the Skin.*
2. GIBSON, G. A. *Some Lessons from the Study of Arterial Pressure.*
3. FOWLER, J. S. *The "Energy Quotient" in Infant Feeding.*
4. WATSON, C. *Chronic Arthritis; A Critical Résumé of Recent Views on the Pathology of Rheumatoid Arthritis, Osteo-Arthritis, Rheumatic Gout, Arthritis Deformans, Etc.*
5. DOUGLAS, C. E. *A Ten Years' Study of Cupar Water Supply (Clatto Waterworks), with Special Reference to the Germ-Content Thereof.*
6. BARCROFT, D. M. *Some Clinical Accessories.*

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. NO 48.
NOV. 28, 1907.

1. *GOLDSCHEIDER. *The Treatment of Apoplectic Attacks.*
2. *WASSERMANN, A. *A Review of Recent Work in Immunization.* (Concluded.)
3. *FRANKE, E. *The Ophthalmo-Reaction in Tuberculosis.*
4. EPPENSTEIN, H. *Acute Leukemia and Streptococcus Septicemia.*
5. LANG, H. *The Treatment of Strictures of the Urethra by Fibrolysin.*
6. *COHN, M. *Calcium, Phosphorus and Nitrogen in the Infant Brain.*
7. STREITZ. *A Case of Pneumococcus Peritonitis.*
8. *HARBITZ, F., AND SCHEEL, O. *Acute Poliomyelitis and Kindred Conditions.*
9. ENSLIN. *The Inheritance of Congenital Cataract.*
10. BARTH, E. *The Differential Diagnosis between Organic and Functional Aphonia.*
11. MENDELSOHN, G. *Two Cases of Poisoning with Nutmeg.*

1. Goldscheider insists on absolute quiet in cases of apoplexy. The patient must not make a movement or speak. His clothes should be cut off, and he should be placed in a cool room as near as possible to the place of seizure, with his head and chest slightly raised. Place an ice bag to the affected side of the head if there is any facial congestion. Nothing can be done if vomiting occurs, except to wipe out the mouth and keep the head and tongue forward. Mustard pastes, etc., are useless. Venesection is indicated where the diagnosis is certain and the full bounding pulse persists while the coma continues or grows worse. It is more effective when done early. He withdraws 200 to 300 ccm. of blood from the arm on the unparalyzed side. A small, weak, rapid pulse with pallor contra-indicates it. Collapse, convulsions, insomnia and headache are treated symptomatically, often with opiates. If there is complete unconsciousness, give nothing by mouth; if the blood pressure drops from inanition, so much the better. Feed with the stomach tube only when paralysis of the muscles of swallowing persists with complete consciousness. If coma continues, feed by the rectum. Straining at stool is dangerous, but cautiously given enemas may be useful. The after-effects, contractures, etc., must be treated according to the situation and severity. If the hemiplegia develops gradually, as in arteriosclerotics, start the iodide at once; but if patients are unaccustomed to the drug, it is better to wait at least a week after the seizure.

2. Wassermann sums up the progress of work on immunity in the last few years, mentioning as among the results obtained the prophylactic inoculations against typhoid fever, the plague and cholera, the serum diagnosis of syphilis, the cutaneous and ocular reactions of tuberculosis, opsonins, and the use of antidysentery and antimeningococcus curative sera. These have all proved of practical worth.

3. Franke gives the results of his tests with the ophthalmo-reaction in tuberculosis, and his experiences support those of others in that this test offers to the general practitioner a simple, accurate and certain aid to diagnosis, which is absolutely harmless to the patient.

6. Cohn concludes from his investigations that the increase in substance of the infant's brain during the first years of life consists of non-nitrogenous material. The total phosphorus diminishes slightly, while the organic phosphorus relatively increases. The calcium also decreases in amount. His analysis of the brains of two nursing infants, dying of tetany, did not sustain the conclusion that tetany in infants is due to anomalies in the calcium metabolism.

8. Harbitz and Scheel sum up their article with the conclusion that poliomyelitis is due to a specific virus. The organism producing this is present in the meninges, in the cerebrospinal fluid and probably in the brain substance itself. When the process is localized, we have no longer the picture of acute poliomyelitis, but incomplete forms, bulbar paralysis, meningo-encephalitis, etc. The transition into polyneuritis or epidemic cerebrospinal meningitis has never been observed.

[L. G. M.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. NO. 48.
NOV. 26, 1907.

1. ZWEIFEL. *The Treatment and Dangers of Placenta Previa.*
2. *RIEDEL. *Appendicitis in Children.*
3. FREUND, W. A. *Further Remarks on the Operative Treatment of Lung Tuberculosis and Emphysema.*
4. STIEDA, A. *The Surgical Treatment of Certain Cases of Emphysema of the Lungs.*
5. LEWIN, L. *Acute Fatal Poisoning by Benzol Vapor.*
6. HOFMEIER, M. *The Use of Zinc Chloride in Endometritis.*
7. REINKE, F. *Successful Transplantations of Tumors of the Lens in Salamanders.*
8. STEUDEL, H. *Review of Progress in the Chemical Physiology of the Nucleus.*
9. *GÖRNER, J. *Stumpf's Clay Treatment and Its Use in Meteorism and Diarrhea.*
10. STEIN, K. *The Treatment of Bubo and Epididymitis by Hyperemia.*
11. HAUN. *Narcosis with Warmed Chloroform.*
12. HAUN. *On Pubiotomy.*
13. PRAUSWITZ. *A New Sterilizer.*
14. MÜLLER, F. *Notes on American Travel.* (Continued article.)

2. Riedel reviews the results of operations on 1,222 adults and 310 children for appendicitis, with a mortality of 6.7% for adults and 16.4% for children. The reasons for the surprisingly large mortality in children are the carelessness of parents in noting symptoms of a serious nature in children, the difficulty of an accurate diagnosis and the greater severity of the disease in children. Small children are extraordinarily sensitive to infections of the appendix. There seems to be a more general knowledge of appendicitis among parents now than formerly.

9. Görner has tried the "clay broth" recommended by Stumpf in a large number of cases of acute enteritis and gastritis of fermentative origin with great success, vomiting and diarrhea usually ceasing after the first dose (100 gm. fuller's earth suspended in 200 ccm. water). After the second dose the cure was completed. In chronic diarrheas, as in tuberculosis of the bowel, cancer, etc., the

diarrhea and meteorism were easily controlled, though no action on the underlying process was to be expected. In the meteorism of typhoid it has also been beneficial. The author has several theories to explain the action of the drug, but none seems adequate.

[R. D.]

No. 49. Dec. 3, 1907.

1. *Schmidt, A. *Experience with Artificial Pneumothorax in Tuberculosis, Bronchiectasis and Aspiration Pneumonia.*
2. Forster, J. *The Minimal Amount of Albumin Needed by the Individual.*
3. Friedemann, U. *Passive Increased Susceptibility.*
4. Doll. *Apoplexy of the Kidney Capsule.*
5. Többin, M. *Treatment of Epidemic Cerebrospinal Meningitis.*
6. Herrenknecht. *Three Thousand Ethyl Chlorid Narcoses.*
7. v. Herff, O. *Childbed Fever.*
8. Günther. *The Appendix as Sole Contents of Hernial Sacs.*
9. Thorey, M. *Foreign Body in the Upper Jaw as a Cause of Chronic Inflammation of the Eye.*
10. Mühlenkamp. *An Interesting Case of Foreign Body in the Nose.*
11. Gunsett, A. *A New Apparatus for Vibratory Massage of the Prostate.*
12. Müller, F. *Remarks on American Travel.* (Concluded.)

1. Schmidt has tried the compression of cavities in the lung due to tuberculosis or other infection by means of artificial pneumothorax, as recommended by Forlanini, Brauer, Lexer and Murphy. In tuberculosis, Schmidt's success was only limited. He believes that in certain cases, if followed for years and with care, a real benefit may be expected. In bronchiectasis, even less success was attained. In three cases of pneumonia and bronchitis due to aspiration, recovery took place in all. Schmidt has injected air, oil or oxygen gas into the pleural cavity, each with success. The main object is to compress the diseased lung. No collapse symptoms have been noted. No pain is to be expected from this procedure unless there are pleural adhesions, when much pain will naturally ensue, which is to be controlled with morphine Whatever means of compression is used must, of course, be administered under the strictest aseptic technic. Schmidt feels that this procedure promises well for the aspiration diseases of the lung, but that in tuberculosis if is too soon to speak definitely. In any event this method will be restricted to a limited group of cases.

[R. D.]

Berliner Klinische Wochenschrift. No. 49.

Dec. 9, 1907.

1. *Westphal, A. *Hysterical Pseudotetany with Peculiar Vasomotor Disturbances.*
2. *Weil, E., and Braun, H. *The Antibody in Lues, Tabes and General Paresis.*
3. Mosse, M. *Chronic Myeloid Leukemia.*
4. Buschke, A., and Mulzer, P. *Further Observations on Skin Pigmentation Resulting from Light Treatment.*
5. Chajes, B. *"Traumatic Epithelial Cysts."*
6. Rheindorf. *Dysentery Caused by Ciliates.*
7. Warschauer, E. *Thyroid Disease Following Iodine Intoxication.*
8. Sklarek, B. *The Etiology of Mercurial Stomatitis and Its Treatment with Formamint.*
9. *Hymans, H. M., and Daniels, L. P. *The Treatment of Tuberculosis with Marmorek's Serum.*
10. Marx, H. *The Ability of the Individual to Undergo Imprisonment.*

1. Westphal reports two cases, the first a woman forty-three years old, an epileptic, with frequent cramps in the arms and legs. The patient had also attacks of very marked circumscribed cyanosis and arterial anemia in the legs and feet, associated with absence of pulse in the dorsalis pedis artery. In the second case, an hysterical woman of forty-four, tonic spasms appeared periodically in the upper extremities and in the muscles of the jaws. These attacks were always accompanied by coldness and cyanosis of the fingers.

2. Weil and Braun believe that the Wassermann-Bruck reaction in syphilis, tabes and general paralysis is not specific as regards antibodies and antigens. They claim that the antibodies which are recognizable by this method represent "auto-antibodies" formed against certain cell products. The recognition of antibodies in the cerebrospinal fluid of tabes or general paralysis does not prove, either directly or indirectly, a connection with syphilis, because the proof that these bodies originate in the central nervous system is not complete. It is much more probable that they originate in the blood stream. The authors consider the fact that these "auto-antibodies" appear in the body fluids in these diseases as a proof that a degeneration of cells and a tissue resorption is present. Whether these substances are of diagnostic importance or not remains to be seen.

9. Hymans and Daniels had poor results in using Marmorek's serum subcutaneously, but in twenty-one cases of phthisis and tuberculosis of bones and joints in which the serum was administered by the rectum, their success was excellent. Cases of severe phthisis were much benefited, while in "surgical tuberculosis," in nearly all cases, the serum caused complete healing. They consider the serum a specific for this class of cases. The earlier it is used, the better the results. Five cubic centimeters were injected daily into the rectum.

[R. D.]

Revue de Chirurgie.

January, 1908.

1. Lecène, P. *Adenomata and Cysts of the Parotid.*
2. *Jonnesco, T., and Grossman, J. *Contribution to the Study of Plastic Linitis.*
3. *Cranwell, D. J. *Diagnosis and Treatment of Diaphragmatic Hernia (Chronic Form).*
4. *Ambiel and Regnault. *Note on Intrasaccular Omental Tumors.*
5. Mathieu, P. *Non-neoplastic Constrictions of the Main Biliary Passages.* (To be continued.)

2. Plastic linitis is a disease so rare as to be little more than a curiosity. First described by Andral in 1840 as a sclerosis of the cellular submucous tissue of the stomach, it was given its present name by Brinton in 1870. There have been different theories as to its pathology, some believing it neoplastic, others chronic inflammatory. Jonnesco and Grossman report a case with the autopsy findings, characterized chiefly by dense connective-tissue thickening of the submucosa, upon which they base their opinion that it is an inflammatory process primary in the submucosa, but tending to spread with production of perigastritis and adhesions. Treatment is always surgical.

3. Chronic diaphragmatic hernia is extremely rare, and Cranwell's case apparently only the second of traumatic origin to be reported as correctly diagnosed and cured by operation. The symptoms are those of pain and discomfort from visceral displacement, as in other herniæ, and of embarrassment of the thoracic organs from pressure. The physical signs vary with the size, position and contents of the hernia, but in general are such as would rationally represent the mechanical conditions. X-ray and inflation of the stomach and colon may be valuable aids in doubtful cases. The chief complications are adhesions and strangulation. The treatment is, therefore, surgical, and radical cure the elective operation. Thoracotomy is generally preferable to laparotomy since it favors replacement of the viscera and suture of the diaphragm.

4. Tumors of the omentum contained within a hernial sac are very rare. They may be tuberculous, cystic, angiomatous, sarcomatous, or fibrous; exact diagnosis is not always possible before operation. The writers report three cases from their own recent experience.

[R. M. G.]

Deutsche Zeitschrift für Chirurgie.

Band 90. Heft 1–3.

1. *Wieting. *The Value and Dangers of Ligation of the Carotid before Unilateral or Bilateral Resection of the Upper Jaw.*

2. Exner, A. *Basal Hernia of the Cerebrum.*
3. *Wolkowitsch, N. *Laryngeal Cancer and Its Operative Treatment.*
4. Frangenheim, P. *Cysts Occurring in Calluses.*
5. Hosch, H. *Primary Sarcoma of the Stomach with Cystic Metastases in the Liver.*
6. Kirchner, A. *Marked Toe-Drop after Unreduced Dislocation of the Astragalus.*
7. Knoke. *The Treatment of Supracondylar Fractures of the Humerus.*
8. Marek. *The Results of Closure of the Mesenteric Arteries.*
9. *Ito, H., and Soyesima, Y. *The Treatment of Facial Paralysis by Nerve Grafting.*
10. *Füster, O. *Novocain in Lumbar Anesthesia.*
11. Graf, P. *Rupture of the Popliteal Vessels.*
12. *Tomita, C. *Bone Transplantation for Extensive Defects in the Long Bones.*
13. Stumme, E. *Exophthalmic Goiter with Tuberculosis of a Parathyroid Gland.*
14. Brunner, F. *Descent of the Right Ureter into the Scrotum Simulating an Inguino-Scrotal Hernia.*

1. Wieting considers ligation of the common carotid artery as a means of controlling the blood supply in an operation for removal of the upper jaw, to be wholly unjustifiable. Temporary closure of this vessel is not nearly so dangerous and is often employed with success. One should take care that the constriction be not removed too suddenly, because this may cause rupture of the wall of a cerebral vessel if it happens to be atheromatous. Temporary closure, however, does carry with it some risk of thrombosis at the site of constriction, so that even this measure is to be avoided if ligation of the external vessel will suffice. In 28 extensive resections of the upper jaw, the writer found it necessary to tie the external carotid but 10 times. In order to avoid retrograde thrombus formation the ligature should be placed as far from the bifurcation of the carotid as possible, and should not be tied with all one's might, but only tight enough to control the hemorrhage. The three main points to be observed in ligature of the external carotid are the following: (1) Point of ligation between the origins of the superior thyroid and lingual arteries. (2) To do as little trauma as possible to the vessel wall. (3) Prevention of secondary hemorrhage by firm wound packing.

3. Wolkowitsch reports 24 cases of cancer of the larynx submitted by him to operation. Three patients died immediately following the operation, one of these deaths being due to sepsis. Seven died soon after operation, of tuberculosis or other chance disease. Five cases showed recurrence, one of them as late as over two years after operation. The fate of one patient is unknown. The remaining 8 cases are free from recurrence at the following periods: over eight years, 1 case; after four, 3; after two years, 1 case each; one and a quarter years and one year, each a case; and seven months after operation, 2 patients. Nineteen of the cases were men, and 5 were women. In more than two thirds of the cases the aditus laryngis was involved, and in 4 instances the process originated in the epiglottis. It was possible to demonstrate involved lymph glands in only 8 of the cases, in 6 of which the aditus was cancerous, while in 2 the process was located below the vocal cords. In one of these latter the carotid chain was not affected, while the supraclavicular glands were. Operative success depends on three factors: radical removal of the growth; avoidance of infection in the wound; and careful feeding after operation. Gland-bearing areas should always be most carefully removed, even if a piece of the jugular vein, to which the glands are often adherent, has to be excised also. Preservation of a portion of the larynx is of so little advantage if the patient must wear a tracheal canula afterwards, that the complete excision of the larynx is usually to be advised. A preliminary tracheotomy is not done except in instances where the growth impedes the breathing. By suturing the upper end of the tracheal stump into the wound, later infection from the mouth is avoided. This is also still better avoided by suturing in their longitudinal axis the edges of the mucous membrane above the former situation of the larynx and in front of the esophagus. Feeding is accomplished by means of an esophageal tube, put in at the time of operation and allowed to remain constantly in place until practically no food comes through the wound on swallowing with the tube removed. Following the above-mentioned method of suturing the trachea into the lower angle of the wound, the patients are able to make themselves heard quite well in some instances by a harsh whisper.

9. The writers report six cases of facial paralysis treated successfully by nerve grafting. All the cases were of the so-called "rheumatic" type. In two instances the facial nerve was united with the spinal accessory, while in the remainder the hypoglossal nerve was used. Union was accomplished by suturing the proximal flap of the hypoglossal into the split facial nerve. The reasons for preferring the hypoglossal to the facial are the following: Atrophy, paresis, or simultaneous movements of the muscles of the shoulder are avoided; union between the facial and hypoglossal is more easily performed than between it and the spinal accessory. Further, the cortical center for movements of the tongue lies nearer the psycho-motor center for the face than does the spinal accessory center, and those fibers of the facial which innervate the muscles which close the mouth often take their origin in the hypoglossal nucleus. Finally, a unilateral paralysis of the tongue is of no detriment to the patient. Electricity, massage, and exercises before the mirror constituted the after-treatment.

10. Füster advocates the use of novocain in the form of tablets, in preference to tropacocain. A dose of 0.1 gm. (1½ gr.) acts more powerfully, is less poisonous, and has fewer by-effects than a like dose of tropacocain. The writer even goes so far as to say that, given a careful selection of the cases with regard to the contra-indications (below fifteen years of age, purulent processes, and severe general cachexia), the use of novocain is of no danger to life.

12. Tomita makes the following points in regard to bone transplantation: the periosteum and medulla of the transplanted piece of bone must be carefully preserved. The piece must be large enough to fit nicely into place. Scar tissue must be completely excised, by sharp dissection, in order to leave a fresh surface. Hemorrhage must be completely stopped and the skin closed without drainage, or with only a bit of gauze in the angle of the wound. As regards the implanted bone, a large piece from the same individual will retain its vitality until it has become consolidated with the fragments. Animal bone, or even periosteum, shows no tendency to growth, nor does it aid much the formation of callus at the ends of the fragments. The periosteum on a piece of bone from the same individual unites very early with the surrounding soft parts. A fresh piece of bone, whether it be taken from the same person or from an animal, heals in without complications. Even when the wound has become infected, a piece of bone from the same individual will heal in after the occasional sequestration of necrotic portions. Transplanted animal bone must eventually die and become absorbed, for foreign bone cells are not capable of further growth as such. But living animal bone heals in better in the human body than the dead substance, giving the bones a firm support which is gradually replaced by human bone through callus formation.

[W. C. Q.]

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Miscellany.

MEDICAL SERVICE OF THE UNITED STATES ARMY.

In his lecture at the New York Academy of Medicine, on Jan. 30, Dr. Louis L. Seaman expressed the opinion that the present condition of the medical service of the United States Army amounted to a national disgrace, and stated that the bill now before Congress which seeks to remedy the evils and mistakes of the medical department is hopelessly deficient in many essential points. If the Surgeon-General would give the county the real facts of the case, he did not believe that Congress would dare refuse the legislation that was required. In the army of the United States in 1898, 2,649 picked soldiers died in three months without leaving the country, in the pest camps of their own native land. This enormous sacrifice of life in consequence of disease was totally unnecessary, as was abundantly proved by the records of the Russo-Japanese war, and the results achieved in its campaigns were accomplished through the simple fact that medical and sanitary officers were present in sufficient numbers and with sufficient authority to successfully enforce proper hygienic measures. The medical department of our army, he went on to say, although it had, with its archaic system, been unequal to cope with the exigencies of the Spanish war campaigns, was to-day, as was admitted by the Surgeon-General, 60% worse off in numbers than at the close of that war or of the Civil War. The theory upon which it was founded, that the cure of disease, rather than its prevention, is its objective, still remained in vogue.

Correspondence.

LETTER FROM PARIS.

[*From our Special Correspondent.*]

Miscellany from the French Medical World.

Paris, Jan. 21, 1908.

Mr. Editor: This will have to be a sort of *olla podrida* letter. Several subjects of interest present themselves; but unfortunately their respective orbits do not touch at any point.

1. You may recall that in a comparatively recent letter I referred to Prof. Stéphans Leduc, of Nantes, and to his experiments in the domain of electric sleep.

Well, it seems that Leduc's discoveries have (*mirabile dictu!*) attracted the attention of the authorities, and — to my confusion, be it said — for most sensible and practical applications; for it has always seemed to me that the powers-that-be are unwarrantably slow in accepting new ideas. But what can one say in face of such instances as the two following, and when one learns that the War Department has just ordered a room to be set aside and fitted up in every barracks, to which soldiers can go on returning to quarters late at night after moving in social circles, and make such applications of Metchnikoff's calomel paste, and of permanganate of potash solution, as the nature of their evening's diversions may lead them to think prudent, before retiring to rest!

Struck with Leduc's claim that by pushing his state of electric sleep, induced by the intermittent current of low tension, beyond the safe point, he can electrocute his subjects in a perfectly decent, painless and unconscious manner, without the slightest phase of struggling or burning, it is now proposed — pending the dethronement of the neat and business-like guillotine — to apply the method (1) to doing away with the countless vagrant dogs that, alas! accumulate at the public pound and have to be destroyed in some manner; (2) to the slaughter of the animals brought each day to the city abattoirs for public consumption.

It is anticipated that his method will be more expensive than the customary process; but still that is not to stand in the way, provided that electrocution proves not to affect the quality of the meat in any manner.

It is impossible to approve too highly of both of these innovations. Coming as they do from the bureaucracy, one is almost stunned by the promptness and enlightenment of these great strides forward. When one has read of the atrocities of the Chicago packing houses, where animals are strung up by the leg, slashed across the throat, and thrown into vats of boiling water, in less time than it has taken me to write the words; when one knows what goes on in the usual routine of abattoir work, and when one realizes that hundreds of dogs are sunk each day for a few moments into an atmosphere of carbonic acid gas, and then thrown pell-mell into carts to be carried off and buried, some of them still moving and gasping, — it is with a sigh of positive relief that one learns of a respectable, clean, painless and unconscious method of inducing death.

It is evident that, for one reason or another, mankind will always be under the necessity of putting certain animals to death. When it *has* to be done, then, let it be done with all the humanity possible. But what shall we say, on the other hand, on the subject of the *un*necessary killing of animals?

The older I grow, the greater becomes my awe of the mystery of life, and the stronger my disinclination to deprive any creature, however insignificant, of this possession. It is to me unfathomable that men, otherwise seemingly possessed of decent feelings, can *for pleasure* hunt or kill innocuous animals. And it is particularly surprising when such primitive and cruel instincts appear in a person high in authority, who not only in his deeds and writings sets the example of this killing for the mere pleasure of killing, but holds up to ridicule a writer of a book, who, whether all he says be strict veracity, or whether by his kind nature he may have been led to think he saw more than in reality existed, at least can claim that his teaching has all been in the direction of a more humane and decent feeling on the part of mankind toward the animals and natural world about them.

2. Having thus given vent to my feelings on that question, I will now pass on to something of a very different order.

However much one advances in years and experience, and to whatever degree one's power of reacting becomes dulled, it seems as though a man never grows accustomed to certain things, — the details varying, most likely, with each person.

Thus to me, personally, it has never ceased to be a matter of marvel to witness the diversity of manner in which different human beings behave as regards their resistance to dissolution. By that I mean that some people appear to succumb so easily in face of disease that their disappearance seems to be about as simple as the blowing out of a candle; on the other hand, other people, aged, weak, with apparently no power of resistance whatever, put up such a fight against illness that it seems as though nothing could kill them, as though they simply could not die.

At the seaside, once, some parents staying at the hotel asked me to see their baby, an infant of about eighteen months, as finely developed and healthy a specimen as one could meet as is often the case with the children of Hebrew descent. The child had been out all the afternoon, but had come home with vomiting and diarrhea. By the middle of the night the poor little thing was dead, from some hypertoxic gastro-intestinal infection. In similar manner an unusually fine boy that I had assisted into this world left Paris for London one day, when about a year old, on his way home. He probably took some impure milk or water on the train, and died in the same manner as the other child in a few hours. And yet other children, often with chronic organic disorders of the nervous system, will linger along in a semi-moribund condition for months and months, until even the parents pray for the end to come. Here again it seems as though they could not make up their minds to die.

In advanced age a similar state of affairs is observed. An old man will pass away in twenty-four hours with pneumonia; and yet, with the mere breaking up of senile decay, or with come chronic disorder, cancer nephritis, etc., he will linger along often for years and years.

In the same line of thought it never ceases to be a source of amazement to me to note what traumatisms some young men can stand without, if you will allow the expression, so much as turning a hair; whereas, *a priori*, you would imagine that, whether from the point of view of general shock, hemorrhage or infection, they had an abundance of reasons for passing on to their ancestors without delay. Witness the following instances:

In December last a Dr. André reported to the academy the following case:

A youth, of seventeen, working in a factory, got his left hand caught by a transmission belt and dragged on to a shaft making sixty revolutions a minute. In a flash his entire arm and scapula were ripped off from his thorax, the clavicle remaining in place. It is not stated how soon the surgeon saw him after the accident; but when he did, he noted the following condition: no immediate hemorrhage; no particular traumatic shock! He shortened the projecting clavicle, tied the sub-clavian artery, regularized the torn muscles a little, and then brought the skin together. And the patient recovered entirely *in two weeks*, without the slightest incident!

Professor Berger, who presented Dr. André's case, said that he knew of only one similar, reported in Cheselden's "Anatomy," in which recovery had also been very rapid without any intervening complications.

Since that meeting, however, attention has been called to a third, exactly similar accident, reported to the Société Anatomique in 1896. A man of twenty-five was busy cleaning the drum over which passed the wire-rope of an elevator, when the machinery suddenly started, nipping his right hand and tearing off his entire arm and scapula with such neatness that the surgeon who saw him said that the skin-line looked as though it had been traced by an operator for interscapulo-thoracic amputation. The victim, who was alone at the time, acted with a degree of self-possession incredible. Pressing his left hand to the torn surface, which was bleeding profusely, he went down several floors until he found a comrade who, with equally praiseworthy presence of mind, bound tightly around his thorax as a sort of tourniquet a long and wide flannel belt such as French workmen frequently wear, and accompanied him to the hospital, a few minutes off. There the interne tied the vessels, — the muscles not bleeding; disinfected the surface; regularized it a little; sutured the skin over drainage, — and the man recovered promptly without suppuration or complications, and left the hospital *in two weeks!*

To the ordinary general practitioner, who specializes in an atmosphere consisting of cases of coryza, urticaria and colic, such occurrences as these seem simply phenomenal. When you think of the cleanliness of the left hand that that workman clapped on to that large, fresh surface of absorption, and of the condition of the belt which the well-intentioned friend bound over it, to learn that no infection ultimately ensued in such an irregular, anfractuous wound is something on the order of a miracle. And finally, what one ceases to comprehend altogether is, that an artery of the size of the sub-cliavan, suddenly torn asunder, should not cause the patient to bleed to death in a few moments; and also that a traumatism of the gravity of the sudden accidental detachment of an entire upper extremity should not produce at least a severe, even if not fatal, condition of shock. To think of that man picking himself up and wandering off until he met a friend, with apparently no more concern than if he had just pinched his finger-end, is something quite extraordinary.

3. I am not prepared to say how it is with other physicians, but personally, during my professional life, I have always lived in dire apprehension of certain special medical eventualities. By this I mean that I have constantly dreaded the sudden occurrence in a patient of some particular form of the "acute abdomen," without my recognizing it. The disorders that I have apprehended have been those of an ususual or rare nature, and especially such as I had never been called on to diagnose myself, and had never even seen diagnosed in hospital service. I find that if you have seen a disorder with your own eyes, even though only once, the chances are fair that you will recognize it next time; the difficulty is to think of, in presence of that graveyard of professional reputations, the sudden abdominal catastrophe, the rare possibilities that you have never yet had occasion to meet.

One of my pet dreads was, for a while, the twisted pedicle of an ovarian cyst; and sure enough, when it did come it landed me high and dry. But that case was really not an altogether fair deal; I'll tell you about it presently. Besides, I found myself on that occasion in such excellent and numerous company that in my shocking error I did not feel more than moderately mortified. Another bugbear has always been extra-uterine pregnancy A more recent one has been that sweet quasi-impossibility, acute pancreatitis, where the elect think of everything but the proper agent! However, I dare say my ultimate balance will not be unlike that of the old man who remarked: "I am now well on in years, and have had a great deal of trouble, — most of which never came to pass!"

But to tell you about my twisted ovarian cyst-pedicle.

The patient, a young lady of about twenty-five, was suddenly seized with excruciating pain in the *left upper* quadrant of the abdomen, with vomiting, but with pulse and temperature normal. The local condition was indefinite; pain deep seated; no signs of peritoneal reaction, of muscular defense, etc. The condition lasted for about three days, requiring repeated injections of morphine, and then disappeared suddenly. No blood or calculus appeared in the urine; but a diagnosis of gravel was made, and suggestions presented in accordance.

For *three years* this young lady traveled in different European countries, having an attack now and then, often in large cities and capitals, and always attended by the best physicians available; and they *all* made the diagnosis of calculus, and treated her in consequence, advising Contrexéville and similar places. At no time and by no one, was the pelvic cavity ever called into question.

Finally she landed in Lausanne, with an attack, and was seen by that smart chap, Roux. Now whether Roux acted on principles of general thoroughness, or whether he was induced by the strange history of the case, I do not know; but anyhow, he put the good lady under an anesthetic and made a careful examination *per v.*, finding a wretched little ovarian cyst the size of an egg, that every now and then became disorderly and twirled round a bit, — untwirling when it had had enough! Removal and entire recovery, — to the general discomfiture of the dozen or more good practitioners who had all gone astray!

Since that time I have heard of two other similar cases, in which, alas, everybody was at sea; but where gangrene and peritonitis ensued, with operation *in extremis* and death. In both of these cases no one thought of the little silent cyst. In one the attack (right ovary) was taken for appendicitis. The young lady, English, was in Paris getting her trousseau. Had a slight attack, diagnosed as appendicitis Recovered in a day or two, and returned to London for her wedding. Taken again, more violently, she was transported to a private hospital; but by the time the medical man had called in a surgeon, one of the very best men in London, her condition was so serious that the consultant said: "I cannot possibly make a diagnosis; but the patient's only possible chance is to open the abdomen and go by what we find." The other case occurred in Chicago; but I have not the details sufficiently fresh in mind to give them.

But to come to the subject of this paragraph. The above diagnostic difficulties are slight as compared with one that has been brought into prominence here of late by a *cause célèbre:* the premature detachment of a normally inserted placenta.

An unfortunate *sage-femme*, practising in a small country place in France, suddenly found herself in presence of a case of this sort, failed to make the diagnosis, naturally, and the patient succumbed. Now this woman was actually brought to the bar for manslaughter and tried; and although the main charge was abandoned, she was still condemned for neglect and imprudence, and fined! I wish that I could give the details of this outrageous affair. It is of the most intense interest from beginning to end. But it would require pages. I can therefore only refer to a few salient points:

That a *sage-femme*, a woman whose obstetrical baggage is, in the immense majority of cases, extremely limited, should have been tried and condemned for having failed in a case of the utmost rarity, where the specialized accoucheurs of Paris, as capable a body of men as exists, have all failed in diagnosis as well as in treatment (when a diagnosis has been made!) — is one of those judicial monstrosities with which the law, unfortunately, can be only too frequently charged.

When Professor Pinard, the accoucheur of the Clinique Baudelocque, heard what was going on, he actually took the trouble, *spontaneously*, of travelling down to the village where this woman was being tried, to give evidence before the court. His statement of *facts* is a model, the accusations and cross-questioning of the prosecution being utterly beneath contempt; but in spite of his rectifications and explanations, the woman was condemned, though not, as has been said, on the chief charge.

But from a medical point of view, the main interest of this case is the following: the insignificance of the symptoms as compared with the gravity of the accident. At her fourth confinement, this patient began labor at midnight. From 2 to 5 A.M. she was agitated, queer, vomited and drank a great deal. The *sage-femme* remained with her, thinking of the possibility of eclampsia; at 8 A.M. she left her patient in good condition, to absent herself for an hour or two to see some other clients. When she returned at 10 A.M. there had been slight external hemorrhage. Toward noon a quarrel with the members of the family arose, and the *sage-femme* left; but by the time that a physician had been obtained, half past one, the woman was dead! At post-mortem 300 gm. of liquid blood and a clot of 675 gm. was found inside the uterus, with the placenta disinserted, though normally situated.

Professor Pinard in his remarks before the court laid chief emphasis on the facts that the accident is one of the greatest rarity, fortunately; that it practically has no definite symptomatology; that the very best among his colleagues in Paris have repeatedly failed to diagnose it; and that when they have, their operative interventions have generally proved inefficacious. One very noticeable detail in this accident is the relatively slight loss of blood that occasions death; under other circumstances many a woman has lost a liter of blood without even feeling it.

We can only all pray to be spared the trial by fire of such a case as this. We might think of a little ovarian cyst, of an extra-uterine pregnancy, or even of pancreatitis; but how many of us, except specialists of long experience, would think, in face of a woman thirsty and vomiting during labor, of a detached placenta! The fact is, as Pinard observes, that it is only quite recently that such a diagnosis has ever been made. Thus the great *sage-femme* of the Paris Maternity, Mme. Lachapelle, states in her book that she never saw a case among 40,000 confinements! Professor Stoltz, of Strasburg, said that in forty years he had never seen such an occurrence!

These two writers, in spite of their special competence, undoubtedly passed over such cases without seeing them, as the accident is not quite so rare as that, although of the very rarest. During the last twenty or thirty years the diagnosis has been made a number of times in the Paris maternities. But in view of the fact that the *quite special* difficulties of the case were fully explained by Pinard to the tribunal, what is it possible to think of this poor woman's condemnation?

"Spectator."

OSCULATION OF CHILDREN.

Cambridge, Jan. 20, 1908.

Mr. Editor: The English are, without any doubt, most practical, and it is not without some common sense that their children wear on their hats the epithet, "Kiss me not." More than once the kiss of a passer-by has been the means of transmitting syphilis to children. Martinez in the March issue, 1907, of the *Archives de Médecine des Enfants* accuses, rightly or wrongly, we do not know, the bacteria of dental caries as being communicated by this means. Such transmissibility may be possible, although verification seems somewhat difficult.

On the other hand the transmission of acute infectious diseases appears certain, and undoubtedly measles, whooping cough, influenza, scarlet fever, diphtheria and coryza are propagated by this means. It is also true that simple contact in other ways is quite sufficient, and a kiss does not seem indispensible for transmission. It is not necessary that one should embrace one's neighbor in a trolley car in order to contract an influenza of which the latter is the victim.

Graver still is the danger of the transmission of tuberculosis. A phthisical patient who coughs and expectorates has a saliva constantly infected by tubercle bacilli and, unless minute care of cleanliness is carried out when this patient is the wearer of a mustache, the bacillus of Koch will be retained in this latter ornament of man.

Transmission of tuberculosis by kissing is an insidious and latent affair, and the initial lesion produced may ring the change on the diagnosis frequently. One, in the first place, is inclined to believe that he is dealing with an acne, a prurigo or impetigo, but, little by little, the lesion develops in depth and in surface and soon its true nature no longer remains in doubt.

Lupus, so frequent in children, preferably localizes itself on the face; the forehead or cheeks are the regions the most exposed to infection from kissing and, at the present time, it is known that lupus in adult or elderly people usually starts in early age.

It goes without saying that kissing is not the only means of transmission, because a scratch, no matter how superficial, may open up the means of entrance for lupus. A chambermaid, for example, may contract a lupus of the hand by cleansing the furniture in a room where a phthisical patient has lived, while, under similar conditions, another may contract the disease on the foot. Phthisical individuals occasionally become inoculated on the back of the hand from wiping their lips, and Martinez relates the instance of a little girl, three years of age, who had two foci of lupus on the left cheek, she having been frequently kissed by her grandmother who was tuberculous.

It is in the province of physicians to warn families against this danger, and they should put mothers on their guard against indifferent kissing bestowed on a child merely from politeness, and they should teach the danger arising from the slightest caress from a syphilitic or tuberculous subject. Diseased patients should not be allowed to kiss their children and teachers should be instructed to put an end to kissing games among the children in their schools. This will not prevent the extension of eruptive fevers, but certainly various forms of tuberculosis will be prevented by these means.

Sapientia.

EXPERT TESTIMONY.

Haverhill, Mass., Jan., 28, 1908.

Mr. Editor: Referring to your editorial in the issue of Jan. 16, I wish to suggest two things:

First. — The expert's opinion should *not* be regarded as the property of the person or corporation by whom he is employed in such cases as are examined with direct reference to court testimony, but rather as an opinion to be expressed by him in his capacity as a witness of the *court.* He is not Lawyer A's man nor Lawyer B's, but a witness of the *court*, presented by the attorney, and his opinion should be given fully and freely, whether it aids or does not aid the side that offers him as a witness. In no other way can he maintain his own self-respect or elevate the standard of the medical profession in the courts

Second. — The best lawyers of high professional honor and ethical feeling will not object to honesty; as for the others, we do not expect their co-operation. There can be no objection to physicians reaching a conclusion among themselves as to the degree of injury if the medical profession is to take the stand that they are interested in but one phase of the courts' work, — the presentation of facts and the best judgment in matters of opinion. The sooner we disabuse our minds of the idea that we are pawns to be moved about by the lawyers, the better for the cause of justice in legal procedure. Our attitude may compel the legal profession to elevate their own ethical standard to that now maintained by a minority of truly honorable and honored, as well as successful, practitioners, but if this be accomplished it will certainly be not to our discredit to say the least.

The question in a nutshell is: Are we independent of the legal profession and can we aid its leaders to elevate the standard by elevating our own?

I might add that the commendatory communications I have received from leaders of the medical profession since the publication of my article in your issue of January 16, lead me to hope that the acceptance of the suggestion is to be widespread.

Sincerely yours,
F. W. Anthony, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JAN. 25, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	2
Chicago	—	—	Waltham	6	2
Philadelphia	—	—	Pittsfield	14	1
St. Louis	—	—	Gloucester	6	—
Baltimore	273	67	Brookline	6	1
Cleveland	—	—	North Adams	15	2
Buffalo	—	—	Chicopee	2	1
Pittsburg	—	—	Northampton	7	1
Cincinnati	—	—	Medford	8	1
Milwaukee	—	—	Beverly	—	—
Washington	—	—	Leominster	4	1
Providence	85	28	Hyde Park	4	1
Boston	230	79	Melrose	—	—
Worcester	69	20	Newburyport	—	—
Fall River	50	28	Woburn	7	—
Cambridge	24	8	Westfield	5	—
Lowell	33	9	Marlboro	1	—
Lynn	26	4	Revere	3	1
New Bedford	34	12	Attleboro	6	1
Springfield	18	4	Peabody	—	—
Lawrence	15	8	Adams	5	2
Somerville	20	3	Clinton	—	—
Brockton	12	2	Gardner	—	—
Holyoke	21	7	Milford	3	—
Malden	14	4	Watertown	3	1
Chelsea	16	2	Plymouth	—	—
Newton	14	3	Weymouth	0	—
Salem	19	5	Framingham	4	—
Haverhill	15	3	Southbridge	2	—
Fitchburg	9	2	Wakefield	—	—
Everett	8	1	Webster	—	—
Taunton	20	5	Arlington	3	0

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING FEB. 1, 1908.

A. C. H. RUSSELL, medical inspector. Commissioned medical inspector from May 7, 1907.

C. BIDDLE, medical inspector. Commissioned medical inspector from June 16, 1907.

F. E. PORTER, passed assistant surgeon. Commissioned passed assistant surgeon from June 7, 1907.

P. T. DESSEZ, passed assistant surgeon. Commissioned passed assistant surgeon from June 10, 1907.

W. L. MCDONELL, passed assistant surgeon. Commissioned passed assistant surgeon from Sept. 19, 1907.

E. A. VICKERY, passed assistant surgeon. Commissioned passed assistant surgeon from Oct. 11, 1907.

E. G. MACKENZIE, assistant surgeon. Ordered to the Naval Hospital, New York, N. Y.

L. M. SCHMIDT, assistant surgeon. Ordered to the Naval Hospital, Annapolis, Md.

L. C. WHITESIDE, acting assistant surgeon. Ordered to the Naval Hospital, Newport, R. I.

C. DEW. BROWNELL, surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the "Mississippi."

M. DONELSON, assistant surgeon. Detached from the "Stringham" and ordered to the "Porter."

F. E. SELLERS, assistant surgeon. Detached from the Naval Hospital, Annapolis, Md., and ordered to the Naval Academy.

RECENT DEATHS.

DOUGLASS SCOVIL FLEWELLING, M.D., M.M.S.S., died in Somerville, Jan. 31, 1908, aged forty-six years.

DR. NELSON BUELL SIZER, of Brooklyn, N. Y., died on Jan. 28. He was graduated from the Medical Department of the University of the City of New York in 1871.

DR. JOHN J. GRIFFITHS, of New York, died on Jan. 31, in the forty-ninth year of his age. He was born in New York City, and was a graduate in arts from Columbia College. In 1883 he was graduated from the College of Physicians and Surgeons, and later served as interne at Roosevelt Hospital.

DR. EDWARD C. MANN, formerly of New York, died at his home in Stoughton, Mass., in January. He was graduated from the Long Island College Hospital in 1871, and for many years practised both in Manhattan and Brooklyn. He devoted himself with success to the treatment of nervous and mental diseases, and his services were in considerable request as an alienist. A few years ago he retired and came to Massachusetts to live.

DR. ASA WILKINSON, of New York, well known as a chemist and the inventor of the Wilkinson process for illuminating gas, died on Jan. 25, at the age of seventy-five years. He was born near Cayuga Lake, N. Y., and was graduated from Brown University. After receiving the degree of M.D. at the New York Medical College he served as interne at the City Hospital on Blackwell's Island, and later was appointed physician in charge of the Children's Hospital on Randall's Island. He was for some time assistant to the Chair of Chemistry and Toxicology in Bellevue Hospital Medical College and to the Chair of Chemistry and Physics in the College of the City of New York. At the time of his death he was chemist to the Mutual Gas Light Co.

BOOKS AND PAMPHLETS RECEIVED.

Writer's Cramp and Its Treatment. By Douglas Graham, M.D. Reprint.

Blastomycosis and Its Congeners; Report of Eight Cases Observed by the Writer in Indiana. By Alembert W. Brayton, A.M., M.D. Reprint.

Syphilis, Past and Present; Its Birth and Origin; Literature, Symptomatology and Curability; Its Relation to Marriage; Innocent Syphilis and Social Prophylaxis. By Nelson D. Brayton, A.B., M.D. Report.

Ophthalmia Neonatorum; A Pathologic Anachronism. By F. Park Lewis, M.D. Reprint.

Transactions of the American Ophthalmological Society. Forty-third Annual Meeting, Washington, D. C., 1907. Vol. XI. Part II.

Essentials of Modern Electro-Therapeutics. An Elementary Text-Book on the Scientific Therapeutic Use of Electricity and Radiant Energy. By Frederick Finch Strong, M.D. Illustrated. New York: Rebman Company. 1908.

Treatment of Ununited Fractures of the Neck of the Femur by the Use of Coin Silver Nails. By H. Augustus Wilson. Reprint.

The Medical Uses of Carbonic Acid. By Thomas E. Satterthwaite, M.D. Reprint.

The Treatment of Chronic Valvular Diseases of the Heart. By Thomas E. Satterthwaite, M.D. Reprint.

University of California Publications in Physiology. A New Proof of the Permeability of Cells for Salts or Irons. By Jacques Loeb.

Surgery, Its Principles and Practice. By various authors. Edited by William Williams Keen, M.D., LL.D. Vol. III. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

Bureau of Vital Statistics of the State of Connecticut. Fifty-ninth Registration Report of Births, Marriages, Divorces and Deaths for the Year ending Dec. 31, 1906. New Haven, Conn. 1907.

Address.

THE CONTROL OF THE LYMPHATICS IN INFECTIONS OF THE EXTREMITIES.*

BY HERBERT L. BURRELL, M.D.

In the case of an infection of an extremity, what can we do to assist nature in controlling its extension? (1) A knife will drain it. (2) Antiseptics may destroy the bacteria. (3) Heat and cold will physically control to a certain degree the development of the bacteria. (4) Rest will control in a measure its extension. (5) Opsonins will increase the resistance of the individual against the toxins of certain bacteria.

I wish to call your attention to the usefulness of compression of the lymphatics and modification of the blood stream, as an old measure rather neglected, but of paramount physical importance in assisting nature to combat destructive poisons.

The frequency with which infections of the extremities occur and the serious consequences that sometimes result from them has always made the subject one of great interest. The striking features of an infection of the hand, for example, are its trivial results in the majority of instances and its very serious consequences in the exceptional case. When a wound of the finger is infected, we know now that the result of the infection depends upon a number of factors among which may be mentioned: (*a*) the kind and quantity of the infection; (*b*) the kind of wound that is inflicted, whether it bleeds freely or not and particularly whether it has opened up lymph channels; and (*c*) the resistance of the individual.

The defenses that exist against the spread of an infection are not as yet clearly understood. Many of them are known and their method of action is in a measure understood, but the full scope of the defensive mechanism of the human organism is not fully established. Certain facts we know and understand their significance; other facts we know, but their full significance is not appreciated. From time immemorial, it has been known that the human organism possesses immunity against certain infections; what immunity is, how it acts, has never been clearly elucidated. Many hypotheses have been presented; some have been controverted, others still remain; but immunity is so interlocked with vital phenomena that, until life itself is understood, immunity cannot be thoroughly explained.

It is not my intention to present to you the hypotheses of Elias Metschnikoff[1] or of Paul Ehrlich.[2] Metschnikoff's theory, or phagocytosis, assumes that the bacteria of an infection are attacked and rendered inert by the white blood cells. That these cells take up bacteria is not open to question; but what becomes of the bacteria is open to question. Usually the bacterium is destroyed, but it has been demonstrated that sometimes the leucocytes carry living bacteria to distant parts and thus spread infection. Ehrlich's or the lateral side chain theory assumes that the infection is controlled more by the body fluids. This theory is lucidly stated by Prof. W. H. Welch, in his Huxley lecture on "Recent studies on immunity, with reference to their bearing on pathology."[3]

A natural outcome of Ehrlich's theory of immunity is the comparatively recent work on opsonins by Professor Wright.[4] Already much literature has accumulated on this interesting and important subject.

Ehrlich's lateral side chain theory developed the idea that before bacterial intoxication can take place, a definite chemical union must exist between the cells of the infected individual and the toxins of the invading microbe. Wright named the various toxins "tropins," because they are substances that turn toward cells. The union between tropins and cells causes a reaction in the infected individual which produces protective substances that are called "anti-tropins." Wright believes that the presence of an adequate amount of these substances within the body is responsible for the existence of natural immunity, and that their elaboration is capable of producing artificial immunity.

Phagocytosis (Metschnikoff's theory), side chain theory (Ehrlich's theory), and opsonins (Wright's theory) are all extremely interesting working hypotheses that assist us in understanding, although not completely, the defenses of the human organism. The effects of radio-activity, of electrical energy, and of the varied disturbances that occur in metabolism are still influences upon the human organism, which are not thoroughly explained or understood. To experimental biology we must look for knowledge that will explain these influences.

In 1865, the treatment of wounds was empirical. The fermentation process, which was thought to be due to spontaneous generation that took place in wounds, was demonstrated by Pasteur's work to be due to bacteria and not to spontaneous generation. Lister appreciated the significance of Pasteur's work, and we are to-day indebted to him for the inestimable gift of asepsis and antisepsis. The recognition of the fundamental principles of infection has upset much of our previous knowledge and has unfortunately relegated to oblivion some useful measures of relief.

Our surgical measures of defense against a local infection of the extremities are the knife and drains, antiseptics, poultices, heat, cold, rest; modification of the circulation in the lymphatic vessels and blood-stream in the extremities; Gamgee's compression treatment and Bier's passive hyperemia treatment; and finally the use of opsonins to increase the protective substances of the organism. I shall assume that the use of the knife, drains, antiseptics, poultices, heat and cold and rest are well known. But it is my belief that the importance of the control of the lymphatic circulation and of the circulation in the arteries and veins is not properly recognized by many practitioners.

The necessity for the use of the knife and the value of drainage needs hardly more than a passing word. Yet the knife is not always used judiciously. Asepsis and antisepsis have led us to the belief that incisions may be made with impunity; and so they may in the majority of cases, but the use of the knife at the wrong time may be followed by disastrous consequences. However, the axiom exists and the truth maintains, that when pus is present, unless there are distinct contra-indications, it should be evacuated. Nevertheless, let us not confound bacteria with pus. Pus may be regarded as the residue that is left after the toxins have destroyed tissues. Every practitioner has seen instances where pus in large quantities, a pint or more, has been retained in the tissues for weeks and months without the individual apparently being seriously poisoned. In acute infections, however, which particularly concern us, there is a belief that they must be instantly operated. All that we do when we open an abscess and allow the pus to flow away is simply to remove the necrotic material, which is the result of what may figuratively be termed a conflagration.

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* An address delivered before the Vermont State Medical Society at St. Johnsbury, Vt., on Oct. 10, 1907.

Many practitioners assume that, if an infection exists and an incision is made and antiseptics applied, the infection will be killed and the poisoning of the patient will cease. This sequence of events occurs in many cases, but it is not due to the use of the knife nor to the application of antiseptics that the human organism erects a barrier to the ravages of an infection. The poisoning from an infection occurs through the lymph channels. It is checked and controlled by the lymph nodes, which are apparently one of the provisions of nature to check the spread of an infection.

I wish to warn against making an incision in an acute local infection until nature has established or there exists an adequate resistance in the tissues of the individual against toxemia. Not that it is necessary to wait in every case until the local infection is " walled off," although it is frequently desirable; but there are changes associated with an infection that occur in the body fluids by which the resistance of the individual is increased, and these normal defenses are sometimes feeble in action or long delayed in appearing. When incisions are made on a patient who has no resistance, the mildest form of infection may become virulent. If, therefore, an individual has no power of resistance in his tissues, it is distinctly wrong to make more wounds that may immediately become septic. Incisions should be used to drain away pus or toxins from the tissues, but their removal does not necessarily stop the extension of the infection; the individual must have sufficient resistance in his body tissues and fluids — hyperleucocytosis, etc. — to overcome the additional infection, which usually results from making an incision or incisions. One may say that the resistance of the patient is a very vague indication as to when or when not to operate. True, but the resistance of an individual as expressed by his mode of life, general appearance, and whether his lymph channels are inflamed or not, is, to a man of experience, a perfectly well-defined quantity. Hence, as we do not as yet know all the conditions that control infections the time to make an incision must of necessity be decided by experience and judgment rather than by a fixed rule.

In some instances I have been asked to see cases in consultation where so-termed surgical incisions had been made to check the progress of an infection of an extremity. Usually, the infection is checked but in some cases I regret to say that the incisions simply added fuel to the fire. In one instance, a surgeon, for whom I have the greatest respect, operated for an infection that had spread from the hand to the man's arm. He made his incisions promptly, in fact, within eight hours of the original infection, which was by a staphylococcus. I was consulted on the third day as to the advisability of amputating at the shoulder joint. The patient at this time was profoundly poisoned. Nature had apparently made no effort whatsoever to check the infection. The incisions that had been made on the arm were surgical in the extreme, but they were simply new areas of lymph vessels that had been opened to drink in the toxins. The patient died within twelve hours.

The surgeon, who was a very good friend of mine, asked me why the incisions and the use of antiseptics had not checked the infection. It gave me the opportunity that I desired and I told him frankly that he did not know what nature would do in controlling infections and that he had opened up a thousand channels through the lymph vessels for the toxins to be absorbed. Whether I was right or not in my opinion is a question.

I may say to you, gentlemen, that I have no new news, I have only old news. But the method of control of infection that I am going to present to you at least has been tried and, while the advances are haltingly progressing in experimental biology, let us cling fast to what we really know, even though it be empirical. It was my fortune to be a pupil of a surgeon who possessed great erudition, and who had on occasion a keen surgical sense. The late Dr. W. C. B. Fifield called my attention many years ago to the use of Mr. Sampson Gamgee's method of compression treatment to control the circulation in the extremities. Later, in Birmingham, England, I had the privilege of seeing Mr. Gamgee demonstrate this method of treatment. Ever since then, I have used it in a modified form. Professor Gamgee [5] advocated compression and immobilization with dry, absorbent materials and infrequent dressings in the treatment of wounds, but as to that matter so did Wm. Hey,[6] Baron Larrey, [7] Cesare Magati,[8] Belloste,[9] Sir Astley Cooper,[10] and many other surgeons.

The important point upon which Mr. Gamgee insisted was that physiological compression as a therapeutic agent for acute inflammation was not properly recognized. Mr. Gamgee states [11] that he understood more thoroughly the advantages of digital compression of the arterial trunks after he had met Professor Vanzetti, of Padua.[12] Mr. Gamgee evidently considered that the control of the blood stream was the essential factor in controlling inflammation in an extremity, but says:[13] "It is also reasonable to assume, though not so easy to prove, that just as pressure applied externally prevents blood stasis, it is opposed to the stasis of lymph."

Mr. Gamgee used for compression a special material, "absorbent cotton-wool tissue," which consisted of "absorbent cotton between two layers of absorbent gauze." He also used strips of unglazed and uncompressed millboard. I have always used oakum instead of the Gamgee tissue. The details of the application of this dressing are as follows: a sufficient quantity of oakum is wrapped in gauze to make a roll the size of the middle of the forearm and long enough to extend, in the upper extremity, from the palm of the patient's hand to the axilla. To the lower extremity, a roll the size of the ankle is applied, long enough to extend from the instep, along the course of the main artery, up to Scarpa's triangle. To the upper extremity one roll is applied along the course of the brachial and radial arteries and a similar smaller roll is applied to extend from the hand to the elbow along the course of the ulnar artery. (See Figs. 1 and 2.)†

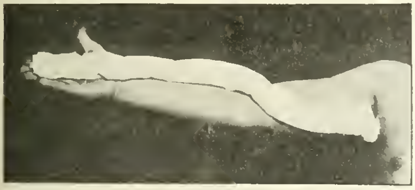

Fig. 1. Pad of oakum applied along the course of the brachial and radial arteries.

A local dressing is first placed on the source of the infection, which is usually on the finger or hand. The rolls of oakum are then placed in position over the course of the arteries and are secured lightly in position by a gauze bandage which is applied from the finger-tips to the axilla.

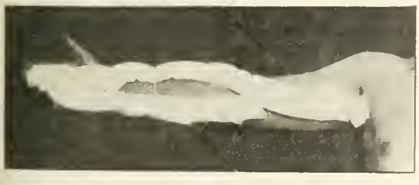

Fig. 2. Pads of oakum in position ready for the compression gauze bandage to be applied to the hand, forearm and arm.

Care is now taken to make equable compression from the finger-tips up to the axilla, an attempt being made to control the circulation in the limb by compression of the oakum rolls. The circulation in the limb unquestionably may be controlled by a skillfully applied dressing, for pain and throbbing will soon cease. At the end of eight hours, instead of taking off the bandages and re-applying the dressing, another bandage is superimposed, so that it gathers up the slack of the dressing. This rebandaging is repeated every six to twelve hours for three to five days. Increased pain or increased tenderness in the limb or a marked elevation of temperatiure indicates that the dressing must be changed. However, as a rule, when the dressing is removed in three to five days, the limb will be found shrunken and wrinkled, the redness will have disappeared, and usually the original area of infection will be found localized, so that a pocket of pus may be incised and evacuated. This same compression treatment may be applied to the lower limb with equal efficiency. In the early stages of an infection, particularly if the lymphatics are conspicuously involved, a compression dressing is of great value in controlling the spread of the infection and in preventing all but a very mild toxemia.

It is impracticable to describe the amount of pressure that is used in applying this dressing. I can only say that sufficient pressure is applied to control the circulation of the lymph and blood in the extremity, but not enough to stop the circulation. Layer after layer of bandage is applied over the oakum rolls until the arm is numb and the throbbing, which is so characteristic of inflammation, has been at least in a measure controlled. The finger-tips should be left exposed and at first should be slightly bluish from venous congestion, but this soon passes away, as the dressing adjusts itself.

I will give you a concrete example of this method of controlling the lymph streams and the blood circulation in an extremity. One evening my telephone rang and a friend, who is a distinguished pathologist, said that he had pricked his finger at an autopsy in the morning, and that the infection was now extending up his arm. He asked me to come at once and see it. I went and found he had a typical case of an infection wound of the finger with the lymph channels of the forearm and arm already swollen and tender, and their course could be plainly made out by typical skin redness. The epitrochlea and axillary lymph nodes were moderately enlarged and tender. My friend watched me while I was examining the case and then, with natural interest, inquired as to what incisions I was going to make. I told him that I was not going to make any, but I was going to apply compression to the blood vessels and lymphatics of the arm, and that I should make no incisions until nature had localized the infection. I saw that he was disturbed and recognized that he believed that I was perhaps in error. His knowledge led him to believe that an infection meant incisions. Being a man of wisdom, he said nothing; he, however, looked askant at the method of treatment that was applied. My friend is a thorough believer in the efficiency of calomel and took a liberal quantity that evening. He assiduously carried out my directions as to keeping up the compression on the arm, which may be increased by flexing the forearm on the arm as becomes necessary. The next morning I saw him early. On meeting me his face was radiant; he said, "Why, Burrell, this compression treatment is a great discovery; it is based on sound scientific principles; why haven't I known anything about it before? The pain and throbbing soon ceased; I slept perfectly comfortably; and I am sure that the process of infection has been checked."

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† I am indebted to Dr. A. W. George, of Boston, for the photographs that illustrate the text.

I believe that the compression treatment of an extremity is based upon the recognition of a great physiological truth and that is, that infections extend through the lymph channels. When I insisted upon keeping on the dressing and not removing it for three days, my friend readily assented. Practical experience had converted the "doubting Thomas." Many, many times I have applied this dressing and, curiously enough, to my fellow-practitioners in various parts of New England. Some of my house officers have seen the advantages of the method of treatment; others have been so fascinated by the use of the knife that they have failed to recognize the natural process of control of infection.

This compression treatment is strikingly similar in its effects to the passive congestion treatment advocated by Bier.[14] Curiously enough, neither Gamgee nor Bier has apparently considered that the control of the lymph stream in a limb was the essential part of the treatment.

I believe that the control of the lymphatics rather than the control of the blood vessels is the more important part of the compression treatment as advocated by Gamgee and the passive hyperemia treatment as advocated by Bier. The lymphatics in the extremities are, under ordinary conditions, not seen, but the blood vessels are obvious. The surface area covered by the lymphatics is very great when it is compared with the surface area of the blood vessels. I have planned a series of experiments to demonstrate if possible precisely what does take place from compression of the lymphatics: (1) To determine if possible the rapidity of the absorption that takes place through the lymph channels. (2) The rapidity of the absorption of the different typical infections. (3) What inhibition compression of the lymphatics exercises over the absorption of the different forms of infection. The results of these experiments will be given in a later communication.

Bier's treatment has been very much the vogue during the last few years. He first used it with brilliant results in joint infections, but of late the method is used particularly for the treatment of acute infections of the extremities. The technic of its application is as follows: two or three turns of an Esmarch bandage are applied about a limb at some distance above the affected joint or lesion. This is applied just firmly enough to constrict the veins, but not to obstruct the arteries; and all grades of venous congestion can be produced in this manner. The constriction is applied with short interruptions in the beginning, but later the intervals of letting up the congestion are made longer. In tuberculous joints, stasis is not kept up more than an hour daily. An abscess is evacuated, after an incision, by cupping glasses or some other form of vacuum apparatus. Bier believes that hyperemia both active and passive is capable of resolving proliferated joint tissues. The bactericidal effect of the congestion is believed to be due to the blood serum and is explained by Bier on various theoretical grounds: first, by an increase in the leucocytes; second, by retention of bacterial products of metabolism that are directly hostile to the organism; third, by increase, caused by these metabolic bacterial products, in the amount of the proliferating granulating wall, which envelops the organisms; and fourth, by an increased alkalinity of the blood.

When one knows a method of treatment and has used it and recognizes its limitations, one becomes an ardent advocate of its use in selected cases. Personally, I have no fear of being able to control the spread of an infection in an extremity if I can see it sufficiently early and can myself apply the compression dressing. Just so soon as a depot of pus is formed, figuratively speaking, the result of the conflagration, it should be evacuated. Do not consider that this method of treatment is a panacea. It is a rational attempt by physical means to check the extension of an infection, which probably takes place always through the lymph channels. The resistance of the individual must be increased by every means in our power, — good food, fresh air and stimulants are imperative. Rest of the infected part and, for that matter, of the whole body, is as essential as when it was first advocated by Hilton in his classical monograph on "Rest and Pain."

Do not discard the use of the knife, drains and antiseptics in treating local infection, but use them, recognizing that they are not nature's method of controlling the absorption of an infection.

The class of case in which this treatment of compression of the lymphatics and modification of the blood stream is particularly indicated is in acute, rapidly extending infections that are systemically poisoning the patient. When an appreciable quantity of pus or an exudate filled with toxins is present, this treatment may be used as an adjuvant; but a knife and drainage are the essentials.

If I have recalled to your minds the use of a method for the control of the infections of the extremities and have given you an addition to your armamentarium, my purpose will have been accomplished.

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[11] *Ibid.*, p. 198.

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Original Articles.

ON THE VALUE OF MALACHITE GREEN MEDIA IN DIFFERENTIATING TYPHOID AND COLON BACILLI WITH THE DESCRIPTION OF A NEW METHOD FOR ISOLATING TYPHOID BACILLI FROM FECES.

BY F. W. PEABODY, M.D.,
AND
J. H. PRATT, M.D., BOSTON.
(From the Department of the Theory and Practice of Physic, Harvard Medical School.)

The cultural methods for the differentiation of the typhoid bacillus from the other bacteria accompanying it in feces, earth and water, may be divided into two general classes. In those of the first, attempts have been made to produce a characteristic typhoid growth — whether of form or of color. In the second, the object is to favor the growth of the typhoid bacillus, and to inhibit the growth of all other organisms, and more especially of the colon bacillus.

The excellent medium of Drigalski-Conradi,[1] which has been extensively used during the past four years, permits sharp and speedy differentiation of the typhoid bacillus and the colon bacillus, as on this medium the two micro-organisms produce colonies of different size and color. It does not, however, check the growth of the colon bacillus. Endo's [2] and Hiss's [3] media belong in the same class as the Drigalski-Conradi. With both these media differentiation of the colon and typhoid colonies depends upon variations in color or form.

The ideal medium for isolating the typhoid bacillus from the stools would be one upon which no other micro-organism could develop. Roth [4] thought he had found in caffeine a substance that would prevent the growth of the colon bacillus and not influence the development of the typhoid bacillus. Ficker and Hoffmann [5] obtained positive results by the use of caffeine in all of eleven typhoid stools they examined; but the experience of other observers has shown that the caffeine method is of limited value, and weighty objections have been brought against it.

In 1903, before the Aerztlicher Verein, of Greifswald, Lœffler [6] first demonstrated the use of malachite green culture media. He showed that the addition of a definite amount of this dye to ordinary agar favored the growth of typhoid bacilli, but inhibited the growth of colon and many other intestinal bacteria.

Lentz and Tietz,[7] working in the same year, confirmed Lœffler's observations of the value of malachite green and devised a method for first increasing the typhoid bacilli on a malachite green medium, and then transferring to Drigalski-Conradi plates, where the differentiation is easier.

Klinger [8] made a comparative study of the Drigalski-Conradi, the Endo, the caffeine and the malachite green methods. Forty-three typhoid stools were examined.

Drigalski-Conradi's litmus, plates,	positive	13	times
Endo's fuchsin plates,	,,	16	,,
Ficker and Hoffmann'scaffeine method,	,,	20	,,
Lentz and Tietz's malachite green method,	,,	26	,,

This investigation of Klinger and those described by Lentz and Tietz [9] in their second paper, and Lœffler,[10] in a recent article, would seem to show that the introduction of malachite green marked a distinct advance in the methods of isolating typhoid bacilli and paratyphoid bacilli from the feces.

That many bacteriologists have had no success with malachite green media is undoubted. The latest papers on the subject indicate this. Leuchs,[11] in an article published in August, 1906, says, "How many investigators, after failing to obtain satisfactory results with malachite green, have abandoned its use we can never know." While our work was in progress, a paper by Királyfi [12] appeared. He obtained most unsatisfactory results and concluded, after making a large number of tests, that malachite green was of little or no value in differentiating typhoid and colon bacilli. Lœffler's second communication, published in 1906, contained detailed instructions for preparing a variety of malachite green media. He recommended particularly a "Rindfleisch Bouillon-Pepton-Gelatin mit Zusatz gewisser Mengen von Phosphorsäure und von Malachitgrün 120." This Királyfi prepared, following exactly Lœffler's directions, but neither typhoid nor colon bacilli would grow upon this medium.

From our study we are led to believe that not only variations in the strength of different preparations of malachite green 120, but variations in the proper reaction of the media for different specimens of this dye, account for these failures. It is evident from reading the papers of Lœffler and Királyfi that these investigators did not realize that slight alterations in the acidity of the medium influence markedly the results.

Lœffler found that two specimens of malachite green differed greatly in strength. The preparation he employed in making his culture media was "Malachitgrün 120," which he obtained from the Höchst dye-works. He was informed by the manufacturers that this was the trade name for a standard preparation, composed of malachite green and dextrin. Lœffler found that a new stock of malachite green 120 was slightly stronger than the old preparation, which was used in his earlier experiments. The addition of 5.0 ccm. of a two per cent solution of the new sample of malachite green 120, to 100 ccm. of agar, checked somewhat the development of typhoid bacilli, so that a smaller number of colonies grew on the plates than when an equal amount of the old preparation of malachite green 120 was used.

Our experience has shown that different specimens of malachite green 120 differ markedly in their strength and in other properties. We did not discover this fact until much time had been spent in seeking to find the cause of our inability to confirm Loeffler's results.

We obtained three samples of malachite green 120. One of these was ordered directly from the Höchst dye-works; the other two were furnished by two American importing firms, but both were labeled "malachite green 120 (Höchst)." For convenience we shall call the specimen that came directly from the Höchst factory, X; the one obtained through Eimer and Amend, Y; and the one furnished by Leitz, Z. It was evident from gross appearances alone that these preparations, purporting to be the same, were quite different. Specimen X was purple in color, while specimens Y and Z were dark green powders. One and two per cent aqueous solutions were made of each. The solutions of specimens Y and Z were quite similar, while that of specimen X was much lighter colored.

To agar made from beef infusion, varying amounts of a one per cent aqueous solution of some one of the three preparations of malachite green 120 were added. A series of malachite green peptone agars were thus prepared, differing only from one another in that they contained different amounts of malachite green. From each of these media two Petri-plates were made. One of these was planted with a drop of a twenty-four-hour typhoid bouillon culture, and the other with a drop of a similar colon culture. A few preliminary tests showed that while specimens Y and Z acted alike in about the same strength, specimen X was much weaker. With specimens Y and Z the best results were obtained by using 0.5 ccm. (approximately 1: 20,000), or 1.0 ccm. (1:10,000) of a one per cent solution to 100 ccm. of agar. There was no growth of either typhoid or colon bacilli on agar containing 2.0 ccm. (1: 5,000) of the same solution. With specimen X, however, both micro-organisms grew when less than 10 ccm. (1: 1,000) of a one per cent solution was added to 100 ccm. of agar; while both were inhibited by 15 ccm. (1: 667). As an optimum concentration we chose 1: 1,000 of specimen X; 1: 10,000 of specimen Y, and 1: 10,000 to 1: 20,000 of specimen Z. In these strengths typhoid colonies grew luxuriantly, while the colon bacilli did not develop at all.

The specimen of malachite green 120 used by Lœffler[10] exerted its selective action in concentrations of 1: 1,000 to 1: 4,000. Klinger[8] found that a strength of 1: 2,000 yielded the best results. Lentz and Tietz,[9] 1: 750; Jorns,[13] 1: 2,500; Kayser,[14] 1: 750; Hertel,[15] 1: 750.

Lentz and Tietz advise the use of malachite green 1, which they claim is a pure preparation, in a dilution of 1: 6,000. They employed it with success. Leuchs,[11] working with another specimen of malachite green 1, found that media containing 1: 6,000 of the dye remained sterile. This was the proportion recommended by Lentz and Tietz. Only with a dilution of 1: 13,000 did Leuchs obtain satisfactory results. It is evident from this that malachite green 1 is not a constant product; neither is it a pure article, as it, as well as malachite green 120, has been found to contain dextrin.

Malachite green is an acid dye, and as the reaction of the medium is important, it seemed wise to determine if the reactions of the three samples of dye differed. They were tested by titrating with n/20 sodium hydroxide. When the neutral point is reached, a leuco-body is formed, and the solution becomes colorless. The titration was carried on slowly, heating the solution, and then letting it stand for at least fifteen minutes after each addition of alkali. As a result of these titrations the acidities were found to be as follows:

Number of ccm. of n/1 sodium hydroxide required to neutralize 100 cc. of a 1.0% solution of the dye to phenolphthalein.

Specimen X = 0.2 acid
Specimen Y = 1.15 ,,
Specimen Z = 1.0 ,,

This shows clearly the differences that exist in specimens of the same dye, and it is interesting to note that the stronger specimens were the more acid.

We made a series of experiments with the object of finding how each of our three specimens, in themselves of different reaction, would act when added to agar media of different reactions. In each case the optimum amounts of a one per cent malachite green solution were used.

TABLE 1.

Malachite green 120. Specimen X, 1.0% aqueous solution. Concentration 1:1,000; 18 hours' culture.

Agar 1.0%* acid	Typhoid = +
	Colon = 0
Agar 0.5% acid	Typhoid = +
	Colon = 0
Agar 0.1% acid	Typhoid = +
	Colon = +
Agar 0.3% alkaline	Typhoid = +
	Colon = +

From these tables it is evident that specimen X, the least acid preparation, has the widest range of usefulness, satisfactory results being obtained from media that vary in their acidity from 0.1% to one per cent. The other two preparations completely inhibited the growth of both organisms in an agar of one per cent acidity, but gave good results in a 0.5% acid agar. As the agar is made more alkaline all three samples lose their inhibitory action, and both organisms grow profusely. The strength of the malachite green seems to depend in a measure on the acidity of the dye, and it would seem that the more acid the dye, the more delicately must the reaction of the agar be adjusted in order to make a satisfactory medium. It is probable that specimen X, the weakest sample, contains the most dextrin, and these tests seem to confirm the observation of Leuchs,[11] who found that within certain limits the more dextrin there is added, the greater the difference between the point where colon growth is inhibited and that where typhoid growth is inhibited, or, in other words, the greater the range of usefulness.

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* One ccm. of n/1 N_aOH being required to neutralize 100 ccm. of the agar to phenolphthalein.

Table II.

Malachite green 120. Specimen Y. 1.0% aqueous solution, eighteen hours' culture.

	1:20,000 malachite green	1:10,000 malachite green	1:5,000 malachite green
Agar 1.0% acid	Typhoid = 0 Colon = 0	Typhoid = 0 Colon = 0	Typhoid = 0 Colon = 0
Agar 0.5% ,,	Typhoid = + Colon = 0	Typhoid = + Colon = 0	Typhoid = 0 Colon = 0
Agar 0.1% ,,	Typhoid = + + Colon = + +	Typhoid = + + Colon = + +	Typhoid = + + Colon = +
Agar 0.3% alkaline		Typhoid = 200 cols. Colon = 50 cols.	

Table III.

Malachite green 120. Specimen Z. 1.0% solution, eighteen hours' culture.

	1:20,000 malachite green	1:10,000 malachite green
Agar 1.0% acid	Typhoid = 0 Colon = 0	Typhoid = 0 Colon = 0
Agar 0.5% ,,	Typhoid = + + Colon = 0	Typhoid = + Colon = 0
Agar 0.1% ,,	Typhoid = + + Colon = 60 cols.	Typhoid = + + Colon = 250 cols.
Agar 3.0% alkaline	Typhoid = + + Colon = + +	Typhoid = + + Colon = + +

+ = growth.
+ + = profuse growth.

In our earliest experiments, we, like Királyfi,[8] were much confused by results that were apparently contradictory. In some tests, even when malachite green was added in considerable strength, colon colonies grew on the plates, but in less number than those of B. typhosus. Upon increasing the amount of malachite green the colon growth was favored rather than checked. Table III, presented above, will make the matter clear. When specimen Z was added to agar in the proportion of 1:20,000 and the reaction of the medium was fixed at 0.5% acid, there was an abundant growth of typhoid bacilli, while the growth of colon bacilli was completely inhibited. When the acidity of the medium was diminished to 0.1% then sixty colon colonies grew on the plate. By doubling the amount of malachite green, leaving the reaction unchanged, a medium was prepared upon which four times as many colon colonies developed. We have reason to believe that by raising the acidity and at the same time raising the concentration of the malachite green far above the optimum of each, that media may be produced upon which both the typhoid and colon bacilli will grow.

This opinion is supported by experiments of our own. (See also Table I in Klinger's monograph.) These observations show the importance of carefully adjusting the concentration of the dye and the reaction of the medium to each other.

With a plain peptone agar the best reaction is undoubtedly 0.5% acid for all the three preparations. Tests with a peptone nutrose agar showed that one per cent nutrose is an advantageous addition, for when any one of the three preparations of malachite green was added in optimum amount to a peptone nutrose agar of one per cent acidity there was a profuse typhoid growth, while without the nutrose there was no growth at this acidity on media containing specimens Y and Z. With a one per cent acid peptone nutrose agar, as good results were obtained as with a 0.5% acid peptone nutrose agar or a 0.5% acid peptone agar. Hence addition of nutrose extends the limits of usefulness of the more acid preparations, specimen Y and specimen Z.

The question of decolorization of the media by the growth of organisms has been considered by several authors. Lœffler maintains that it is of importance in distinguishing the typhoid colonies. It should be noted, however, that decolorization may take place without any growth in plates on which no inoculations have been made. In such cases it is the result of a chemical change in which the leuco-body is formed by neutralization of the malachite green. The following table shows this. The malachite green was added to the agar, and the plates were set aside for eighteen hours and then inspected.

Attempts were made to produce an improved medium that would combine the good features of the malachite green media and the Drigalski-Conradi agar, so that we might have at our service a medium upon which the growth of bacillus coli would be checked and yet bacillus typhosus would grow in a characteristic manner that would distinguish it from nonpathogenic bacteria. At the time we made these experiments we did not know that the same idea had previously occurred to Reischauer.[16] His efforts, like ours, were unavailing. Malachite green was substituted for the crystal violet of the Drigalski-Conradi agar. Various concentrations of the dyes and various reactions were tried, but no medium was devised upon which the typhoid bacillus formed such distinctive colonies as it does on the Drigalski-Conradi medium.

A NEW METHOD FOR ISOLATING TYPHOID FROM FECES.

Lœffler's claim, that on his malachite green agar the typhoid colonies could be recognized by their characteristic appearance, has not been confirmed by Long and Pratt working in this laboratory. In not a few of the stools they found that other micro-organisms formed colonies that could not be distinguished from those of bacillus typhosus. They regard Lœffler's method as of much less practical value than the one invented by Lentz and Tietz.

Table IV.

Agar 1.0% acid	0.2 ccm. of 1.0% sol	Specimen	Y	not	decolorized
„ 0.5% „	0.2 „ „	„	„	slightly	„
„ 0.1% „	0.2 „ „	„	„	completely	„
„ 0.1% „	0.5 „ „	„	„	completely	„

Klinger, as was stated in the first part of this paper, obtained better results with the method of Lentz and Tietz than he did with any other.

In the hands of its originators the typhoid bacillus was demonstrated by this procedure in the stools of one hundred and fifty (73.2%) out of two hundred and five typhoid patients examined.

We have devised a simpler method than that of Lentz and Tietz. Instead of using malachite green agar, we employed a malachite green bouillon as an "enriching" culture. It is more quickly and cheaply prepared than the one they recommend, and Long and Pratt in a series of comparative examinations, as yet unpublished, obtained positive results in a larger percentage of cases with our method than with that of Lentz and Tietz. In their first communication the latter observers stated that they had attempted to use a fluid medium containing malachite green, but without success, as the other bacteria overgrew the typhoid bacillus. We found this to be true of bouillon if the acidity was as low as 0.1%. With a 0.5% acid bouillon there was a profuse growth of bacillus typhosus, causing the medium to become markedly turbid and distinctly blue in color. Little diagnostic importance can be attached to this color reaction. Long and Pratt have observed a similar change from green to deep blue when this malachite green bouillon has been inoculated with a suspension of feces containing no typhoid bacilli. The tubes inoculated with colon bacilli remained a pale green color and showed no apparent growth. Drigalski-Conradi plates, however, made from these tubes yielded a scanty number of colon colonies. In bouillon of one per cent acidity neither micro-organism grew.

This method as applied in the examination of feces is as follows: the proper dilution of malachite green and the proper reaction for bouillon must be determined for each preparaton of the dye. With specimen X the strength employed was 1:1,000 malachite green, and the medium was made 0.5% acid to phenolphthalein. The bouillon was prepared from beef infusion. After it had been sterilized, 10 ccm. of a one per cent solution of malachite green, made with sterile water, were added to 100 ccm. of the hot bouillon. Then it was placed in medium-sized test tubes, 10 to 15 ccm. in each tube.

A fecal suspension was made by adding to a small bit of feces an equal amount of sterile normal salt solution and mixing thoroughly. Fluid stools were not diluted. Then to each tube of malachite green bouillon was added a drop of the fecal suspension. At the same time a large Drigalski-Conradi plate (20 ccm. in diameter) was inoculated.

After eighteen to twenty-four hours' growth in the incubator, one or two large Drigalski-Conradi plates were inoculated by rubbing a drop of the malachite green bouillon culture over the surface of the agar by means of a Drigalski-Conradi spatula or with the end of a small sterile test tube. If the growth in the bouillon is profuse, a dilution is made in salt solution and a drop of this spread over the surface of an agar plate.

CONCLUSIONS.

The general results of these experiments lead us to hold the malachite green media in high esteem. They are not ideal, for their action is not absolutely specific; while they inhibit the growth of the colon bacillus, the micro-organism most likely to be confused with the typhoid bacillus, there are other bacteria which flourish in them. Furthermore, as Jorns [13] and Klinger [8] clearly showed, malachite green checks somewhat the development of the typhoid bacillus. It is, nevertheless, true that the discovery of the action of malachite green is a step forward in the search for a perfect differential culture medium.

We have found it comparatively easy to make a medium on which the typhoid bacillus will grow and on which the colon bacillus will not grow. While it is true that various preparations of malachite green differ in their action, it is a simple process to determine the strength of solution to be used, and the proper reaction of the medium for the given preparation.

The malachite green bouillon method is not only more economical in time and money than that of Lentz and Tietz, but in our laboratory has yielded better results.

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OBSERVATIONS ON SIX CASES OF ACUTE PERFORATING ULCER OF THE DUODENUM.*

BY E. A. CODMAN, M.D., BOSTON.

Recent active experience with operation on six cases of acute perforating duodenal ulcer, and two cases of the same disease operated on in a subacute condition without definite perforation, as well as recent passive experience in the same disease, have stimulated my interest in duodenal surgery. For much of the active experience and some of the passive experience I am indebted to Dr. Harrington. There are a number of observations which we have made in connection with these cases, which have led us to conclusions which, though by no means proved, we are sufficiently convinced of personally to bring up for discussion and for further support from the experience of others. For those conclusions which are correct, Dr. Harrington is responsible; for those which are incorrect, I am responsible.

As time will not permit of the arrangement and presentation of evidence, I shall simply state what seem to me important points on this subject and trust to giving more elaborate evidence in a future paper. First, concerning cases of acute perforation: I believe that in the past (and even in the present) we have been operating on these cases supposing that they were peritonitis from appendicitis, and that we have sometimes removed the appendix as a scapegoat because it was inflamed and covered with fibrin *externally* and have not observed that *internally* there was no ulceration or gangrene of the mucosa. The cases have lived or died without our thinking of duodenal perforation in connection with them. Of course, it is well known that appendicitis is the usual pre-operative diagnosis for acute perforation of the duodenum, but I further say that we have allowed it to be our operative and post-operative diagnosis as well. It is only three years since I showed my second case at one of these clinical meetings. It was the first case at this hospital which had been diagnosed at the operation and had recovered, although my first case had lived two months after being successfully sutured. Both of these, before operation, I mistook for appendicitis. I pointed out then that previous cases in the records, with one exception, had only been diagnosed at autopsy. Since that case I have had three more cases at this hospital and one in private practice in which I have made a provisional second diagnosis of duodenal perforation and thus the operation greatly aided. Three of these have recovered. During the last five years I have operated at this hospital on 5 cases of perforated duodenal ulcer and 82 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1–16. During this same five years all the other seventeen surgeons together have operated on 12 cases of perforated duodenal ulcer and 1,130 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1–100. During the three years previous to 1903, the proportion of all the hospital cases, including my own, was 1–580 of acute appendicitis. These figures must mean something even to the non-believer in statistics. There is little danger of these cases being confused with anything but acute appendicitis, for they simulate them almost exactly. I do not believe that it is mere accident that so many of these cases have fallen to my share. I have in all cases looked at the appendix first and believe that this should always be done. In two cases I had to remove the appendix and open it in order to convince myself that it was not the cause of the trouble, so inflamed was its peritoneal surface. On the other hand, in several appendix cases I have thought of perforated ulcer but fortunately looked at the appendix first.

It does not follow from the fact that a case recovered after removal of the appendix and drainage of the peritoneum that the case was not one of perforated ulcer, for drainage alone may be sufficient to let the ulcer close and seal with fibrin. I believe that such cases have occurred occasionally at this hospital and are to be found now in the records as appendicitis. I can recall cases of my own, before I learned to recognize perforated duodenal ulcer, in which the condition of the appendix seemed hardly sufficient to account for the trouble, and which have recovered. I am inclined to think, however, that most cases need suture of the ulcer to be successful. Another reason that leads me to make this statement is, that most of these cases absolutely deny previous stomach trouble and only describe vague symptoms on the most careful questioning. As Weir has pointed out, the reason for confusing it with appendicitis is that the direction of least resistance is downward toward the right iliac fossa along the outer side of the colon, and that absence of previous gastric symptoms is the rule. There is not nearly so much danger of confusing the diagnosis with perforated gastric ulcer.

The following points in the severe cases would make me suspicious of duodenal ulcer instead of appendicitis:

1. Onset of pain more sudden and violent and more initial shock.

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* Presented at the Clinical Meeting of the Massachusetts General Hospital, Jan. 10, 1908.

2. A contracted *concave* boardlike abdomen. This seems to be very characteristic, though some cases of appendicitis have it, too.

3. Tympany over the normal area of liver dullness. This is by no means the rule, but when present is almost diagnostic. Gas may not always be noticed when the peritoneum is opened.

4. The vague symptoms of duodenal ulcer elicited by careful questioning.

5. Most of the patients are males between twenty and forty years.

6. Location of tenderness and pain is very deceptive.

There are a few points of technic which I should like to speak of.

1. If perforated ulcer is suspected, it is well to be sure that small, curved, round needles are on hand, for one is much embarrassed with straight needles in suturing the perforation.

2. Make high appendix incision and examine condition of appendix first. Take it out if necessary, to be sure of the mucosa.

3. If appendix is not perforated or gangrenous, carry incision up rectus high enough to see whether there is fibrin about the pylorus. If there is, carry incision up to actual margin of ribs. One needs plenty of room to do suture quickly.

4. One obtains the best view of the duodenum by pulling gall bladder out with one hand and hepatic flexure down with other. Most ulcers are easy of access.

5. Suture the ulcer *before* washing out the abdomen.

6. Unless the ulcer is large and indurated or extends beyond the pylorus to the stomach, or there is stenosis of the pylorus, or the history shows severe pain and distress in the past, I should not do gastro-enterostomy. It seems to me the remedy is worse than the disease.

The problem is quite different from that of gastric ulcer, for, as I hope to be able to show, the prognosis of duodenal ulcer is better, and the important obstruction may be at the lower end of the duodenum instead of at the upper.

7. In operating for acute appendicitis the surgeon should always inspect the mucosa of the appendix unless perforation or gangrene is obvious.

The most interesting clew which these acute cases have given us has been in directing our attention to non-perforating small peptic ulcers similar to those which do perforate. What proportion do perforate? If so many of the perforated cases have few symptoms before peritonitis sets in, may there not be many which give few or no symptoms at all?

Somewhere between simple pain from hyperacidity and the classical duodenal ulcer with violent pain and tarry stools there lies a relatively unknown disease — the small peptic ulcer. I do not believe we have obtained a fair view of this disease from the autopsy end, because it may be that most of the cases get well. We do not know what proportion of them heal nor how long it takes them. We do know a few things about these ulcers: that they may perforate into the general cavity; that they may cause adhesions to neighboring organs; that they may cause cicatricial stenosis of the pylorus and the symptoms of gastric stasis; that they may cause adhesions to the gall bladder. (And, by the way, I believe many of the adhesions blamed to the gall bladder have been due to the duodenum.) Besides these we must admit another division: those that cause few or no symptoms and which are confused with hyperacidity and nervous dyspepsia. The first question is, then, What proportion do perforate? It is generally supposed a large proportion; I believe but a small proportion. The next question is, How are we to recognize those that have no intention of perforating? I believe the cardinal symptom is "hunger pain;" two to four hours after meals, if *unassociated* with ordinary indigestion and stomach stasis. The quality of the diet makes little difference. I believe that such little ulcers will seldom show blood in the stools.

Now I have a theory to offer as to the cause of duodenal ulcers and duodenal symptoms. There seems to be a general impression that as soon as food has gone into the duodenum it has a free pass along the rest of the route. But those that think this forget the cause of gastro-mesenteric ileus. Under certain conditions may we not get a subacute condition of this kind and have stasis of duodenal contents from partial obstruction where the superior mesenteric vessels cross the duodenum? In other words, I want to suggest to stomach specialists another disease, — duodenal stasis from chronic gastro-mesenteric ileus. They probably know it already. There are a number of things in connection with our cases which make this hypothesis at least worth investigating. Any one who has seen acute gastro-mesenteric ileus would not laugh at it. Probably the stasis is of secretions, not of food.

P.S. Since writing the above I have read a most interesting article on acute gastro-mesenteric ileus by Bloodgood in the November *Annals of Surgery*. This article is mainly a discussion of three cases of acute dilatation, but in connection with the suggestions I have offered the final paragraph is very appropriate.

He says: "In conclusion I again call especial attention to case 3, which is undoubtedly an example of chronic gastro-duodenal dilatation or gastro-mesenteric ileus. Further experience may demonstrate that this is the common pathological condition of many cases of gastric neuroses which have not been relieved by posterior gastro-enterostomy, and which may be relieved by duodeno-jejunostomy."

I think that within a few years we shall hear much about stasis in the duodenum. In a future more detailed discussion on this subject I intend to report a private case of probable duodenal ulcer which through many years has shown a tendency to relapses. In his case it seems to me not unlikely that duodenal stasis has been the cause of repeated ulcers rather than that one persistent duodenal ulcer has been the cause of all the attacks. Finally, I would like to say that

I am much interested in this subject and would be greatly indebted to other members of the staff for opportunities to observe their suspected cases of duodenal ulcer, either at the bedside, at operation or at autopsy.

The following questions need answers: Perhaps those familiar with the literature can give them to me.

Why is duodenal ulcer a male disease?

What evidence is there to show that these small ulcers are intractable in healing?

Why may the persistent symptoms not be due to the cause (duodenal stasis) or the result (periduodenal adhesions)?

Can perforation into the pancreas cause a leakage of pancreatic juice into the intestine at the wrong time?

Why may not the alkaline duodenal secretions be responsible for some of the pain attributed to acid gastric secretions?

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THE "OPTOMETRIST" AND HIS "COLLEGES."

BY JOHN C. BOSSIDY, M.A., M.D.,
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Preceding articles by the writer have aimed to show how these so-called optometrists veil a lack of general scientific or medical education in a flood of words; how their constantly repeated claim to the elevation of their "profession" means no more than a listening at occasional meetings to medical papers so abstruse that they startle scientific and medical men by their apparent depth and complexity. The acrobatic ease with which these men handle the most difficult subjects, the self-satisfied way in which they proclaim their superiority over the physician in general, and the oculist in particular, would be amusing were it not serious; for it is certainly a serious thing to see thousands of poorly or partly educated men follow the lead of a few enthusiasts into medical water so deep that even medical experts sail on them with extreme caution.

The men who nimbly do these daring things are the opticians who reason out medical cause and effect in a moment, after either securing their working training in a workshop or behind a counter in most cases, or (if they be decidedly ambitious) by an investment in a correspondence or an attendance course at one of the many optical schools scattered throughout the country.

Let us see how they give a tangential touch to both scientific and medical education and then proclaim themselves the caretakers of the most complex and delicate organ of the human body, — the eye.

From the mass of literature and great number of circulars regarding their get-educated-quick institutions and get-a-diploma-quick methods, the following are selected as truly representative:

Lake Forest Correspondence Optical School (Ill.):

> "This is a correspondence course and is taught by mail by a regularly incorporated Optical College, incorporated according to the Illinois State Laws, endowed with the power to confer the degree of Oph.D. (Doctor of Ophthalmology) upon its graduates.
>
> "Time required to complete course is *one week*. . . . We guarantee to make all students thoroughly competent. The entire fees, including examination, instruction, graduation and diploma, are $15.00.
>
> "Dr. G. J. W. —— "

Detroit Optical College, J. S. O., M.D.:

> "By these [the college's] methods of object teaching an intelligent person may become sufficiently familiar with the eye, its defects of vision and their accurate correction by properly adjusted glasses, in a few weeks to be skillful in all the requirements of the art."

This two weeks' course comprises:

> "Everything that is necessary to make students practical opticians, including a thorough knowledge of defective vision and its correction by means of the case of trial lenses and test cards, the practical application of prisms, opthalmoscope, mydriatics, etc."

A diploma (title not stated) is given with this attendance course. Accompanying the catalogue is a letter to me extolling a correspondence course at $25.00, giving a diploma 16 x 21 inches in size, which contains nothing "to indicate that you have taken a correspondence course."

A circular from the same college mailed later to me says:

> "In response to a number of applicants, we made a special club offer for forty pupils. We have enrolled forty-seven pupils in this club, and are furnishing them our $12.50 correspondence course in optics, for $7.50.
>
> "The above course consists of a book on diseases of the eye, etc., special type-written instruction; examination questions which will be criticised and returned to you, and 16 x 21-inch diploma."

They later offer a correspondence course at $2.00 down and $1.00 a week for six weeks, or $6.00 cash in advance; a diploma also accompanies this course.

Chicago Ophthalmological College and Labortory:

> "This course consists of the anatomy and physiology of the eye, their relation to associated organs and the sympathetic system, physical optics, physiological optics, lens building, muscular imbalance, differentiating disease from optical conditions, and frame adjustment."

Students finishing the four weeks' course will will be awarded a diploma,— title not given.

McCormick Optical College (Chicago). The *Optical Journal* of Oct. 20, 1904, has this advertisement:

> "I will for $25.00, cash with order, give a correspondence optical course that will make the others sick-degree, Doctor of Ophthalmology."

Los Angeles School of Ophthalmology and Optometry (Cal.):

> This school is presided over by a physician whose practice is advertised as limited to eye, ear, nose, throat, catarrh and fitting glasses. In from four to six weeks, a student can secure a certificate of competency, after acquiring a thorough and lasting knowledge of anatomy of the eye and its appendages, an ability to recognize diseased conditions, a perfect working knowledge of all the different forms of defective vision and muscular imbalance, a knowledge of different forms of lenses and kinds of instruments for examining the eye and detecting defective vision, etc.

A personal letter to the writer guarantees to make him qualified to pass optometry boards, as state examinations are only a matter of form, according to the letter.

The Rochester (N. Y.) School of Optometry:

> Five circulars and one personal letter have reached the writer in reference to this school. The course is of about three months in length, and professes to teach elementary optics, anatomy and physiology of the eye, physiology of vision, errors of refraction, accommodation, anomalies of ocular muscles, asthenopia, retinoscopy, ophthalmology, lenses, mechanical optics and diseases of the eye. *The president of this college was in 1905 president of the Optical Society of the State of New York.*

Rowley Ophthalmological College (St. Louis, Mo.):

> "The cause of 85% of all human ills is permanently removed by following our teachings. Tuition, $25.00 for a short time, and students are guaranteed satisfaction or money refunded.
>
> "When proficient, the degree of Doctor of Ophthalmology is conferred on them.
>
> "We also teach an attendance course in optics, the price at present being $10.00, but will soon be advanced."

The South Bend (Ind.) College of Optics:

> Five calls have come to me to take this correspondence course, reduced from $25.00 to $7.50, and carrying the diploma and title of Opt. D. (Doctor of Optics).
>
> Over ninety special subjects are taught (*e. g.*, anatomy and physiology of the eye) for the above named sum,—so that the seeker for knowledge or a diploma can acquire the same at an average outlay of about $0.08 per subject, if you put no value on the title. Let title be worth $5.00 and $2.50 represent knowledge, and the subjects average about 3 cents apiece.
>
> The college also has a $4.00 course which graduates one as "Master of Ophthalmic Optics," on a 21 x 16-inch diploma.

The New York *Optical Journal* is advertised as saying:

> "Those who get the course, at the prices quoted, will be lucky."

That many availed or were expected to avail themselves of this offer is indicated by a statement in the prospectus that

> "We asked our engravers to name their lowest cash price on a thousand diplomas in one lot."

The Manhattan (N. Y.) School of Optics says:

> "With the passing of recent laws wherein Optometry is recognized as a profession, a new and highly profitable occupation is opened to the retail pharmacist, jeweler, optician, etc."
>
> The course is on lenses, light, the eye, optical instruments and correction for all defects.

In regard to the eye, they profess to instruct on anatomy, the acuteness of vision, visual defects and complications, hypermetropia, myopia, presbyopia, astigmatism, strabismus and muscular asthenopia, which seems a decidedly medical training for the druggist and jeweler.

You get all this in from ten to twelve weeks at the rate of three lessons a week.

You pay $50.00 for the attendance and $25.00 for the correspondence course and "this institution awards a handsomely engraved diploma to its graduates. This is an official document and a work of art."

Coming nearer home, we find recently the Kansas School of Optometry, located at Saco, Me., and teaching by correspondence:

> "anatomy, physiology, hygiene, neurology, myology, diseases of the eyes, functional nervous diseases and their cure, refraction, the complete fogging system, shadow testing by the static dynamic and fogging methods and ophthalmoscopy."
>
> "A complete course and diploma for only $10.00. The greatest post-graduate course ever prepared for opticians."

The title in this case is Doctor of Optometry.

The school is now located in Boston in the same building where the president of the American Optical Association conducts his business, and on a glass door as you enter the school, this large painted sign stares you in the face:

> "Eyestrain causes Headache, Stomach Trouble, Epileptic Fits, St. Vitus's Dance, Cross Eyes, Cataracts, Female Trouble. We can cure you with Glasses."

The Klein School of Optics (Boston):

This school advertises a course of ten weeks; furnishes a diploma and rectifies during that time any previous deficiency in education.

Gray's Anatomy, Foster's Physiology, Brockway's Physics, DeSchweinitz on the Eye, Haab's Atlas of Ophthalmoscopy, Prentice on Ophthalmic Lenses, are the books recommended for school use; while the student must also have a small dissecting case, ophthalmoscope and retinoscope. The subjects for study are anatomy, physiology, physics, ophthalmology and mechanical optics.

In anatomy you study osteology of the skull, structure of the orbits, Tenon's capsule, muscles, nerves, arteries, lymphatics, veins of eye and orbit, the eyeball, its layers and refractive media, the optic nerve and the brain. In physiology you study the retina, optic nerve, chiasma, optic tract, corpora quadrigemina, corpora geniculata, pulvinar cuneus, etc.

In physiology you study strabismus, muscular errors, paralysis and spasms of accommodation, diseases of the eye, etc.

Is this medicine, —have Tufts and Harvard Medical Schools a hitherto unknown rival in the medical field?

The reader may say that these schools are not shown to have any official connection with so-called optometry, — have little or nothing to do with the case in question. In that event, since the opticians have no official college, we will connect them with schools which they must recognize.

The New York Institute of Optometry has for its president the oldest living ex-president of the American Optical Association, and he is also an ex-president of the State Optical Society of New York.

The secretary of this society is the present president of the Physiological Section of the American Optical Association. These men are listened to in stated addresses at the annual conventions of the American Optical Association, which would not be the case if their school did not have at least quasi-official recognition. They are of a faculty of seven, teaching physics, physiological optics, subjective and objective optometry, mechanical optics, anatomy, physiology, hygiene and optics. The course is of three months duration if the student works mornings and afternoons; of six months duration if he divides the day by working mornings for three months and afternoons for three months. They describe optometry as:

> "One of the modern professions, and an evolution from the calling of the optician, combined with portions of the work formerly undertaken by the oculist."

Let us note how they drive the oculist to the wall in three months!

In the first month, they teach arithmetic, algebra, trigonometry, anatomy, physiology, hygiene and kindred subjects.

They enlarge on these same subjects in the second month by taking eyes of animals for dissection, by showing innervation and ennervation of eye muscles and *diseases of the internal and external eye that an optometrist should recognize.*

During the three months, they continue at mathematics, anatomy, physiology, hygiene and many other subjects.

They advertise "visits to wholesale stores and instruction given as to how to intelligently order goods."

In the fourth, fifth and sixth months, one gets more of a business course, — first aid to the injured, salesmanship, professional advertising, and advt. writing, professional ethics, professional limitations of optometry, optometrical jurisprudence, professional book-keeping and office management, diet, physical development, etc.

It seems that the Institute reverses all accepted rules of education in that you dip into science and medicine during the first three months, but during the last three months get down to what is at the bottom of all this agitation, — cash and commercialism.

Two degrees are conferred by this school, — "Bachelor of Optics" and "Doctor of Optometrical Science."

Is not this a representative educational institution of this optical brotherhood, when two of its officers are two active members and frequent speakers at the annual meetings of their American Association?

If this school represents the highest educational standard of so-called optometry, it seems not only to touch upon but to delve very deeply into medical mysteries.

The Northern Illinois College of Ophthalmology and Otology:

This school professes to teach the laws of optics, anatomy and physiology of the eye; dissection of human and animal eyes; to give practical work on operations and treatment of diseased conditions; to teach refraction, accommodation, convergence, trial case and use of mydriatics.

This is a correspondence course of six weeks in which students are given a thorough understanding of the anatomy of the eye and an ability "to recognize diseases and conditions which are often so annoying to the optician." After completion of this correspondence course, those who receive the diploma are invited to spend a week at the school in Chicago,

> "although this addition to the course is not at all necessary, as we thoroughly equip the graduate for his practical work before granting the degree of Doctor of Optics."

You are taught by correspondence "anatomical construction of the eye, its development and diseases in a way that our students know the eye and its appendages as they know the alphabet."

The course with degree of Doctor of Optics costs $25.00. The school has a faculty of nine, five of whom are advertised as M.D.'s; while of the two lay members of the faculty, one is advertised as Lieutenant-Governor of the State of Illinois.

The curriculum embraces the principles of ophthalmology and otology, clinical and didactic ophthalmology and otology, anatomy and physiology of the eye and brain, *latent brain strain,* dioptrics, optical jurisprudence, refraction, optometry and psychology.

The remarks regarding this school were taken from their catalogues or prospectuses of past years.

Their 1908 advertisement has this day reached me, and part of their claims is:

> "We dissect human eyes and the eyes of animals with our students, thus familiarizing them with all its normal and abnormal conditions and appearances. . . . Amblyopia, heterophoria and all other defects are minutely covered. Under this head are included pathological conditions of the eye

> and its appendages, enabling the student to *recognize at once* all defects and to differentiate those requiring the attention of the oculist from those he may handle himself."

This is quoted in order to call attention to the extraordinary diagnostic skill which these students acquire in a few weeks, while the oculist, who has worked for years and years, can lay no claim to such unusual power.

The degrees conferred are: "Fellow of Optics," "Doctor of Optics," "Bachelor of Ophthalmology," "Master of Ophthalmology" and "Doctor of Ophthalmology." They also announce an additional, but unnamed honorary degree, and announce finally that they are not empowered to grant the degree of Doctor of Medicine. One of their diplomas is mentioned as being 28 x 28 inches in size. If the other four be of the same size, you can, or could, secure from this school over 25 square feet of diplomas, and do all this in an eighteen weeks' correspondence, or eight weeks' attendance course.

Query: Would 25 square feet of elegantly engraved diplomas be more expensive than decidedly expensive wall paper in a well appointed optical office?

This must be a representative optical college, for its president frequently appears at large optical gatherings as a speaker, and in 1906 read a stated paper at the annual meeting of the American Optical Association at Rochester, N. Y., while at Minneapolis, in 1905, the secretary of this same school read a paper at the annual meeting of this same American Optical Association on "Professional Integrity."

In addition to doing extraordinary things in an educational line, this man does even greater in a curing way. He is the president of an Eye Remedy Company which advertises such miracles as removal of floating spots from the interior of the eye, the clearing of the retina of congestion and the absorption of cataract by the use of his wonderful preparations.

Do the optical or optometry seekers for higher education claim as their own the high standing New York Institute and the North Western College of Ophthalmology and Otology which turn out these many-diploma, would-be-professional men in a few weeks, — or do they dare to disown optical diploma mills in general and these schools in particular, even though the heads of the latter schools be active men in their association?

Little of optics and much of medicine seems to be the rule with all of them; yet in unison they cry that they are not practising medicine, because they do not prescribe drugs.

An optical writer calls attention to the fact that "Optometry" has been in the Century Dictionary since 1901, which allows me to make an additional statement regarding this coined word. When at Milwaukee, in 1904, the president of the American Optical Association introduced the subject of its adoption:

> "Private discussion had during the morning brought forth several pronunciations of the word, but it was stated the proper and most common usage placed the accent on the second syllable. Thomas H. Russell, editor-in-chief of Webster's Imperial Dictionary Co., was next introduced, and explained that he had come to the convention to get the Association's correct pronunciation and definition of the word."

And so the child was born, named and defined to suit the claims of these mechanical workers. If 1901 were the date of birth, the baby would now be about seven years of age; but if the Century Dictionary of 1888 were perused, it would be found that "Optometry" was a breathing infant thus defined:

"1. The measurement of the range of vision.

"2. The measurement of the visual powers in general (including the acuteness of the perception of form, of light and of color, — eidoptometry, photoptometry and chromoptometry respectively), of the extent of the visual field (perioptometry), of the accommodative and refractive states of the eye (dioptometry), and of the position and movements of the eyeball (ophthalmostatometry and ophthalmotropometry)."

Do these men do all that this definition embraces? For this word was then defined with no thought of latter-day optical societies bending words to suit their purposes, just as they say that they simply bend rays of light in their "professional" work.

Whether this bill fail or succeed, the optician partly accomplishes his purpose, — to bring the name "Optometrist" before the people, to advertise it, and then to charge for his "professional" service as well as for the glasses he sells. One of their prominent men acknowledges this to be true when he says that his fellow workers do not now dare put "Optometrist" on their advertising signs, — but that they will be prepared to do so when they shall have educated the public by legislative enactment to a knowledge of what the word means.

The two words (optician and optometrist) are absolutely convertible, so that your writer clings to the former and ignores (as all physicians should) the latter. And this word "optician" is decidedly elastic, being susceptible of three meanings:

If he be (1) "One skilled in the science of optics," there are but few of them who could qualify; if he be (2) "One who makes optical glasses and instruments," few again could qualify; if he be (3) "One who sells optical goods and instruments," all, or nearly all, of them could qualify.

In such event, he is on a par with the butcher, baker and grocer, who sell their wares as best they can and do not seek to become professionalized by word of law.

This latter object is their desired "education," as is proved by the advertised fact that

> "Secretaries of state societies are notified that the following pieces of literature, designed to build up and strengthen the local society and aid in securing state legislation,

> may be had free of charge, in lots of from one to five hundred, upon application to Secretary ——, at Kansas City, Mo."

Then follows a list of eight pamphlets, number four of which is headed, "Organization, Legislation, Education. Without organization you cannot secure legislation. Without legislation you cannot afford education."

That in a few words is their case, — professionalize them by law and they can then "afford education." If they do work better than the physician, as they claim, why do they not peruse books or found a school before they have recourse to law?

Ridicule their claims, if you will, yet the fact remains that their organized and persistent effort, coupled with the apathy of the medical profession, has caused a so-called optometry law to be enacted and placed upon the statute books of Indiana, California, Tennessee, Nebraska, Idaho, Utah, Montana, Minnesota, Oregon, North Dakota, Arizona and New Mexico.

They will come with their claims for recognition before the Committee on Public Health of the Massachusetts Legislature on the 20th inst., when it is to be hoped that the usual reserve of physicians will give way to an active working interest in what vitally concerns them, — the protection of the public and the preservation of the professional and educational qualifications which our state has wisely enacted and seeks wisely to enforce.

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Massachusetts General Hospital.

CLINICAL MEETING OF THE MEDICAL BOARD, JAN. 10, 1908.

I. ACUTE INTESTINAL OBSTRUCTION, DUE TO TABES MESENTERICA.

II. INTRA-ABDOMINAL CURETTAGE OF THE UTERINE CAVITY.

BY F. B. HARRINGTON, M.D.

I. A boy nine years old, of previous good health, was seized with acute abdominal pain and vomiting. These symptoms continued for two days with marked distention, when he was brought to the hospital. The diagnosis was intestinal obstruction. On opening the abdomen a point in the small intestine was found adherent to a mass as large as a small orange, at the root of the mesentery. An inch above the adhesion there was a kink in the bowel which caused the obstruction. The mass was made up of hard glands which indicated an old inflammatory process undoubtedly tubercular. On separating the bowel a small opening was shown to exist between the gland mass and the interior of the gut. It indicated that suppuration had taken place with discharge into the bowel. This opening was closed. The condition of the bowel at the kink was sufficiently good to justify a belief that it would take care of itself.

The bowels were tapped and the distension relieved. The abdomen was closed without drainage. There was relief of symptoms for a week, when pain, vomiting and distension returned. Nine days after the first operation the abdomen was opened again. There was great distension, the intestines were studded with miliary tubercles and another portion of the bowel was found adherent to the same glandular mass. Two Mixter tubes were inserted into the small intestine at considerable interval. The bowels were got back into the abdomen with the greatest difficulty. The parents were notified that there was no hope of the child's recovery. He did recover, however. One of the tubes came out on the seventh day, the other on the twelfth day. The fecal discharge gradually ceased from both openings with the passage of feces in the normal way.

The outlook for this boy is still not good, and it will be necessary to watch him with great care. If there is a recurrence of the symptoms an attempt must be made to remove this tubercular mass which has caused the trouble, but there is sure to be great difficulty in draining this area without setting up a general peritonitis or causing obstruction of the bowels.

II. In the *Johns Hopkins Bulletin* of May, 1906, Russell reports 32 cases of hysterotomy and speaks of the value of this operation as a means of diagnosis and treatment. I wish to call attention to this operation which is a safe and satisfactory one. It has been performed by several of the hospital surgeons in the past but it has not received the attention it deserves. In the last fourteen months I have had nine cases. All have made rapid and satisfactory convalescence. The reaction has been slight, one case only reaching a temperature of 101° and that but for a single day.

Three of the patients had been previously curetted by the vagina for metrorrhagia which had recurred. Four had profuse endometrial discharge and conditions which called for opening the abdomen. Two had intra-uterine polypi.

The method used is to incise the anterior wall of the uterus in the middle line down to the cavity. Double hooks are then used to retract the incised wall. The incision extends from the fundus to the internal os. The bleeding is slight. This gives a clear view of the cavity of the uterus and makes it possible to curette thoroughly into the horns of the uterus. In one case the operation was done immediately after a careful curetting, by the vaginal route. The opening of the uterus from above showed the imperfection of vaginal curetting. Much hyperplastic mucous membrane had escaped the curette and the membrane in the horns had not been touched.

The uterus is closed by two layers of catgut and the peritoneum of the uterus by fine silk sutures.

The approximation of the peritoneum is the great safeguard of the general cavity. Drainage through the cervix into the vagina should be insured by dilating the canal if necessary.

FOUR CASES OF LEAD POISONING.

BY F. C. SHATTUCK, M.D.

Case I. A painter, thirty years old, single, admitted the 25th day of November. Been feeling poorly for six weeks, but quit work two weeks ago on account of weakness in legs and back. "Legs won't hold him up; can't go upstairs; joints are lifeless." Has had some grinding pain in abdomen, and kept bowels open with salts for the past two weeks. No paralysis in hands or arms, but legs weak. No knee jerks even on reinforcement. No lead line. Lead was found in the urine. Marked stippling of the red cells. Dec. 16, he was sent to the Convalescent Hospital with some gain of power in legs.

The interesting feature of this case is the exclusive involvement of the legs, more common, I believe, in children than in adults.

Case II. A stout man of fifty entered, Dec. 2, with cardiac dropsy and complete wrist drop. He has been drinking well water coming through some thirty feet of lead pipe. Lead line on gums. An examination of the urine for lead after taking iodide of potash was negative. Marked stippling of the red cells. Discharged Dec. 23, with considerable improvement in wrists, great improvement in cardiac condition. The past seven months he has drunk less water than previously. No other member of his family or person using this water has been affected.

In this case we have the typical lead paralysis but without colic.

Case III. A salesman, forty-nine, a hard drinker, was admitted Dec. 10 for abdominal pain, worse at night, of about five weeks' duration. Constipation. Pain often leads to vomiting. Dec. 17, his colic being less severe, marked muscular weakness appeared in both arms, soon involving the back, so that he could not rise in bed without assistance. The colic soon ceased altogether, but the paralysis got worse. Dec. 29, he had a chill, ushering in a pneumonia, which proved fatal on Jan. 2. Marked stippling of the red cells. For three years he and his family have occupied an old house, newly plumbed five years ago. Well water was used coming through at least fifty feet of lead pipe. No other member of the family was affected.

In this case the dry colic was at first the prominent symptom, paralysis coming on rapidly and involving nearly all the muscles of the arms and back.

Case IV. A man of fifty-seven entered Jan. 4. Has worked for nineteen years in a paint factory as a mixer. Four years ago, operation for appendicitis at the Massachusetts General Hospital. Was in the Natick Hospital for five weeks last summer for vomiting and diarrhea, and while in the hospital became weak in his arms and legs, and later constipated. Discharged from the Natick Hospital four months ago unrelieved, and since then has kept the bed. He has a complete toe-drop and more or less loss of power in all the leg muscles. There is marked atrophy of the thumb and interossei muscles, but apparently no predominant weakness of any special muscle group in the arms. No lead line on gums. Slight stippling. Feb. 10, there has been marked and steady gain. On entrance he could not stand; now he can walk.

Dr. Putnam thinks lead a factor in this case, but there is probably also diffuse degeneration of the spinal cord.

These cases seem to me worth reporting, as I do not recall such a group, illustrating the more ordinary forms of lead poisoning, coming into the hospital within so short a time.

THREE CASES OF NEPHROTOMY AND A CASE OF HYPERNEPHROMA.

BY W. M. CONANT, M.D.

Eight cases of renal surgery have been operated upon by myself and Dr. Cobb on the South Service during the three months preceding Jan. 1. In the short time allotted it will be possible to call attention only to the most interesting features.

In three cases a diagnosis of stone in the kidney was made; they are of special interest, not only on account of the x-ray plates and the light they throw upon the possibilities of diagnosing kidney stone in this way, but also on account of the cystoscopic and ureteral examinations made for me by Dr. Lincoln Davis, and also for certain interesting points in the pathology and operative technic in the individual cases. In two cases the x-ray diagnosis of stone was confirmed at operation. In one case, in which a previous nephrotomy for actual stone had been done, the x-ray picture was misleading; a chronic pyonephrosis, the etiology of which is still in doubt, was found and nephrectomy was done.

The case of sarcoma or hypernephroma of the kidney is interesting on account of the differential diagnosis and also because of the exceedingly malignant nature of the growth.

Case I was a boy sixteen years old who had had attacks of pain in his right side for eight years, with hematuria. The x-ray plates showed clearly stone in both kidneys; there had been, however, no symptoms on the left side.

The urine contained some pus and blood. The right kidney was cut down upon by an incision through the loin extraperitoneally. The peritoneum was opened and the left kidney palpated. The peritoneum was sutured, after which the right kidney was delivered and the stone felt in the lower pole near the pelvis. Instead of splitting the kidney along its posterior border, a direct cut radiating from the hilum was made down upon the stone, which was extracted. The interesting point in the operative technic is that the incision into the kidney was closed with a quilted suture of kangaroo tendon and a layer of Lembert sutures of No. 1 catgut. The kidney was replaced and the abdominal wound closed in layers without drainage. In my experience such a procedure is unusual and has not been done by many surgeons. It seemed to me in this case possible to accurately close the wound in the kidney and eliminate the necessity for drainage. The boy recovered promptly, had no reaction from the operation, and the other kidney did its work well. The patient was up out of bed on the twelfth day after operation. Another x-ray of the left kidney taken before his discharge from the hospital showed stone in that kidney. The patient was directed to report for further observation and to return if symptoms developed on the left.

J. T., sixteen, single, shoe cutter, Oct. 24, 1907, complains of pain in right side off and on for the last eight years. With it he has had some difficulty in micturition and occasionally bloody urine.

On examination the abdomen is held rigidly but there is no mass to be felt or tenderness to be elicited.

Temperature 98°. Pulse 100. Urine smoky, acid, 1,026 specific gravity, sediment, much blood, some pus. X-rays show stones in both kidneys.

(Oct. 26.) Operation, Dr. Conant. Five-inch linear incision over right iliac crest. Peritoneum opened. Left kidney not remarkable, closed. Right kidney dissected free and delivered. In lower pole a hard mass was felt; an incision was made over it through the parenchyma and a small, red brown, crystalline stone was extracted. Incision closed with several Lembert sutures of No. 1 catgut. Kidney replaced. Muscle sutured with medium kangaroo, the skin with silkworm gut. The wound was closed without drainage.

(Oct. 28.) Urine contains a good deal of blood. (Oct. 29.) Urine clearer, wound not tender. (Nov. 2.) Urine clearer, 45 oz. (Nov. 5.) Wound solid and not especially tender. All stitches removed. (Nov. 7.) Sitting up. (Nov. 10.) Up and about. (Nov. 12.) X-ray shows shadow in left kidney region. (Nov. 16.) Discharged well.

Case II was that of an Italian thirty-nine years old. He had had pain in the left side for only a month before operation and had noticed a bunch steadily increasing in size. There was a large tumor occupying the left hypochondrium and loin, oval in shape, hard and tense, extending below the level of the umbilicus. There was a septic temperature. Dr. Davis made a cystoscopic examination for me and reported a normal bladder, but a thick stream of pus coming at regular intervals from the left ureteral orifice. The right ureter showed a clear stream. X-ray pictures were not taken before the first operation. A large abscess was opened and one stone removed at this time. The wound drained profusely for three weeks, and an x-ray photograph at the end of this time showed four or five large shadows, presumably of large stones. Accordingly a second operation was done about four weeks after the preliminary incision. Five large stones were extracted. and it appeared as if there were considerable renal tissue left.

The case has done well since the last operation. The remaining kidney is competent and the septic condition has disappeared.

J. E., thirty-nine, married, barber, admitted Oct. 14, 1907. For the last month has had pain in the left side of abdomen, where he has noticed a lump growing. His urine has been cloudy, like pus, and he has lost fifteen pounds.

On examination, abdomen retracted and soft. Descending from the left hypochondrium is a hard, tense, oval tumor mass extending just below level of umbilicus. It moves slightly with respiration. Rectal examination negative. Temperature 101°. Pulse 120. White count 12,600. Urine opaque, acid, 1,015, no sugar. Sediment contains a mass of pus with degenerated blood cells. No tuberculosis. Urea 1.1%.

Cystoscopic examination by Dr. Davis. Normal bladder except for area of reddening and inflammation about left ureteral orifice from which a thick stream of pus exudes at regular intervals. Right orifice emits a strong, clear stream.

Operation by Dr. Conant. A five-inch oblique incision over left iliac crest, perirenal fat entered upon and bulging kidney opened with the release of a good deal of pus. A large stone felt and removed. (Oct. 25.) Draining profusely. (Nov. 1.) Urine still contains a good deal of pus. (Nov. 10.) Discharge continues. (Nov. 8.) X-ray shows four or five shadows.

Operation by Dr. Conant. Right kidney explored and found to be of normal size and consistency. Renal tissue searched digitally and five more stones extracted. Nephrolithotomy. (Nov. 26.) Urine fairly clear with a little sediment. (Dec. 6.) Mass has diminished a good deal in size; urine quite clear. (Dec. 10.) X-ray shows a large irregularly shaped shadow in left side.

(Dec. 16.) Urine clear; no pain. Discharged much relieved to Waverley.

Case III is that of a man twenty-five years old. A stone had been removed from the right kidney about a year before by Dr. A. T. Cabot. Three weeks before I operated upon him he had entered the medical wards. He complained of bloody urine and of pains similar to those which he had before Dr. Cabot's operation, pain in the right flank radiating into the urethra and into the testicles. He had passed considerable bright blood. Urine examinations showed considerable pus and blood. The kidney could be palpated; the x-rays showed a doubtful shadow of stone. Because of this x-ray and the definite symptoms of stone, the kidney was cut down upon by a six-inch incision in the flank. The kidney was freed and delivered with difficulty because of the old adhesions. The kidney was found enlarged and covered with scars and several necrotic areas; for this reason it seemed best to remove it. Examination of the kidney after operation showed no stone.

G. H., single, iceman, Dec. 5, 1907, complains of having suddenly begun, three weeks ago, to pass bloody urine and to suffer from pain in right lumbar region similar to that which he had when in the Massachusetts General Hospital before. Has had dull pain in right side present most of the time and a stinging pain starting from the meatus and running up into right side after micturition. The urine has been bloody and the last few ounces bright blood streaked with yellow pus. Lately the pus has predominated. Has lost appetite and has complained much of thirst. Has lost about ten pounds in weight in last three weeks. On examination abdomen presents old scar in right lumbar region, is soft and tympanitic. On coughing a mass appears bulging on right side near scar.

(Dec. 23.) Patient is still passing considerable pus in urine and complains of tenderness in right side of abdomen in region of scar. The kidney cannot be definitely made out. X-rays show rather doubtful shadow of stone. (Dec. 26.) Operation by Dr. Conant. A six-inch oblique incision was made over the right iliac crest. Kidney freed and delivered with difficulty because of old adhesions. The organ was covered with scars and showed several blanched areas. Pedicle tied off and kidney cut away. Gauze wick left to stump. The peritoneal cavity was first opened and left kidney found to be normal in size and consistency so it was immediately closed again.

Case IV. Hypernephroma: A man, thirty-five years old, of more than ordinary intelligence, only eight weeks before entering the hospital noticed an unusual feeling in the left side and back. Six weeks before he had several sharp and severe attacks of pain in the left side and only three weeks before entrance had he noticed the tumor, which grew rapidly. He was confined to his bed for four or five weeks before operation. There was a large mass in the left flank, immovable, slightly tender and giving a slight feeling of fluctuation. Upon inflation of the colon the mass lay behind the bowel. The x-ray showed no shadows suggestive of stone. Cystoscopic and urine examinations gave no diagnostic evidence of the nature of the growth. The tumor was thought to be a pyonephrosis due to ureteral stone. Upon operation a very vascular malignant tumor of the kidney was found, but the patient's condition was too precarious to allow any attempt at removal. A small portion of the growth was removed and reported to be hypernephroma. After operation the progress of the malignant disease was astonishingly rapid. Coley's toxins were tried for a short time without influencing the progress of the growth in the least.

G. B. F., thirty-five, married, clerk, Oct. 24, 1907.

Appendectomy four years ago; pleurisy at same time, Gonorrhea nine years ago. Eight weeks ago began to have a sore, uneasy feeling in left side. It sometimes extended over his back and down into his hip. Six weeks ago he had several sharp, severe attacks of pain in the left flank; three weeks noted lump in left flank. Has been in bed for last five weeks.

On examination, abdomen full, rigid. There is a mass in the left flank which is immobile, tender; inflated colon lies in front of mass. X-rays show no stones or suspicious shadows. Temperature 99°. Pulse 100. Respiration 22. White count 14,600. Urine normal, acid, 1,018. Diagnosis pyonephrosis with or without ureteral stone. Cystoscopic examination by Dr. Davis. Normal bladder. Both ureteral openings difficult to see and emit clear streams of urine.

(Nov. 2.) Operation by Dr. Conant. A four-inch incision over iliac crest, peritoneum opened; right kidney felt to be of normal size and consistency; closed. Perirenal fat exposed and an attempt made to free the kidney, but it was too large. As a consequence an incision was made into a fluctuant area and a pint(?) of thick, red brown fluid containing grayish bits of tissue exuded. On account of the man's poor condition a large gauze was packed into the cavity and the wound closed.

Nephrotomy with drainage. During the afternoon and evening there was a good deal of staining; his pulse was rapid and weak and he was in a dangerous condition. (Nov. 4.) Looks better, pulse rate down. (Nov. 10.) Wounds discharging a good deal. Shows a little improvement. (Nov. 21.) Still very weak. (Nov. 25.) Given Coley serum. (Dec. 3.) Serum treatment reacting severely, has some difficulty in breathing and is bothered by the rapidity of the heart. Coley treatment stopped.

An interesting thing about the tumor was the fact that it was not directly connected with the left kidney, but was at the lower pole. It was very vascular and was so firmly adherent to the surrounding tissue that owing to the man's condition it did not seem best to attempt complete removal. Another point of interest was the severe reaction which followed the Coley treatment.

FOUR CASES OF ACUTE HEMATOGENOUS INFECTION OF THE KIDNEY.

BY FARRAR COBB, M.D.

It is well known that in the presence of septic foci elsewhere multiple embolic abscesses may occur and that these are usually found in both kidneys. These abscesses are in most cases caused by the carrying of actual bits of infected tissue into the terminal vessels of the kidney. Only for a few years, however, has it been recognized that in persons apparently well, acute septic infarcts of one kidney can be caused by the arrest of bacteria, usually colon bacilli, which are in the blood and which have entered the blood stream presumably through some minute defect in the intestinal mucous membrane. The most acute cases of this form of hematogenous infection of one kidney present an almost typical picture of a grave abdominal emergency,—appendicitis, acute cholecystitis or visceral perforation with abdominal rigidity, spasm, tenderness, vomiting, high leucocytosis, rapid pulse and high temperature. A number of cases have been operated upon under a mistaken diagnosis. In other cases the infection may be less acute and be cumulative, the infarcts increasing in number and size and going on to true abscess formation from day to day while the patient's general condition becomes more septic.

In 1901, Dr. A. T. Cabot recognized this condition clinically and reported a case under the heading of "Idiopathic Abscesses of the Kidney." Sampson, of Johns Hopkins, has done some experimentation upon animals to determine the reason for the bacterial localization in one kidney and not in the other. Brewer, of New York, has reported thirteen cases operated upon, and has also done some animal experimentation to determine the reason for the unilateral localization. My own experience covers six cases operated upon in the last four years. About a year ago, in the BOSTON MEDICAL AND SURGICAL JOURNAL, I reported one case, with a study of what had been done on the subject up to that time.

The course of the disease may be rapid with increasing toxic symptoms or after the acute onset the patient may go for weeks or months in a chronic septic condition. In a small number of cases the infection may manifest itself by a slight pain in the back and a long continued pyrexia with or without pyuria, which may never lead to a suspicion of the kidney as a cause. The urine may be normal or may show blood, pus and casts. Leucocytosis is usually high, 18,000 to 35,000. Tenderness in the costo-vertebral angle is a constant sign.

The differential diagnosis in these cases is difficult unless the pain is directly referred to the kidney. The cases most exactly simulating appendicitis or acute cholecystitis cannot be accurately diagnosed. The presence of pus, blood and blood casts in the urine may justify a suspicion of the seat of infection. It can be fairly stated that in septic conditions elsewhere, or in general infectious diseases, this acute picture should lead to consideration of an acute infection.

The experiments of Sampson, Brewer and Buxton seem to prove conclusively that in normal conditions of health and in normal kidneys, bacteria circulating in the blood will pass through the kidney without causing harm. In cases apparently in good health where infection occurs there is some cause in the kidney itself. The kidney may have been injured; it may be prolapsed and rotated on its axis so that its circulation is interfered with. There may have been the obstruction and traumatism of calculi. It has been shown that obstruction of the ureter will most readily cause lodgement of the bacteria, and in all probability the most frequent cause of this form of renal abscess is some abnormality in the ureter due to stricture, the result of inflammation or calculi. In women deformities in the ureters caused by pregnancy and childbirth may be the cause. It cannot be stated, however, that such infections will not take place in lowered general vitality and resistance with or without abnormalities.

The infecting bacteria are arrested in the terminal vessels in the cortex, close to the fibrous capsule, and the clogged blood vessels are seen filled with micro-organisms. Blood passes into the interstitial tissues, and in this stage of infiltration, the earliest stage, the infected areas resemble hemorrhagic infarcts. As the infection goes on a true abscess is formed, separated from the sound tissue by a hemorrhagic margin.

During the present service there have been four cases of this type of renal infection, one of them operated upon by Dr. Conant and three of them by myself. The four cases give an excellent illustration of the different types and stages of the infection.

Case I. The first case is typical of the acute fulminating cases that almost perfectly simulate a grave abdominal emergency. A young married woman, whose previous history was unimportant, while at work twenty-four hours before, was taken with sudden intense pain in the abdomen, most severe on the left side, with vomiting and collapse. Examination an hour after entrance discovered a rigid, generally tender abdomen with marked muscle spasm, especially marked on the left side. Temperature 104°. Pulse 120. Leucocyte count 26,000. Nothing of importance on pelvic examination. A diagnosis of gastric or visceral perforation was considered and, indeed, was made by another member of the staff. The fact that there was marked tenderness in the costo-vertebral angle on the left, and that attempts to palpate the left kidney between the hands caused excruciating pain, led me to make a provisional diagnosis of septic kidney. To eliminate the possibility of an intra-abdominal infection and also to determine as easily and as speedily as possible the existence of the other kidney, the abdomen was opened in the median line by a short incision. After this exploratory incision was closed the left kidney was exposed by an incision in the flank and removed. Numerous infarcts were found, cultures from which showed colon bacilli.

Examination of the kidney after removal showed a small stone embedded in one of the calices. This was the probable cause of the infection. This case made a prompt and satisfactory recovery. The day after the operation the temperature dropped to normal and the leucocyte count to 16,000.

Case II. The second case was that of a woman, twenty-four years of age, in whom the onset was more gradual, and in whom examinations of the urine and bladder furnished positive evidence pointing to the kidney. This case had been operated on several times for tubercular glands in the neck and axilla. Two weeks before entrance she had a miscarriage for which she was curetted at the City Hospital. Five days before she had begun to have pain in the right side and in the right iliac region. At examination she was tender on the right side of the abdomen and the right kidney was enlarged and somewhat tender. Various diagnoses were made by those who saw her in consultation; chronic appendicitis, tubercular retroperitoneal glands and tubercular kidney among others. Cystoscopy and catheterization of the ureters by Dr. Davis showed nothing pathological save that it was difficult to obtain any urine from the right ureter. The patient ran a moderately septic temperature for a week. Two days before operation she complained of severe abdominal pain on the right side. Temperature rose to 104°. The leucocyte count was high. Examination of the urine then showed blood, pus and swarms of bacilli. Associated with this sharp attack of pain and the urinary signs the enlarged kidney became very tender. Accordingly, operation was done and the kidney, showing typical septic infarcts, removed by Dr. Conant. The case made a rapid and successful recovery. Cultures showed the infection to be colon bacilli.

In this case catheterization of the left ureter showed the presence of a functionating kidney on the other side.

Case III. The third case was operated upon about seven days after the beginning of the acute attack. The patient was a Jewess, forty-eight years of age. For sixteen years she had had attacks of pain on the left side, suggestive of renal stone. Seven days before entrance there was a sudden severe attack of pain in the left side of the abdomen associated with vomiting. Frequent and burning micturition. Upon examination of the left side of the abdomen there was tenderness and muscle spasm. There was marked tenderness at the costo-vertebral angle. The kidney could be palpated. Cystoscopic examination by Dr. Davis showed a very small stone lying on the floor of the bladder and determined that from the left ureter was coming pus and detritus and from the right clear normal urine. X-ray examination showed no shadow suggestive of stone.

The kidney was exposed by an incision through the flank and multiple infarcts of various sizes in the cortex found and one abscess holding about two drams of pus. There were also numerous scars, presumably of old infarcts. The cultures gave pure colon bacilli. The kidney was removed. The patient made a perfectly satisfactory and rapid recovery.

Case IV. The fourth case was operated upon by me for acute septic infarcts of the kidney one year ago at which operation the kidney was not removed, but was decapsulated and the infarcts incised and drained. The patient recovered satisfactorily from this operation. For the last six months she has had severe attacks of pain in the left side with frequency of micturition and pus and blood in the urine. She re-entered the hospital in December last. The kidney could not be palpated. After admission to the ward she had one or two attacks simulating severe renal colic due to stone. Catheterization of the ureters gave no evidence of disease. The x-ray gave a positive shadow of stone. The kidney was exposed by an incision through the flank and because of its scarred and diseased appearance was removed with difficulty. Upon splitting the kidney after its removal no stone could be found. Scars of the old infarcts could be plainly seen. An x-ray of the kidney itself was then taken and clearly showed a stone. After this the kidney was sliced and the stone discovered. One of the interesting points in this case is that presumably the stone might have been the cause of the acute septic infection a year ago. The case also illustrates the difficulty of finding stones in the kidney at operation.

GOWERS' BOOT.

BY GEORGE L. WALTON, M.D.

I wish to show the traction-splint for muscular shortening, of Sir William Gowers', for use in cases of toe-drop to obviate tendency to shortening of calf muscles. The objection to the use of an elastic muscle attached to the toe and to a band about the leg is that the local pull is irksome and cannot be borne continually. This apparatus was described and figured in a lecture in the *Clinical Journal*, March 6, 1895, and reprinted in Gowers' Clinical Lectures (Blakiston, Philadelphia, 1895), in a lecture on the treatment of muscular contracture, but it seems not to have attracted in this country the attention which it deserves.

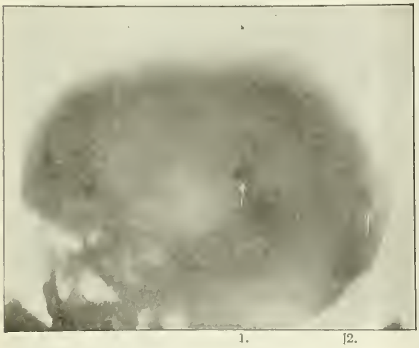
This apparatus is admirably adapted to remedy this condition by causing the pull to be extended over the surface of the boot. The boot consists of a single piece of sole leather "connected by a narrow part about two inches wide, behind the heel, which allows flexion of the ankle, and yet affords sufficient vertical resistance to prevent any pressure on the skin at the source of the pull." The leather having been soaked in cold water is allowed to harden about a mold of the leg and foot in such a way that the narrow strip of leather forms a hinge at the heel. Lacings are inserted, and the elastic is stretched from rings attached to the back of the foot sheath and the sides of the leg piece. In the model shown (which Sir William Gowers had forwarded Dr. Walton at his request, together with full directions for its manufacture) the leg piece was continued to the thigh and cut out for another hinge at the knee. This extension is for use in case of tendency to contracture of the hamstring muscles, in which event the elastics are extended crosswise over the knee. This appliance may be worn continuously day and night for months, and, if desirable, the patient can walk about the room with the apparatus on. The Massachusetts General Hospital can furnish such boots if plaster cast of leg and foot be supplied.

CASE OF BULLET WOUND OF THE BRAIN; SUCCESSFUL REMOVAL OF THE BULLET.

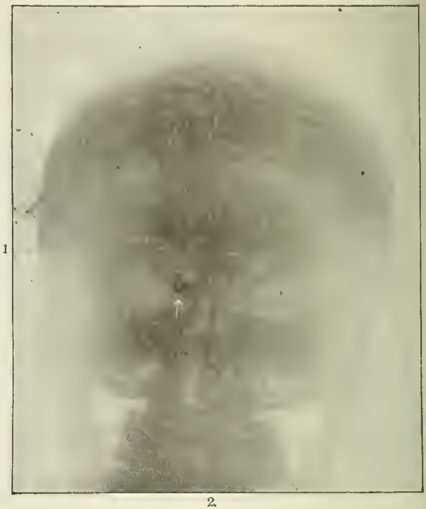
BY E. A. CODMAN, M.D.

The patient was a strong, well developed man of thirty-nine years. He was brought to the hospital on the evening of Dec. 5, 1907, about an hour after he had sustained a bullet wound in the left temple. His general condition was good. He was conscious, quiet and reasonable and showed no signs of paralysis or changes in any of his reflexes except a Babinski on the right. Pulse 75. There was nothing to indicate a brain injury except that the patient was lethargic. Since his recovery he apparently does not clearly remember the circumstances under which he was shot and brought to the hospital.

Examination showed a typical bullet wound of the left temple from which a small amount of brain substance had oozed into the temporary dressing. For about three inches backward from the wound of entrance over the ear there was an elongated swelling which was soft and fluctuant, except at one point where a hardness indicated the possible position of the bullet. Two x-rays were taken, one from directly behind the occiput, the other from the left side. These x-ray pictures, you see, show that the bullet divided on the edge of the skull into almost equal halves. One lay in the tissue of the temporal muscle outside the skull, the other travelled through the temporal bone, through the brain substance of the temporal and occipital lobes and lay in the brain tissue about one-half inch below the bone in the occipital region, to the left of the median line and slightly above the level of the external occipital protuberance. There are minute fragments about the wound of entrance. It was of great assistance to me in determining the situations of the halves of the bullet to have watched Mr. Godso take these wonderfully beautiful x-rays.



1. Extra-cranial half. 2. Intra-cranial half.



1. Extra-cranial half. 2. Intra-cranial half.

I was surprised to find that the whole process of taking and developing these pictures, so that I could see them, was less than fifteen minutes.

Dr. Harrington was kind enough to come down and see the case with me and to allow me to do the operation under his direction.

Under ether I excised the wound of entrance of the bullet and turned down a small flap in the temporal region to expose the portion of the skull which was shown in the x-ray to be injured. On dividing the skin it became at once evident that the fluctuant swelling, above alluded to, was caused by lacerated brain substance and blood which had oozed out among the torn fibers of the temporal muscle in the path of the outer fragment of the bullet. This outer fragment was easily found in this disintegrated mixture of blood, muscle and brain tissue at the position shown in the x-ray. There are also shown in the x-ray several small chips of bone substance lying free in the wound of entrance in the skull. These were removed and a vessel, probably the posterior branch of the middle meningeal, which was bleeding freely, was ligated. After cleaning out the ragged wound of entrance in the skull and removing a considerable amount of lacerated brain substance and clot from the cortex beneath the lacerated dura, the wound was temporarily packed and search made for the posterior fragment of the bullet in the following manner: By a careful comparison of the two x-rays we located a point on the skull which, by its relation to the external occipital protuberance, corresponded with the probable position of the second fragment of the bullet. A flap of about two inches in diameter was turned down over this area. We then made a trephine opening about one inch in diameter and removed a button of bone. The dura bulged into the opening, did not pulsate and was dark blue in appearance. The dura was incised and about a dram of brain substance with clot immediately oozed from the opening. All the brain substance which could be seen was lacerated and mixed with blood. With a Nélaton probe the fragment was soon located about one-half inch below the dura and readily removed. Both the wounds were carefully irrigated with salt solution and very loosely drawn together so that the skin should cover the openings in the skull but that a valve-like opening would be left at the sides so that if there was intracranial tension, the lacerated brain substance and clot might have a path of exit. No gauze or rubber tissue was used directly in the wounds, but a voluminous gauze dressing was applied.

Two halves from their inner surfaces.

From their outer surfaces.

Note. The two halves are of almost equal weight. Both together weigh 1½ gr. less than a similar undamaged bullet taken from the same revolver. The small chips alluded to must make up the difference.

The patient bore the operation well and the convalescence has been in every way normal, except that brain substance oozed into the dressing for a number of days and even at the time of discharge, Dec. 21, 1907, there was still a slight oozing of the cerebrospinal fluid.

On the day after the operation the patient was drowsy, confused and aphasic. He had the form of aphasia which, I believe, is known as word-deafness. His hearing appeared to be good but the words which he heard apparently conveyed the wrong impression to his mind. For instance, when asked to put out his tongue he would say, " Yes, I am feeling better," and when asked in the same tone of voice to raise his right hand, he would do it readily. Anatomically, from the known course of the bullet, portions of the first and second temporal convolutions must have been destroyed, as well as some of the occipital lobe. There has been some disturbance of eyesight which has improved.

I saw the patient to-day for the first time since his discharge. The wounds are healed except for a small granulating area on the temple. He still has a little aphasia, his eyesight is good, but not perfect, and his memory almost as good as ever. Otherwise he appears well.

P.S. Feb. 8, 1908. At this date the wounds are entirely healed. The patient's general condition is good, although he has some lack of confidence in himself. He is somewhat emotional, as many people are after recovery from serious operations. His mind is clear and there is no more impairment of its vigor than if the operation had been on some other organ than the brain. Dr. J. J. Putnam, who had seen him at the hospital, has been kind enough to give me the following note on his present condition:

When I examined him with you at my office it was difficult to say with positiveness that any defect was left. His language was a little flowery and there was a tendency to talk a good deal. Not only did he understand ordinary speech, but he was able to give a good account of several paragraphs which I read to him out of a book. His hearing for the watch was poor in both ears, but no less so on one side than on the other.

Yours sincerely,

Feb. 5, 1908. James J. Putnam.

Reports of Societies.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, Oct. 9, at 8.30 p.m.

The President, Dr. James B. Walker, in the chair.

AN UNOBTRUSIVE SPUTUM RECEPTACLE FOR USE BY TUBERCULOUS PATIENTS.

Dr. Solomon Solis Cohen presented this receptacle for use by patients while on the street or in public places. It consists of a small leather bag, about the shape and size of that used for opera glasses, closed with a draw string, by which it can be carried, and lined with a soft rubber-faced fabric, in which there is a pocket to hold the papers or cloths for the reception of sputum; while a water-proof paper bag is inserted within the outer leather bag to receive the used papers, so that on the patient's return home the paper bag with its contents may be taken out at once and thrown into the fire and a fresh paper bag inserted. The bottom of the bag has been stiffened by the insertion of an oval piece of card-board between leather and lining, while a rim of card-board a little less than two inches wide is slipped within to keep the leather spread at the bottom and hold the paper bag in place. The use of this bag renders it easier for sensitive women to observe hygienic directions in regard to the disposal of their sputum. Messrs. F. E. Morgan & Sons, druggists, have had the bag made according to Dr. Cohen's directions.

LANTERN SLIDE DEMONSTRATION OF PHYSIOLOGICAL AND CLINICAL OBSERVATIONS UPON THE ALIMENTARY CANAL BY MEANS OF THE ROENTGEN RAYS.

Dr. George E. Pfahler presented this demonstration which consisted of about eighty slides which had been prepared to illustrate a paper upon the subject before the Section on Medicine of the American Medical Association. On account of the difficulty of darkening the room they could not be shown at Atlantic City. The author simply read the conclusions of his paper which will soon be published in the *Journal of the American Medical Association.* The slides demonstrated the normal form and position of the stomach which is shaped somewhat like a reversed " J " and occupying the left side of the abdomen the upper two thirds being vertical and the lower third horizontal. The effects of the contractions of the abdominal muscles was also shown as well as a number of other facts.

Dr. Solomon Solis Cohen thought that, from the demonstration given by Dr. Pfahler, it was evident that by the ordinary methods of auscultation and percussion many stomachs and masses heretofore had been outlined where they did not exist. Dr. Cohen has long since abandoned the use of the buckled bandage in gastroptosis, but with Dr. J. Torrance Rugh he has experimented with and made some changes in the method of Dr. Achilles Rose, of New York, in his application of the zinc oxide bandage directly upon the skin. He has found this method useful also in cases of displaced kidney in which the gastroptosis is a minor feature. In one such case in which these bandages had been worn over a period of two years there had been apparently perfect recovery. Dr. Pfahler's statements regarding the motions of the stomach under abdominal contraction he thought showed that systematic abdominal exercises are sometimes to be preferred to any kind of bandage.

Dr. H. A. Hare inquired whether Dr. Pfahler had met with cases of bismuth poisoning from the retention of such large quantities of the emulsion.

Regarding the arrest of the food in the esophagus at the cardiac orifice of the stomach, Dr. Hare's observations place the period at six seconds and not seven, as stated by Dr. Pfahler.

As in almost all other forms of treatment, Dr. Hare thinks it cannot be said that belts are useful in all cases of gastroptosis, but that a careful study of the cases must determine the question of their application.

Dr. L. Jay Hammond was especially interested in the cases in which the pyloric end of the stomach seemed to be divided from the duodenum and the food remained as in hour-glass stomach. He referred to a case in which there was almost total obstruction of the pyloric end and in which operation revealed a bag in duodenum which had retained food for a considerable time. The condition was due to a bending down of the second portion of the duodenum because of a pericholecystitis.

Dr. Joseph Sailer observed that in almost every case of congenital malformation of the abdominal viscera there is an extreme degree of descent of the transverse colon involving the hepatic flexure. In these cases the x-ray is of value in diagnosis and in determining the treatment. Improvement of the nutrition of the stomach was regarded as an important element in treatment.

Dr. Addinell Hewson thought many mistakes in diagnosis had been brought about because in many of the textbooks on anatomy it had been taken for granted that the position of the stomach was not vertical, but more of a horizontal character. The work of Treves in his comparisons of the position of the stomach of the lower animals with the condition in man and the change brought about in the position of the stomach and duodenum due to the peritoneal attachments had changed the statements of the textbooks of to-day. It was suggested that the decided turn in the duodenum caused by the turning of the stomach to reach the descending portion of the duodenum might explain the kinking of the duodenum outside of the stomach with its consequent effect upon the position of the food in the duodenum.

Dr. John B. Roberts referred to Ochsner's conclusions that there is a sphincter in the duodenum, making the first part a pouch somewhat similar to the stomach in which some portions of food are retained.

Dr. W. Wayne Babcock referred to the relative rarity of dilatations and displacements of the stomach shown on the autopsy table at Blockley. In 30 cases there were 7 marked types of anomalous conditions of the colon. In none of the bodies was there any condition of the stomach except atrophy. In the marked disproportion between the number of dilatations in this series and those seen in the average patients outside, the question arises whether there is any causative factor in the character of life of the two classes of patients.

Dr. Ernest Laplace congratulated Dr. Pfahler upon his demonstration, and desired to thank him in public for the help he had given him, especially in gastro-intestinal surgery at the Medico-Chirurgical Hospital. He feels that Dr. Pfahler's work by which is shown so beautifully the movements of the stomach and the course of the food offers great possibilities to surgeons as well as to physicians.

Dr. Hare, apropos of Dr. Roberts's remarks, stated that there had recently been published a contribution of the anatomical laboratory of Harvard University, stating that Ochsner's so-called sphincter fibers of the duodenum do not exist.

Dr. Pfahler in closing expressed his disbelief in the possibility of definitely outlining the stomach by percussion. He believes that the stomach if distended with gas in the recumbent position can be outlined and its size determined, but that as soon as the patient stands up the gas will rise to the upper pole, the lower pole will be lost sight of and the clinician will outline the transverse colon.

Answering Dr. Hare, he has never noticed the slightest symptom of bismuth poisoning in any of his cases.

FACTORS IN THE OPERATIVE TREATMENT OF PULMONARY TUBERCULOSIS WITH REPORT OF AN EXCISION OF OVER ONE HALF OF THE RIGHT LUNG.

Dr. W. Wayne Babcock referred to the failures attendant upon the operative treatment of tuberculosis of the lungs and pointed out that the type of operations heretofore employed have been the same as those that have proved ineffective against tuberculosis of other organs. More thorough operative measures with precautions to avoid any additional infection may prove valuable in the treatment of pulmonary tuberculosis as they have been in treating tuberculosis of the kidney, and other organs. The excision of entire lobes of the lung and probably of all of one lung Dr. Babcock claims is feasible through properly planned posterior incisions giving access to the root of the lung. Operative treatment is to be considered in selected cases in which hygienic and medicinal treatment prove adequate in arresting the progress of the disease, but impotent in overcoming localized massive lesions which have already formed. In the case reported the left lung was almost free from disease, there was but a moderate miliary involvement of the upper right lobe and a massive caseation of the entire lower right lobe. Two months' open-air treatment proved the patient's ability to overcome the lesser lesions, but death was inevitable from the condition of the right lower lobe. The lower lobe of the right lung, weighing 770 gm., was, therefore, excised, the hemorrhage being controlled by ligation of the vessels of the base of the lung and the bronchus occluded by a flap of pulmonary tissue sutured over its lumen. The man's cough ceased, and nine days after the operation he was able to be out of bed. The night of the tenth day he was left out of doors in a rain storm by the carelessness of an attendant and developed pulmonary edema, to which he succumbed on the fourteenth day. The portion of right lung remaining in the body was atelectatic and weighed 320 gm., showing that life was maintained after the operation almost entirely by the left lung. This experience has convinced the author of the feasibility of massive resection up to the removal of an entire lung. In a second case the patient greatly improved after a pneumotomy for large tuberculous abscess. To overcome the effects of the pneumothorax a new vacuum shield designed to be placed over the chest wound during the operation for the reduction of intrathoracic pressure was demonstrated. After extensive resections, if feasible, the pleural cavity should be closed under negative pressure. The divided bronchi would be occluded best by covering them with flaps of tissue. All portions of ribs should be removed from the flap in the chest wall and primary drainage of the pleural cavity avoided.

A LANTERN SLIDE DEMONSTRATION OF THE DIAGNOSIS AND TREATMENT OF TUBERCULOUS DISEASES OF THE SKIN.

Dr. Schamberg remarked that lupus vulgaris was a comparatively rare disease in this country, and was particularly uncommon in the cities without much foreign population. It is especially differentiated from the nodular syphilide, lupus erythematous and epithelioma. Syphilis may closely simulate lupus, but as a rule runs a much more rapid course; the tubercular syphilide makes as much progress in a month as lupus does in a year; lupus nodules are much softer and more friable than those of syphilis. A case of accidental tuberculous inoculation of the sole of the foot with subsequent tuberculous involvement of the femoral glands was portrayed and described. Dr. Schamberg showed photographs upon the screen, of the various types of photo-therapeutic lamps and compared the value of actinotherapy and radiotherapy in lupus. The x-rays do remarkably well in many cases, but on the whole, the results obtained with the large Finsen lamp are, from the cosmetic view point, the best. Opsonotherapy in lupus has not given better results than other methods

Book Reviews.

The Conquest of Cancer. A Plan of Campaign, being an account of the principles and practices hitherto of the treatment of malignant growths by specific or cancrotoxic ferments. By C. W. Saleeby, M. D., F. R. S (Edin.). New York: Frederick A. Stokes Company. 1907.

The writer takes pains to explain in his very readable preface that he is a physician retired from practice; that his sensibilities have long been shocked by the prevalence and by the surgical treatment of cancer, and that he proposes to preach the gospel of a specific ferment in the therapeutics of that disease. He complains bitterly of the coldness shown him by his professional brethren; he makes a bitter and somewhat hysterical attack upon surgeons, and dwells upon their "utter failure" to cure cancer, and he winds up with this melancholy reflection: "If this book . . . serves even in infinitesimal measure to hasten the end of this most damnable thing (cancer), my life will have been worth living, though it should end upon the gallows amid universal execration."

For three hundred and sixty-one pages the author pursues his ingenious and somewhat rabid course, preaching the value of trypsin as the best remedy for cancer which he has found as yet. He hopes to find something better.

Saleeby's book, with all its shortcomings, rouses certain reflections in the thoughtful man. The author takes the position of hundreds of other impatient souls whose protests have ascended to heaven since the world began. He is roused to a genuine grief when he reflects upon one of the greatest curses to which mankind is subject, and he shrieks with indignation against those in whose hands relief must rest. In truth, the fault lies in the limitations of human nature and human capacity. The medical profession has no greater a supply of geniuses than any other profession. The laboratories of our world are crowded with conventional, dull and faithful formalists, whose earnest endeavor often seems to be to smother imagination. One hears the unthinking man say, "Imagination has no place in science," as though we were to disregard those magnificent achievements of the imagination of such princes of science as Galileo, Newton, Locke, Virchow, Darwin, Pasteur, Lister and others of like order. Without imagination the great ones of the earth never would have brought their endeavors to fruitage. That curiously disagreeable and interesting book, "The Guarded Flame," deals with the romantic story of a scientific genius, and tells in a way which must appeal to every intelligent mind how genuine greatness struggles up through the smothering clouds of convention. The story is as old as Cain, whose fiery impatience with smug self-righteousness made him a wanderer upon the face of the earth. And so our author chafes and struggles against the conditions which tend to swamp progress. But progress continues. Every little man, every little investigation, counts for something, despite limitation of endeavor and feebleness of outlook, until the time comes when the genius arises who shall gather up, formulate and make very present the great accomplishment.

Saleeby's writing is entertaining and suggestive, though the writer himself seems utterly to have lost his perspective and any genuine appreciation of the progress now being made by many of the best workers in cancer research. He addresses himself to the laity and the "unappreciated" general practitioner. If any of his readers should encounter a case of spontaneous "freak cure" of cancer, they are urged to communicate with the author, for such a case will be invaluable as a basis of study.

Physicians' Manual of the Pharmacopeia and the National Formulary. By C. S. N. Hallberg, Ph.G., M.D., and J. H. Salisbury, A.M., M.D. American Medical Association. 1907.

This small manual of 198 pages, including the index, published by the American Medical Association, is an epitome of all the articles contained in the United States Pharmacopeia and National Formulary. It should be useful as a convenient book of reference.

THE BOSTON

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THE DISCHARGE OF THE INSANE.

IN his recent inaugural address, his Excellency Gov. Curtis Guild, of Massachusetts, made certain definite suggestions regarding the discharge of the insane from asylums. The paragraph particularly referring to this matter is as follows:

> "It is extremely difficult to commit a person to an insane asylum. Though a vote of a board of trustees is legally necessary to secure release from an asylum, the only actual safeguard is the decision of any one superintendent. Recent terrible events consequent on the release of a homicidal maniac have, I hope, sufficed to correct maudlin sentimentality in regard to the discharge from custody of the insane. The law to-day requires that no person shall be put into an insane asylum without the joint recommendation of two specialists in insanity, approved by a court. I ask you that in future no person shall be loosed on the public from an insane asylum without the joint recommendation of two specialists in insanity, approved by the same court that committed him. If justice to the individual demands that confinement in an asylum should be permitted only on elaborately detailed proof of insanity, justice to the community demands that release to range at large should only be permitted on an absolutely equivalent proof of recovery and sanity."

The immediate cause of this utterance on the part of the Governor was a murder at the Boston State House by a man recently discharged from an insane hospital. In previously commenting on certain matters of medical interest in the inaugural address, we commended in a general way the attitude of the Governor in relation to the discharge of insane persons. We are naturally firm in the conviction that every possible safeguard should be afforded the public against persons declared insane with homicidal tendency, but mature consideration leads us to doubt very seriously whether the means suggested by the Governor would be either desirable or efficient.

In the first place, the Governor makes the statement that commitment to an asylum requires the recommendation of two specialists in insanity. This is not a correct statement of the facts, inasmuch as any two physicians who have been in practice three years are regarded by the courts as competent to commit an insane person. Such men are not required to be experts in insanity, and as a matter of fact very often are not. Therefore, although the law requires very properly certain safeguards against improper commitment, they are by no means of so rigid a sort as the Governor's statement would imply. The suggestion is made that no person should be discharged from an asylum without the joint recommendation of two specialists in insanity, approved by the same court in which the commitment was originally made. Inasmuch as the present law does not require that commitment shall be made by two specialists in insanity, it seems unreasonable that the discharge of the patient should require such an examination. If two physicians in general practice are to be called upon to pass upon the discharge of a patient, we should place our expert hospital physicians in a wholly anomalous position. It is evident that the examining physicians would have to depend very largely upon the information afforded by the superintendent of the hospital or by its other physicians, and would, therefore, practically be carrying out the judgment of those who had been observing the patient carefully and who were, therefore, most competent to judge of his mental condition. The discharge of a patient by the same means through which he was originally committed is manifestly impossible, since the sources of information regarding him are in the one case derived from the expert physicians who have been observing him, and in the other from family and friends. It, therefore, appears to us that from the practical standpoint the power of discharge must remain essentially in the hands of the superintendent as the person best qualified from recent contact with the patient under the most favorable conditions of observation, to decide as to his degree of sanity.

A further complication, were the Governor's plan carried out, would be the necessary court proceedings, together with the very considerable expense to the state involved in such proceedings. A peculiar responsibility would devolve upon the judge who was called upon to decide from the evidence presented regarding the state of mind of the person under consideration. It is clear that the judge could only determine the matter through the statements of the physicians who had examined the patient, and, failing to be convinced by their testimony, further experts would of necessity be called, and no doubt in many instances a hearing demanded, with its concomitant complications and delay. Here again the ultimate determination would of necessity rest largely with the superintendent of the hospital in which the patient was confined. Finally, we are of the opinion that the development of such a line of procedure as advocated by the Governor would ultimately tend to be a greater menace rather than a protection to the public. If the discharge of patients is to be attended with so complicated a procedure, it is evident that many of the borderline cases, who constitute so great a danger to the community, would not be so readily committed for observation. It is altogether desirable that no legislation be enacted which will tend to reinstate the old fear and dread of the asylum which is now gradually being removed, and to restore the prison idea as distinguished from the hospital.

While willingly admitting that a homicide committed by an insane person is a most deplorable occurrence, and one from which the public should be safeguarded by every possible means, no hasty steps should be taken, and particularly nothing should be done which would further complicate the situation and very probably lead to an increase rather than a diminution of the ever existing danger. It is not our purpose at the present time to suggest methods; we are, however, convinced that the matter should be given most careful attention by experts in insanity and by legislators, to the end that a just, practical and efficient means of preventing the discharge of dangerous persons be found. The Governor in his inaugural does not suggest such a means.

◆

ARE GREAT CITIES MAN-CONSUMING?

Time was — and that easily within the present generation — when great cities had enormous mortality rates. It used to be computed that such vast communities as London and Paris would become extinct within the century were they not constantly being refed by provincial blood. But to-day that situation no longer obtains. Modern sanitation (the babe in the family of sciences) is demonstrating how vast populations may live healthfully, and the principles of this new science are, through wise legislative support, being intelligently and most beneficently applied.

Nowadays the great cities are almost as salubrious as rural districts; with regard to such diseases as malaria and typhoid fever they are probably more so. Only infancy and childhood and old age, it seems, find the country more healthful. For instance, in New York State the metropolis, with a birth-rate of 30.7, as compared with a birth-rate of 22.3 in other cities above 100,000, has a death-rate of 18.3, as compared with a death-rate of 15.1 in the latter. Chances of longevity are thus about equally good until one gets to cities ranging from 50,000 to 100,000 inhabitants, which average a birth-rate of 26.2 and a death-rate of 18.2; conditions in them are, therefore, not so favorable for health as in the metropolis. It is a just inference, which we believe will be borne out by facts, that in our greatest cities the health authorities are now better organized than in the lesser ones, and better equipped to cope with infections.

The present low death-rate of New York City, to which it has been progressively tending during twenty years past, is truly remarkable when we consider that some of its districts are more crowded than any other equal territory, Christian or heathen, in the whole world. Not in Pekin or Calcutta or anywhere else is there such density of population. And this density is being constantly increased by the many thousands of fresh immigrants who every week increase the congestion. Dr. William H. Guilfay,[1] the register of records of the New York City Health Department, rightly invites us to consider how, "in a community of 4,250,000, it is reasonable to suppose that the presence of 1,750,000 'foreign borners' would appreciably affect the death-rate of the community, especially when we consider that the language, customs, habits and environments of fully eighty per cent are so dissimilar in all respects to the requisites established by the authorities for the making of a sanitary member of the body politic." In our western cosmopolis some sixty-six languages or dialects are represented.

The overcrowding here mentioned is, however, not so dreadful a factor as might at first sight appear. For the modern systems of plumbing and of sewage, of model and well-ventilated, though many-storied, tenements, and of good and adequate water supply, make it possible for ten or a hundred times the number of people to live in very good health, in situations which would a decade ago have proven dreadfully fatal. Nevertheless, the overcrowding in the metropolis is giving concern to the extent that a very active "Committee of Congestion of the Population," which has been delegated from a large number of influential societies, is preparing data for the information of the public at large. It is working in consonance with the municipal health and charities departments, and demonstrations are being arranged akin to those which anti-tuberculosis organizations have found so effective against that disease. And this metropolitan movement will certainly be viewed with much interest in other communities where conditions obtain of a like sort, though nowhere else to the same degree.

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[1] The Death-rate of the City of New York as affected by the Cosmopolitan Character of its Population. The N. Y. Medical Rec., Jan. 25, 1908.

London presents a most gratifying demonstration that huge cities are no longer man-consuming. Jephson[2] describes the contest for decent municipal conditions since the time of Dickens, who declared at a public meeting that "he knew of many places in London unsurpassed in the accumulated horrors of their long neglect by the dirtiest old spots in the dirtiest old towns under the worst governments in Europe." Since that "pigsty period" the fight has been a very long one, a very sad and a very dreary one, waged chiefly against vested interests, which are so oftentimes upheld with the most heart-rending results in human suffering and human death. That the fight has been gloriously won we may believe from the London County Council's Report covering 1906, which was submitted in December last. Since the Public Health Act of 1891 became operative, the death-rate has fallen nearly 30%, and we are amazed to learn that it has now reached 15.1 of the population. Among English cities above 200,000, only Leicester and Bristol are able to get below this; and London is now justly considered one of the healthiest regions in the whole world.

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AN UNUSUAL EPIDEMIC OF SMALLPOX.

An interesting report of the recent outbreak of smallpox, at Kingston (N. Y.) on the Hudson River, has just been received. It appears that in June last a case of the disease occurred in the East Kingston brickyards. It was promptly reported, and the patient, who was a negro, was isolated. A number of persons who had been exposed to the contagion were also quarantined, and some of these, after their release, went to the neighboring mountains of Hurley, where, later in the summer, a great negro camp meeting was held. After this had broken up, smallpox appeared in three different localities. The cases were mild, however, and did not attract much attention from the rural authorities. Moreover, the disease did not at this time spread to any extent. Besides the cases mentioned, only one other was reported in the month of September, and one in October. In November, eleven scattering cases were reported in the city of Kingston and its vicinity; but the symptoms in these were so peculiar and erratic that the physicians attending them differed in their diagnosis, some of them refusing to believe that the disease was smallpox at all. December, however, brought an increased number of cases, and the Kingston physicians, now thoroughly awake to the seriousness of the situation, consulted together and agreed to act in concert. The local board of health called representatives of the State Department of Health in consultation, and a vigorous campaign for the suppression of the pest was inaugurated. To this end a special committee of the board of health, with the mayor of the city as its chairman, was appointed, with full power to deal with the epidemic.

All the schools, public and private (which had closed for the Christmas holidays), were ordered not to re-open until duly notified, and all places of amusement, as well as the public libraries, were required to close their doors. The churches held only the regular morning services, and Sunday-schools were suspended. The board of health enacted an ordinance that hereafter no child should be admitted to school without a vaccination certificate. It was urged that every person in the city should be vaccinated, and a bureau for free vaccination was established. Over 1,400 of the population availed themselves of this, and it is estimated that in all at least 12,000 inhabitants submitted to vaccination. In addition, sanitary police were employed, strict quarantine of cases was enforced, and on Dec. 31 the Board of Education turned over one of its school buildings for use as an isolation hospital. As a result of the measures adopted, the disease has been controlled, and the panicky feeling which for a time prevailed in the community has passed away. At the end of the first week in February there were still under observation some twenty-five cases in quarantined dwellings in different locations and in the isolation hospital. The total number of cases which occurred during the epidemic is not stated.

A remarkable feature of the outbreak has been the mild character of the disease, comparatively few of the cases being severe, and not a single death resulting. Among the causes that contributed to the spread of the contagion were the facts that a large proportion of the population were unvaccinated and that many families, not knowing the nature of the malady, did not call in a physician. Moreover, in many instances where medical men were in attendance, the latter did not report the cases as smallpox, not belie ing them to be such. The trouble in this epidemic has not been due to the sanitary condition of Kingston, the regular death-rate of which will compare favorably with other cities of its class. Secretary W. B. Scott of the local board of health is authority for the statement that during the past eight years there have been reported but thirty-three cases of typhoid fever in the jurisdiction of the department, and fully one fourth of these were contracted elsewhere. The responsibility for the outbreak is to be charged to the immigration of southern negroes. These people are brought in in considerable numbers to work in the brickyards and cement plants along the Rondout Creek. It is now urged that they should be required to be subjected to as rigorous an examination as are foreign immigrants arriving at the port of New York.

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[2] The Sanitary Evolution of London, by Henry Jephson, Wessels, Publ.

MEDICAL NOTES.

Damages Claimed for Loss of Pastime. — A novel suit has been brought against a trolley company in New Jersey by John Hampson, seventy-three years of age, who claims $10,000 damages for the loss of his pastime, hunting specimens of butterflies and other insects. He received injuries by falling from a trolley car in December, 1906, and before the Circuit Court in Newark testified that in consequence of these he has been unable to pursue his entomological studies since that time. Before he was injured, he stated, he could walk forty or fifty miles a day.

Centenarians. — Mrs. Lucy M. Osborn, of Danbury, Conn., reputed to be one hundred years old, died Feb. 6. Her mental faculties were alert up to the day of her death.

It is announced that Mrs. Mary Sherry, of Brocton, N. Y., has recently died at the age of one hundred and two years. She is said to have had clear recollections of the events of the War of 1812.

Mrs. Mary Bohan, of Newark, N. J., died on Feb. 1 at the age of one hundred years. Death was due to old age, and she is stated to have never been ill until two days before her death, when her powers rapidly failed. She was a native of County Galway, Ireland, and came to this country sixty-five years ago. She had been the mother of no less than twenty-five children, ten of whom survive her.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 12, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 38, scarlatina 66, typhoid fever 9, measles 123, tuberculosis 52, smallpox 0.

The death-rate of the reported deaths for the week ending Feb. 12, 1908, was 21.15.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Feb. 8, 1908, was 242, against 221 the corresponding week of last year, showing an increase of 21 deaths and making the death-rate for the week 20.64. Of this number 130 were males and 112 were females; 231 were white and 11 colored; 158 were born in the United States, 79 in foreign countries and 5 unknown; 62 were of American parentage, 147 of foreign parentage and 33 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 2 deaths; scarlatina, 61 cases and 1 death; typhoid fever, 2 cases and 1 death; measles, 98 cases and 0 deaths; tuberculosis, 50 cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 43, whooping cough 1, heart disease 29, bronchitis 10, and marasmus 3. There were 17 deaths from violent causes. The number of children who died under one year was 51; the number under five years 78. The number of persons who died over sixty years of age was 63. The deaths in public institutions were 83.

Hearing on City Psychopathic Ward. — A well-attended hearing was held last week at the mayor's office in Boston relative to the establishment of a so-called psychopathic ward at one or all of the city hospitals. The chairman of the Board of Aldermen presided in the absence of the mayor. The opinion was unanimously expressed that the city stood in great need of such an observation ward, preferably at the City Hospital. A number of physicians and laymen spoke, among them Mrs. Alice N. Lincoln who has been furthering this movement, Dr. George F. Jelly, Dr. Walter Channing, Dr. P. C. Knapp, Mr. Charles F. Gaynor and Mr. Robert Treat Paine.

NEW YORK.

Open Air Treatment of Pneumonia. — Through the generosity of Mrs. W. K. Vanderbilt a capacious ward has been fitted up on the roof of the Presbyterian Hospital, and this winter the open-air treatment of pneumonia is being carried out there on a large scale.

Outbreak of Diphtheria at a Reformatory. — A serious outbreak of diphtheria has occurred in the reformatory at Rahway, N. J., though no deaths had been reported up to Jan. 31. Of the 540 inmates, 50 have been taken with the disease, and the drill-room of the institution has been turned into a temporary hospital, the regular hospital on the grounds proving inadequate to accommodate all the patients. Later advices show that the disease continues to spread among the inmates of the Reformatory, and the situation there would seem to be serious. On Feb. 4 it was stated that there were over 130 cases and that the disease was still spreading.

Decrease of Dependents. — The State Board of Charities, in its forty-first annual report just sent to the legislature, states that there are indications that the proportionate number of dependents, in relation to the population, is slowly decreasing, owing principally to a more effective administration of the poor law, and that the methods of almshouse administration have greatly improved since publicity has been given to official reports of inspection. Furthermore, the efforts of the state to secure the segregation of the feeble-minded, the insane and the epileptic classes are also bearing fruit, since this checks the propagation of the degenerate and unfit.

Pollution of New York Waters. — The special committee of the Merchants Association on pollution of the waters of New York has just sent to the City Board of Water Supply a report on the sanitation of the Catskill watershed which has been made for it by James C. Bayles, the well-known sanitary engineer, who was formerly president of the New York Health Department. Mr. Bayles makes a number of recommendations for the protection of this watershed, and in the course of his report states that one of the things immediately necessary is the preparation of a complete sanitary code for the area controlled by the Board of Water Supply. The board, he says, cannot enforce regulations which are vague and variable.

Water Supply. — In the annual report of the State Water Supply Commission, which was submitted to the legislature at Albany on Feb. 3, attention is called to the growing necessity of employing drastic measures in carrying out a "careful and far-seeing policy" to prevent further contamination of the lakes and streams of the state. The commission then expresses the opinion that the new source of water supply for New York, which is now being developed in the Catskill region, will meet the wants of the rapidly growing population for only about twenty years, and that the city will then probably have to look to the Hudson River for its increased supply. For this reason it urges that efforts should at once be instituted to put a stop, as far as possible, to all present sources of pollution in connection with that stream and to prevent contamination in the future.

Death of Dr. John Conner Barron. — Dr. John Conner Barron, retired, for many years a well-known practitioner, and one of the founders of the Union League Club of New York, died from typhoid fever at his home in that city in the seventy-first year of his age. He was a graduate of Burlington College and Yale College, and received the degree of M.D. from the College of Physicians and Surgeons, New York, in 1861. He served as surgeon of the Sixty-ninth New York Regiment during the Civil War, and was present at the battle of Bull Run and other prominent engagements. At the close of the war he settled in New York, and in 1871 was made surgeon of the Seventy-first Regiment, National Guard. Dr. Barron was a man of wealth and an enthusiastic yachtsman. For a number of years he was Rear Commodore of the Seawanhaka Corinthian Yacht Club.

Current Literature.

Medical Record.

Jan. 11, 1908.

1. Doty, A. H. *The Plague.*
2. *Stern, H. *The Renal Complications and Sequelæ of Influenza.*
3. Bryant, W. S. *Influenza of the Nose, Throat, Larynx.*
4. Collins, J. *Duchenne of Boulogne.*
5. Gordon, A. *Relation of Accidents to Functional Nervous Diseases and Psychoses; Medico-Legal Considerations.*

6. Lederer, W. J. *Fetid Breath ("Broncopena").*
7. *Trenholtz, C. A. *Forms of Tubercle Bacilli which cannot be Colored by Ziehl-Nielsen Stain.*

2. Stern points out the possibilities of kidney complication during and after attacks of influenza, and shows from examination of a number of cases, convalescent from an acute attack, that the functions of the kidney may be materially impaired for weeks.

7. Trenholtz reports his observations on human tubercle bacilli which do not stain by Ziehl-Nielsen method, but do by modified Gram's stain and the Lœffler-Giemsa method, and suggests possibilities of studies in this field His work is based on that of Much and Michaelides, to which he refers.

[W. B. R.]

New York Medical Journal.
Jan. 11, 1908.

1. Hudson-Makuen, G. *The Voice as an Index to the Throat, Nose and Ear.*
2. Pottenger, F. M. *The Advantages of Sanatorium Régime in Tuberculosis, with Especial Reference to the Treatment of Extrapulmonary Lesions.*
3. *Shanahan, W. T. *Acute Pulmonary Edema as a Complication of Epileptic Seizures.*
4. Sherman, D. H. *Concerning the First Week of Infant Life.*
5. Bierhoff, F. *On the Abortive Treatment of Gonorrhea in the Female.*
6. White, C. S. *Cerebral Contusion.*
7. Roberts, D. *Hospital Dietetics.*
8. Armstrong, A. W. *The Causes of Appendicitis.*
9. Hoffman, W. E., Jr. *The Inspection and Chemical Examination of the Baltimore Milk Supply.*
10. Brown, M. H. *Observations made at the Bier Clinic in Berlin.*

3. Shanahan reports eleven cases of acute pulmonary edema complicating epileptic seizures: seven recovered and four died. In three patients the condition recurred, and was fatal in one case. In every *grand mal* and in many *petit mal* seizures, there is a more or less marked increase in the secretion of mucus from the respiratory passages. This acute pulmonary edema is also not to be confounded with the frequently occurring terminal edema in many epileptics. During the stertorous period of the isolated seizure, there suddenly appears an outpouring of mucus from mouth and nose, with marked cyanosis and dyspnea. The most important procedure in the treatment seems to be a change of posture to aid in draining the respiratory passages of the great excess of mucus.

[R. I. L.]

The Journal of the American Medical Association.
Jan. 11, 1908.

1. Smith, C. D. *The Problems of State Boards of Health.*
2. Southworth, T. S. *The Importance of Early Recognition and Treatment of Rachitis.*
3. Luckie, S. B. *False Statements Concerning Causes of Oral Pathology.*
4. Posey, W. C. *The Significance of Changes in the Optic Nerve in Certain Affections of the Cerebrospinal System.*
5. *Pusey, W. A. *Rœntgen Ray in Epithelioma.*
6. Cullen, T. S. *Adenomyoma of the Uterus.*
7. Ogilvy, C., and Coffin, T. H. *The Opsonic Index in Orthopedic Surgery.*

5. Pusey reports a series of 111 cases of epitheliomata treated with x-rays more than three years previous to July, 1907. He has included in his list no cases which at the time of beginning treatment were complicated by demonstrable carcinoma in the neighboring glands. Of these, 80 are either well to-day, have died without recurrence of epithelioma, or remained well more than three years after a healthy scar was produced, but cannot now be located. Of the 80 successful cases, 39 were cases which had recurred after previous radical treatment, usually operation. Of the 31 cases which are classed as not entirely successful, 28 were cases which had failed of relief under other forms of treatment. The diagnosis in the earlier cases was confirmed by the microscope. In the later cases, microscopic examinations were made when there was any possible room for doubt.

[R. I. L.]

Bulletin of the Johns Hopkins Hospital.
January, 1908.

1. Kelly, H. A., and Others. *Major James Carroll, M.D., U. S. A.*
2. Goldsborough, F. C. *The Maternal Mortality in the First 5000 Obstetrical Cases at the Johns Hopkins Hospital.*

The Journal of Infectious Diseases.
January, 1908.

1. *Rosenau, M. J., and Anderson, J. F. *A Stomach Lesion in Guinea Pigs caused by Diphtheria Toxins, and its Bearing on Experimental Gastric Ulcer.*
2. Weaver, G. H., and Tunnicliff, R. *Noma, Gangrenous Stomatitis, Water Cancer, Scorbutic Cancer, Gangrene Oris, Gangrene of Mouth.*
3. Pennington, M. E. *The Virulence of Diphtheria Organisms in the Throats of Well School Children and Diphtheria Convalescents.*
4. Perkins, R. G. *Relation of Bacillus Mucosus Capsulatus Group to Rhinoscleroma, and of the Various Members of the Group to One Another.*
5. Tunnicliff, M. and Davis, D. J. *Spontaneous Phagocytosis of Fusiform Bacilli and Influenza Bacilli.*
6. Davis, D. J. *Hemophilic Bacilli; Their Morphology and Relation to Respiratory Pigment.*
7. Heinemann, P. G. *The Pathologenicity of Streptococcus Lacticus.*
8. Berry, J. L. *A Study of the Pneumococcus with Especial Reference to the Inulin Test.*
9. *Craig, C. F. *A Study of Latent and Recurrent Malarial Infections, and the Significance of Intra-Corpuscular Conjugation in the Malarial Plasmodia.*
10. Rickets, H. F. *Observations on the Virus and Means of Transmission of Rocky Mountain Spotted Fever.*

1. In a study of the effects of diphtheria toxin on guinea pigs the authors find a lesion at or near the pylorus in 66% of 1,897 autopsies. It consists of a sharply defined area of congestion, hemorrhage or ulceration near or at the pyloric extremity of the stomach, occasionally extending half an inch into the duodenum. The first stage consists of congestion, best seen in pigs dying in about twenty-four hours after injection. When the pig dies on the second or third or fourth day, the lesion is more marked, and consists of hemorrhage into the mucosa, followed by destruction of tissue, sometimes extending into the muscularis, but never perforating completely. The lesion is not a result of any particular diphtheria toxin, and may be produced by injections of bacilli. Control tests made with tetanus toxin and chemicals produced no such lesions.

9. Craig includes under latent malaria all those cases where plasmodia may be demonstrated in the blood, but in which no clinical symptoms of the disease are present, whether there have been previously symptoms of the disease or not. Out of about 1,600 cases he observed nearly 25% latent cases; all forms of malaria were found among these latent cases, the predominating being the tertian-estivo-autumnal type. The dangers from these cases in the presence of anopheles should be remembered, especially in tropical countries, and prophylaxis must include systematic treatment of neighboring infected natives. The author reaches the following conclusions: that intracorpuscular conjugation is the chief cause of the maintenance of malarial infection; that it does this by producing a resting or zygote stage of the plasmodium within the human body which is resistant to quinine and other injurious influences, and that this is the cause of latency and recurrence of malarial infections; the zygote stage remains dormant until conditions are favorable, when it gives birth to several young plasmodia, thus causing a recurrence of infection. The article contains many references to the literature.

[W. B. R.]

The Lancet.

Jan. 18, 1908.

1. *Osler, W. *Lecture on Erythremia (Polycythemia with Cyanosis, Maladie de Vaquez).*
2. Bradshaw, T. R. *Lecture on Tropical Abscess of the Liver.*
3. Lister. *Note on the Preparation of Catgut for Surgical Purposes.*
4. *Dobson, J. F., and Jamieson, J. K. *Excision of the Cecum and Ascending Colon with the Corresponding Lymphatic Area.*
5. Buxton, D. *Legal Responsibility and Anesthetics.*
6. Weber, F. P. *Arteritis Obliterans of the Lower Extremity with Intermittent Claudication ("Angina Cruris").*
7. *Langmead, F. *Note on Certain Pupillary Signs in Chorea.*
8. Yule, A. *Case of Imperfect Development. Acrania.*
9. *Walton, A. J. *Some Cases of Bone Cavities Treated by Stopping with Paraffin.*
10. Alexander, F. W. *Electrolytically Produced Fluids Containing Hypochlorites, Their Manufacture and the Rationale and Chemistry of the Process for Securing Stability.*

1. Osler presents an interesting clinical lecture on the new clinical entity which he calls erythremia, which name he prefers to that of polycythemia with cyanosis, or *maladie de Vaquez*, as it has been termed by others. He gives the history of this disease and takes up the different symptoms and signs in detail, — cyanosis, polycythemia, or erythremia, and enlargement of the spleen. The etiology is still indefinite. The suggestion has been made that it is due to a lessened power of the red blood corpuscles to absorb oxygen. What brings about this lessened power, however, it is impossible to state. He classes it with leucemia and allied conditions in which there is a hyper-functioning of the blood-forming elements. Treatment is of comparatively little avail. Bleeding, inhalations of oxygen and x-ray have occasionally given some help.

4. Dobson and Jamieson describe the technic of excision of the cecum and ascending colon with the corresponding lymphatic area in a case of carcinoma of the ascending colon, and in one of tuberculous disease of the cecum. The operation is an extremely radical one, including not only the diseased part of the intestine, but a large amount of apparently normal intestine with its mesentery, and all the glands in the neighborhood. They describe the so-called "lymphatic area" of this region, and the meaning of this term. In this region the lymphatic area includes all the primary lymphatic glands receiving direct vessels from the cecum and ascending colon, the lymphatic vessels and the tissues in which these vessels lie. The results in these cases were excellent, and they believe that it is only by such a radical operation that permanent recovery can be assured.

7. Langmead describes certain pupillary signs in chorea, as hippus (a rhythmical oscillatory movement of the iris), certain peculiarities of movement of accommodation, unequal contraction, varying inequality of the pupils and eccentric pupils.

9. Walton gives the technic of the use of paraffin to fill bone cavities. To secure good results the following points seem to be necessary: (1) the wound must be carefully protected from contamination with the material in the abscess cavity or the irritant substances used to sterilize and to dry the cavity; (2) the operation should be completed in one stage, so that good apposition of the edges of the periosteum and skin may be insured; (3) paraffin of a melting point of 120° F. should be used to fill the cavity.

[J. B. H.]

British Medical Journal.

Jan. 11, 1908.

1. Ballantyne, J. W. *Treatment of Morbid Pregnancies.*
2. *Davies, H. M., and Hall, G. *The Bacteriological Aspects of the Problem of Neuropathic Keratitis.*
3. Binst, J. J. *A Plea for the Improvement in the Teaching and an Encouragement in the Study of Legal Medicine.*
4. Alcindor, T. *Cancer, Its Etiology and Treatment by Trypsin.*

2, The writers state the various theories in regard to the development of a so-called neuropathic keratitis in conjunction with injury or excision of the fifth nerve or the Gasserian ganglion. Three factors are necessary to bring about this form of keratitis: (1) removal of the Gasserian ganglion; (2) presence of the bacillus X found in every one of their cases; (3) a factor of undefined nature dependent on the eyelids and removed by closing them. They give their results of bacterial investigations of this bacillus X in thirty-one cases.

[J. B. H.]

Jan. 18, 1908.

1. Lister. *The Preparation of Catgut for Surgical Purposes.*
2. *Lane, W. A. *Remarks on the Results of the Operative Treatment of Chronic Constipation.*
3. Hertz, A. F. *Lectures on the Passage of Food through the Human Alimentary Canal.*
4. Short, T. S. *On a Special Form of Dilatation and Displacement of the Stomach.*
5. Cameron, H. C. *Some Physiological Aspects of Gastro-enterostomy.*
6. Gardner, H. B. *Ether Administration by the Open Method.*
7. *Macewen, H. A. *The Conveyance of Whooping Cough from Man to Animals by Direct Experiment.*

2. Lane gives the histories and results in full of twenty-two cases which he has operated on for chronic constipation. In the earlier cases he removed only the large intestine up to the splenic flexure; later he found it best to remove the entire large intestine. In most instances the immediate reason for the operation was pain. The results were very satisfactory. In some cases, in addition to the chronic constipation, there was colitis, mucous, membranous, or ulcerative, all of which seemed benefited by the operation.

7. Macewen presents a short note on the transference of whooping cough to a cat who was fed sputum and vomitus from cases of this disease for seven days. The cat developed what appeared to be typical whooping cough. No bacterial investigations are mentioned.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 49.

Dec. 5, 1907.

1. Schwalbe, E. *Recent Researches on the Morphology and Origin of Tumors.*
2. Haendel. *Deviation of the Complement.*
3. *Fehr. *Injury to the Optic Nerve by Atoxyl.*
4. Joseph, J. *The Correction of Crooked Noses.*
5. Lublinski, W. *When is the Radical Operation on the Nasal Accessory Sinuses Necessary?*
6. *Barth, E. *The Physiology of the Tonsils and the Indications for Their Removal.*
7. Gardemin, E. *Spirosal, a New Anti-rheumatic Remedy.*
8. Rothschild, O. *A Case of Retrobulbar Teratoid Tumor.*
9. Torkel, K. *Breaking of the Canula during Lumbar Puncture.*
10. *Stein. *Burns Treated by Bier's Hyperemia.*

3. Fehr reports from Berlin two cases of injury to the optic nerve due to atoxyl. His cases regained restoration of sight on leaving off the drug, but he quotes two other cases where vision was permanently destroyed. As vision becomes reduced, the center of the field is comparatively unaffected, but the nasal side is much restricted. The retinal arteries were contracted, the optic disk blanched, and the pupillary reactions normal. The process seems to be a peripheral one with changes in the vessels. In a note the author states that Koch, in his experience with atoxyl in the treatment of sleeping sickness, had twenty-two cases of blindess, but all were under higher doses than he afterwards advocated.

6. Barth claims that the tonsils form a protective apparatus, just as do the lymph glands. The secretion of the tonsil flows outward, and there is a constant stream

of lymphocytes pouring forth. Hypertrophy of the tonsils means excessive functioning, and they are only to be removed when they cause disturbances in respiration, and he advises against removing sound tonsils which serve such a useful purpose of elimination. If there are necrotic areas or abscesses operation is indicated. In such cases it is important to so remove the tonsil that as little scar as possible is left. Barth cites several cases where apparently the infection causing the inflamed tonsil came from the interior of the body, and tries to prove by experiments that the bacteria found in the normal tonsil are on their way out of the body, being brought thither by the lymph channels.

10. Stein recommends the treating of burns by Bier's hyperemic method. By applying a band above the burn all pain can be soon controlled, healing promoted and cicatricial formation lessened. He advises the keeping up of the constriction for burns of the second and third degree for ten, twenty, or thirty minutes twice a day.

[L. G. M.]

Münchener Medizinische Wochenschrift. No. 50.
Dec. 10, 1907.

1. Rautenberg, E. *An Analysis of the Extra Systole in Tracings of the Auricular Pulsations.*
2. Asch, P. *Cylindruria and Albuminuria.*
3. *Osann, E. *Research on the Mendel-Bechterew Reaction.*
4. Frank, O. *Decapsulation of the Kidneys in Eclampsia.*
5. Otte, A. *Post-operative Complications and Thromboses in the Lungs after Etherization.*
6. Michelsson, F. *The Futility of Using Suprarenalin in Lumbar Anesthetic Mixtures.*
7. Waelsch, L. *Epididymitis Erotica.*
8. Schmidt, W. *A Case of Complete Removal of a Cyst of the Pancreas.*
9. Welzel, A *A Case of Swine Erysipelas in Man, with Successful Treatment by Swine Erysipelas Serum.*
10. Vörner, H. *Pigmentation of the Nails in Secondary Syphilis.*
11. Kuhn, F. *Sterile Raw Catgut.*
12. Madleuer, M. *Fibers of Urtica Nivea as Sutures.*
13. Basler, A. *A Simple Saccharometer.*

3. Osann has tried the Mendel-Bechterew reflex in a number of cases, both normal and pathological. He considers the normal reflex (an extension of the toes after tapping over the outer dorsum of the foot) to be an idiomuscular reflex caused by the direct irritation of the extensor digitorum brevis. It is practically constant in normal people. It may, of course, be masked or impossible to bring out, when edema or joint changes are present, or when the muscles are atrophic. The absence of the normal extension reflex is of no particular pathological significance. The Mendel-Bechterew reflex appears in cases of organic spastic paresis of the lower extremities. It exists in many cases where the Babinski reflex is obtainable. In rare cases a positive Mendel reaction is present without Babinski. Although both of these reflexes appear together, there is not much real relation between them; while the Babinski is a pure skin reflex, and does not depend on the muscle tonus; the Mendel-Bechterew seems to depend on a hypertonic condition of the foot and toe flexors. This reflex is very often associated with ankle clonus.

[R. D.]

Berliner Klinische Wochenschrift. No. 50.
Dec. 16, 1907.

1. *Wassermann, A. *The Development and Present Position of the Serum Diagnosis of Syphilis.*
2. Lewin, C. *Experimental Contributions to the Morphology and Biology of Malignant Tumors.*
3. *Michael, C. *The Fibrolysin Treatment of Perigastric Adhesions.*
4. Kromayer. *The Permanent Cure of Sweating Hands by X-rays.*
5. Kron, N. *Basedow's Disease in Relation to the Sexual Life of Woman.* (Continued article.)
6. Hock, A. *Congenital Stricture of the Urethra.*
7. Posner, C. *Observations on Human Semen with "Dark-field" Illumination.*

1. Wassermann reviews the subject of sero-diagnosis in syphilis. The diagnostic worth of the method is already recognized, as it has been found to be positive in from 80% to 85% of a series of one thousand cases. The author answers the contention of Weil and Braun (reviewed in this Journal Feb. 6, 1908, p. 203) claiming that they differ from his results, without bringing sufficient proof on their side of the question. Wassermann, judging from his later researches, believes the substance concerned in the reaction to be a lipoid body. He finds the reaction positive in all stages of lues, but never in the healthy uninfected individual.

3. Michael reports two cases of severe perigastric adhesions which were much benefited by injections of fibrolysin. The first was a man thirty-two years old in whom severe gastric symptoms developed, due to adhesions about the stomach following a gastric ulcer. He was treated three distinct times for gastric ulcer, and operated on once without relief of symptoms. Great relief resulted from a course of fibrolysin injections, after which the patient was well enough to resume work. The second was a twenty-six-year-old seamstress, who had been through several gastric ulcer "cures," without relief of distressing pain in the region of the stomach after eating. On entrance to hospital a tumor near the pylorus was palpable. After eighteen injections of fibrolysin, this tumor had disappeared, the symptoms were much improved, and the patient was able to resume work. The author used Merck's fibrolysin (thiosinamin sodium salicylate) in doses of 1.15 ccm. injected into the abdominal wall in the region of the stomach. No untoward symptoms were noted. The article ends with a review of the few reported cases of adhesions in the gastro-intestinal tract treated by fibrolysin.

[R. D.]

Die Therapie der Gegenwart. No. 11.
November, 1907.

1. Martens, M. *The Treatment of Tuberculosis of the Joints.*
2. *Mai, E. *Researches on the Action of Escalin on the Mucous Membrane of the Stomach.*
3. Steida, A. *Acute Hemorrhagic Pancreatitis Successfully Treated by Drainage.*
4. Hoppe. *The Use of Nucleogen in the Nervous Diseases of Children.*
5. Goldschmidt, H. *Endoscopy of the Urethra.*
6. Hollstein, C. *The Treatment of Seborrhea of the Scalp by Thiopinol.*

2. Bickel has claimed that escalin, recommended for gastric ulcer by Klemperer, causes a great increase in the gastric secretion, as the aluminum in escalin combining with the gastric juice sets free hydrogen gas. The author admits that pure powdered aluminum will be dissolved in the gastric juice, but the aluminum in escalin is in such a mixture as to remain undissolved; in this combination almost no hydrogen is formed. In post-mortems on animals or men after escalin treatment, an undissolved layer of escalin has been found in the stomach. Especially on ulcerated surfaces, the aluminum glycerine mixture (escalin) forms a layer which is soft but adherent, and apparently non-irritating. The author has observed the effect of administering escalin in twenty cases with normal stomachs. In these cases after fifteen minutes, and again after one hour, no increase in secretion, either of HCl or pepsin, was demonstrable, and no difference in the amount of secretion after doses of escalin or bismuth could be detected. In twelve cases of hyper-, sub-, or an acidity, which were carefully observed, no influence on the secretion after doses of escalin could be observed. The author believes the different results of Bickel and Feigl to be due to faulty technic. He believes that escalin will prove a valuable means of stopping hemorrhage, and of favoring the healing process in gastric ulcer.

[R. D.]

Deutsche Zeitschrift für Chirurgie. Bd. 90.
Heft 4–6.

1. *Schaad, H. *A Case of Acquired Renal Dystopia with Hydronephrosis.*
2. Jenckel, A. *Acquired Atresia of the Intestine.*

3. *HELFERICH, *The Prognosis and Technic of Gastroenterostomy.*
4. GRAF, P. *The Surgery of Benign Diseases of the Stomach.*
5. *ITO, H., AND SOYESIMA, Y. *The Operative Treatment of Hirschsprung's Disease.*
6. FRANGENHEIM, P. *Bone Formation in the Human Penis.*
7. LÖHRER, H. *The Pathology of Fatty Growths in the Knee Joint.*
8. LICHTENHAHN, F. *Chronic Cystic Mastitis.*
9. BÜDINGER, K. *The Etiology of Retained Testicle.*
10. OELSNER. *The Results of Lumbar Anesthesia in Eight Hundred and Seventy-five Cases.*
11. BUDDE. *Extensive Resections of the Tarsus and Metatarsus.*

1. Schaad makes the position of the blood vessels at their origin from the aorta or vena cava the deciding factor between a congenital and acquired dislocation of the kidney. If the vessels are found to arise at their normal positions, the malposition of the kidney must be due to post-natal causes; conversely, if they have abnormal origins, the renal dislocation must be considered due to developmental faults. He reports the case of a youth of seventeen in whom all the usual signs of appendicitis were present, but at operation a dislocated kidney which had become hydronephrotic, was found. There was a definite history of trauma four years previously. Apparently at this time the right kidney, presumably abnormally mobile, became dislocated into the right iliac fossa, where it became adherent. A kinking of the ureter led to hydronephrosis, to which the attacks simulating appendicitis were due. Nephrectomy cured the condition.

3. Helferich feels that post-operative ulcers of the jejunum and vicious circle are avoided by his method of performing a posterior gastro-enterostomy. This is accomplished by a suture which narrows the afferent jejunal loop, leaving the efferent loop to make an easy exit of full diameter for the stomach contents. (For details of this procedure, see the illustrations in the following article of Graf.)

5. The authors report the following case of congenital dilatation of the colon successfully treated by operation. A boy of fourteen years had had incontinence of feces since birth, together with distention and a feeling of fullness in the abdomen. In spite of intestinal lavage and bimanual emptying of the rectum, the condition did not improve. At operation the colon, from the splenic flexure to the rectum, was found dilated and somewhat thickened. The mesentery was of normal length, but also thickened. Several mesenteric glands were somewhat enlarged. No narrowing or kinking of the intestine could be found. A broad lateral anastomosis was made between the lower ileum and the upper portion of the rectum, followed by an infolding of the descending colon for about 20 cm., reducing its diameter by about one half. Following this operation the bowels moved voluntarily once or twice a day, but the amount of feces thus passed was so very small that the sigmoid became again impacted. The abdomen was again opened, therefore, and the anastomosis being found perfect, the ileum was cut in two just below this, and both ends closed. The convalescence from this second operation was without complication, the boy having daily spontaneous evacuations when heard from four months later.

[W. C. Q.]

Miscellany.

THE MASSACHUSETTS MEDICAL SOCIETY.

MEETING OF THE COUNCIL.

A MEETING was held at the Medical Library, Boston, on Wednesday, Feb. 5, 1908.

The meeting was called to order at 12 noon, by the President, Dr. George W. Gay; 100 councillors were present.

Delegates were appointed to medical societies as follows:

American Medical Association, 1908 and 1909: H. D. Arnold, of Boston; J. A. Gage, of Lowell; O. J. Brown, of North Adams.

Alternates. — Edgar Garceau, of Boston; F. W. Anthony, of Haverhill; J. W. Spooner, of Hingham.

Maine — F. S. Newell, of Boston; W. C. Keith, of Brockton. New Hampshire — F. P. Emerson, of Boston; G. P. Twitchell, of Greenfield. Rhode Island — J. M. Fay, of Northampton; J. P. Torrey, of Andover. Connecticut — T. S. Bacon, of Springfield; R. W. Lovett, of Boston. New Jersey — J. B. O'Connor, of Lowell.

The following were appointed a committee to audit the treasurer's accounts: M. V. Pierce, Godfrey Ryder.

Voted: That Dr. Christopher Seymour, of Northampton, be appointed a member of the Committee to Procure Scientific Papers in place of Dr. M. D. Clarke, resigned.

Voted: That Dr. H. C. Ernst, of Boston, be appointed the representative of the Society at the meeting of the Council on Medical Education, of the American Medical Association.

The Committee on Medical Diplomas, through Dr. Marion, in accordance with instructions from the Society, presented a revised list of medical colleges whose diplomas shall be recognized for eligibility for examination for admission to the Society.

Voted: That the list as reported be adopted.

Dr. Wheatley, for the committee appointed to consider the matter of the defence of malpractice suits, presented the following report:

The committee appointed to consider the advisability of providing legal counsel by The Massachusetts Medical Society for the defence of its members when accused of malpractice." offers for the consideration of the Council the following report:

Active members of The Massachusetts Medical Society shall be entitled, on conditions hereinafter specified, to receive, without personal expense therefor, legal advice and court service of an attorney or attorneys-at-law in the employ of the Society, for the purpose of conducting their defence in any court in this Commonwealth, when they are accused of malpractice, or of illegal transactions in connection with the commitment of persons to institutions for the insane.

The legal services herein provided for shall be granted only on the following conditions:

First: Active members of the Society desiring to avail themselves of the privileges of this act shall make application therefor in writing to the Secretary of the Society, and shall show to his satisfaction that they are members in good standing in the Society, and that all of their pecuniary obligations to the Society by way of dues and assessments have been duly discharged. They shall also furnish the Secretary at his request with a complete and accurate statement of their connection with and treatment of persons upon which complaints against them are based, giving dates of attendance, names of and residences of nurses and of other persons cognizant of facts and circumstances necessary to a clear and definite understanding of all matters in question, and shall furnish such other relevant information, if possible, as may be required of them by the Secretary or the attorney of the Society.

Second: They shall agree not to compromise the complaints against them nor to make settlement of them in any manner without the advice or consent of the Society given through its attorney, nor shall they employ other counsel in aid of their defence without the consent of the Society.

Third: In the event that they shall, without the advice or consent of the Society, determine to settle or compromise complaints against them, they shall reimburse the Society for the expenses incurred in undertaking their defence, and in default thereof, they shall be deprived of further privileges under this act.

Fourth: In the event that members of the Society shall make requests under the provisions hereof, the President and Secretary, acting together, shall have the power to grant the same, or for cause to reject them, as the case may be, and to make such further provisions or requirements as may be deemed necessary for carrying out the purpose and intent of this act.

Fifth: It is to be distinctly understood by each and every member of this Society that under no conditions or contingency will The Massachusetts Medical Society pay any sums awarded in settlement or compromise, or by verdict or otherwise against any member sued for alleged malpractice, and each member in applying for the services of the attorney of the Society in any malpractice case shall agree not to obligate in any manner The Massachusetts Medical Society, or any persons connected therewith, to the payment of any sums whatsoever for any purpose, except as may be specified in this act.

Sixth: This act shall take effect upon its passage by the Council and approval by the Society, and shall apply only in cases arising subsequent to its enactment and during the applicant's membership in the Society.

Respectfully submitted,
George W. Gay,
Frank G. Wheatley,
Charles H. Cook,
Committee.

After a statement by the president, Dr. Gay, of the beneficial workings of a similar act passed by the Medical Society of the State of New York, the relation by several members of their experience in suits for malpractice, and the discussion of the report, it was

Voted: That the report be adopted and referred to the Society for approval.

The Committee on State and National Legislation, through Dr. Sears, reported that the formation of a North Atlantic Branch of the American Medical Association had been carefully considered by the committee, and it was the unanimous opinion that it is inexpedient to take any action toward the formation of such a branch.

Voted: To adopt the above report.

The same committee, on the question of adopting measures for reform in medical expert testimony, presented a preliminary report that it was useless to attempt any reform by legislative enactment without the aid of the legal profession. Conferences were therefore held with prominent lawyers and judges, and as a result a committee was appointed by the Bar Association, who have acted in co-operation with the Society's committee. A bill has been prepared and introduced into the present legislature on petition signed by both lawyers and physicians, which gives the Court, under certain conditions, power to appoint a medical expert, whose compensation shall come from the county, without depriving either party to the suit of the right to summon additional expert witnesses.

Dr. Presbrey, delegate to the annual conference of the Committee on Medical Legislation and the National Legislative Council of the American Medical Association, presented a report of the meeting held in Chicago, Dec. 10–13, 1907.

Mention was made of the report of the Committee on Army Reorganization of the bill to equalize and fix the pay of army, navy and marine corps and revenue-cutter service; of Navy Surgeon-General Rixey's bills for increasing the efficiency of the hospital corps of the United States navy; for the appointment of dental surgeons in the navy, and for the establishment of a corps of trained women nurses in the navy. Also reference was made to the enthusiastic endorsement of a committee's report on the Carroll-Lazear pension bills. The importance of uniformity in medical legislation in the various states was considered and insisted upon by the Council of the Association.

Voted: That the Council of The Massachusetts Medical Society, recognizing the discreet and successful management of the important affairs of the Board of Registration in Medicine as conducted by its secretary, and the value of his experience to the Commonwealth in all matters relating to medical legislation, earnestly recommends to his Excellency, Curtis Guild, Jr., the reappointment of Dr. Edwin B. Harvey at the expiration of his present term of office.

Dr. H. R. Stedman offered the following which, as amended by Dr. L. M. Palmer, was passed:

Voted: That the Council of The Massachusetts Medical Society, believing that the best interests of the insane of the Commonwealth demand that the insane of Boston be placed under the care and supervision of the state, strongly advocates the measures now being taken to secure legislation to that end; and further, that the Council recommends the establishment of observation hospitals in the large cities of the state, and refers the matter to the Committee on State and National Legislation to put this vote into practical effect.

RECORD OF MORTALITY

For the Week ending Saturday, Feb. 1, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	5	1
Chicago	711	199	Waltham	4	1
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	7	1
Baltimore	236	46	Brookline	—	—
Cleveland	—	—	North Adams	5	1
Buffalo	—	—	Chicopee	7	3
Pittsburg	—	—	Northampton	11	3
Cincinnati	—	—	Medford	7	1
Milwaukee	—	—	Beverly	2	1
Washington	—	—	Leominster	3	—
Providence	84	25	Hyde Park	0	—
Boston	247	69	Melrose	10	2
Worcester	50	16	Newburyport	—	—
Fall River	80	35	Woburn	9	1
Cambridge	32	10	Westfield	2	—
Lowell	33	9	Marlboro	8	2
Lynn	26	5	Revere	1	—
New Bedford	28	13	Attleboro	3	1
Springfield	29	6	Peabody	—	—
Lawrence	24	8	Adams	6	3
Somerville	13	1	Clinton	6	2
Brockton	12	2	Gardner	—	—
Holyoke	28	11	Milford	3	1
Malden	12	—	Watertown	6	2
Chelsea	12	2	Plymouth	—	—
Newton	7	2	Weymouth	6	0
Salem	13	4	Framingham	2	—
Haverhill	16	3	Southbridge	—	—
Fitchburg	9	6	Wakefield	—	—
Everett	6	1	Webster	—	—
Taunton	—	—	Arlington	—	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JAN. 29, 1908.

Stoner, G. W., surgeon. Granted leave of absence for six days from Jan. 18, 1908, under paragraph 189, Service Regulations.

Young, G. B., surgeon. Detailed to represent the Service at the meeting of the 4th Annual Conference of the Council on Medical Education, American Medical Association, to be held at Chicago, Ill., April 13, 1908. Jan. 23, 1908.

Mathewson, H. S., passed assistant surgeon. Granted leave of absence for seven days from Jan. 31, 1908. Jan. 29, 1908.

Lloyd, B. J., passed assistant surgeon. Granted leave of absence for seven days from Dec. 21, 1907, on account of sickness. Jan. 24, 1908.

Francis, Edward, passed assistant surgeon. Granted leave of absence for seven days. Jan. 23, 1908.

McCoy, G. W., passed assistant surgeon. Directed to proceed to Sussex County, Va., via Richmond, Va., for special temporary duty; upon completion of which to rejoin his station at the Hygienic Laboratory. Jan. 25, 1908.

Robertson, H. McG., passed assistant surgeon. Relieved from duty at Reedy Island Quarantine Station and directed to proceed to Tampa Bay Quarantine, assuming command of the Service, Jan. 22, 1908.

Manning, H. M., assistant surgeon. Relieved from duty in the Philippine Islands and directed to return to the States, reporting his arrival in San Francisco by wire. Jan. 22, 1908.

Bryan, W. M., assistant surgeon. Granted leave of absence for seven days, to be taken en route between Savannah, Ga., and New Orleans, La. Jan. 28, 1908.

Brooks, S. P., acting assistant surgeon. Granted leave of absence for seven days from Jan. 25, 1908, under paragraph 210, Service Regulations.

Rodman, J. C., acting assistant surgeon. Granted leave of absence for four days from Jan. 28, 1908. Jan. 27, 1908.

Thornton, M. J., acting assistant surgeon. Granted leave of absence for one day on account of sickness. Jan. 12, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING FEB. 8, 1908.

W. A. McClurg, medical director. Commissioned medical director from June 16, 1907.

R. T. Orvis, surgeon. Commissioned surgeon from March 1, 1905.

W. N. McDonell, passed assistant surgeon. Detached from duty at the Naval Hospital, New York, N. Y., and ordered to the Naval Recruiting Station, Chicago, Ill.

L. H. Wheeler, assistant surgeon. Ordered to the Naval Training Station, Newport, R. I.

UNITED STATES CIVIL SERVICE COMMISSION.

Surgeon. March 4, 1908.—The United States Civil Service Commission announces an examination on March 4, 1908, to secure eligibles from which to make certification to fill a vacancy in the position of acting assistant surgeon, Public Health and Marine-Hospital Service, for duty at St. John's River Quarantine Station, Mayport, Fla., at $125 per month, and vacancies requiring similar qualifications as they may occur.

For the specific vacancy mentioned applicants must be experts in the diagnosis and treatment of yellow fever, and persons who are immune to that disease are preferred.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C.

SOCIETY NOTICES.

The New England Hospital Medical Society.—The regular meeting of the New England Hospital Medical Society will be held at Hotel Nottingham, Huntington Ave., Thursday, Feb. 20, 1908, at 7.30 p.m. Obstetrical Section. Dr. Hannah G. Myrick, Chairman. Papers: 1. The Evolution of Maternity Technic illustrated by the Records of the New England Hospital for Women and Children from 1862 to 1907. Dr. Emma L. Call. Discussion — Drs. Hobart and Hamilton. 2. Pregnancy complicated by Uterine Fibroid. Report of a case. Dr. Mary F. Hobart. Discussion — Dr. Hamilton.

Dr. Blanche A. Denig,
Secretary.

The New England Pediatric Society.—The next meeting of the New England Pediatric Society will be held at the Boston Medical Library, 8, The Fenway, at 8.15 p.m., Feb. 15. Program: 1. President's address. Thomas Morgan Rotch, M.D. 2. A report of cases of cerebrospinal meningitis treated with anti-serum. Charles Hunter Dunn, M.D. 3. Our Present Knowledge of Obstetrical Paralysis with Some Illustrations by the Rœntgen Ray. William N. Bullard, M.D. 4. The Value of the Rœntgen Method in the Diagnosis of Disease in Children. Ariel W. George, M.D. 5. Presentation of specimen; results of a case of pyloric stenosis as shown by postmortem examination seven months after operation. John Lovett Morse, M.D., and F. T. Murphy, M.D.

Clinical Section of the Suffolk District Medical Society in Conjunction with the Boston Medical Library.—Meeting, Wednesday, Feb. 19, 1908, at 8.15 p.m. John Ware Hall. Serum Treatment of Cerebrospinal Meningitis, by Dr. Simon Flexner, Director of the Rockefeller Institute for Medical Research. Discussion by Drs. C. Hunter Dunn and John L. Ames.

Edwin A. Locke, M.D., *Secretary,*
117 Beacon Street.

Richard C. Cabot, M.D., *Chairman.*

Prize Offered for Best Essay on Economic Waste due to Occupational Diseases.—Dr. L. L. Seaman, of New York, has offered a prize of $100 for the best essay on The Economic Waste due to Occupational Diseases. The essays must not contain more than 5,000 words, must be signed with a *nom de plume*, the real name and address of the writer being sent in a separate sealed envelope to the Director of the American Institute of Social Service, Dr. Wm. H. Tolman, 231 West 39th St., New York. The essays must be sent in not later than April 1, 1908.

RECENT DEATH.

Leavitt R. J. Varnum, M.D., M.M.S.S., died in Lowell, Jan. 21, 1908, aged thirty years.

BOOKS AND PAMPHLETS RECEIVED.

The Pyonex. Its Theory and Practice. By W. B. Rule, M.R.C.S., L.R.C.P. Illustrated. London: John Bale, Sons & Danielsson, Ltd. 1907.

Maternity. By Henry D. Fry, M.D., Sc.D. New York and Washington: The Neale Pub. Co. 1907.

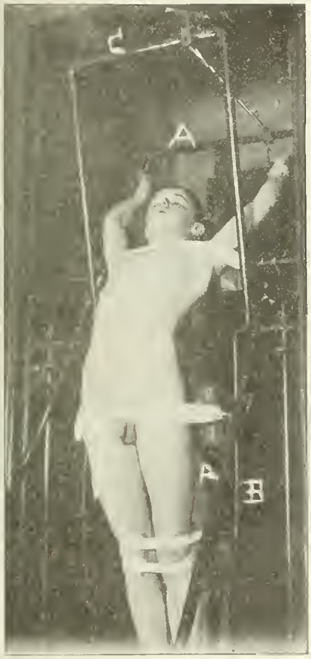
The Production and Handling of Clean Milk. By Kenelm Winslow, M.D., M.D.V., B.A.S. (Harv.). Illustrated. New York: William R. Jenkins Co. 1907.

Original Articles.

PENDULUM APPARATUS AND AN APPARATUS FOR ROTARY CORRECTION IN CURVATURE OF THE SPINE.

BY ROBERT SOUTTER, M.D., BOSTON,
Assistant Surgeon, Children's Hospital; Member of American Orthopedic Association.

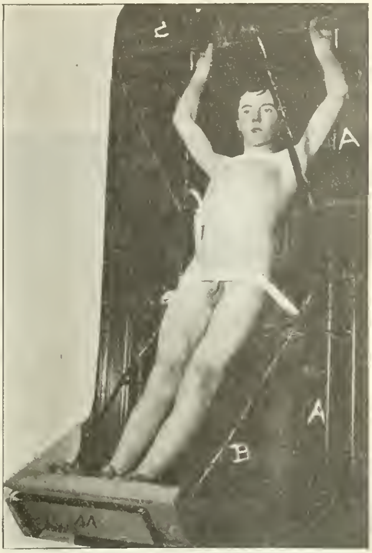
In curvature of the spine, cases can be divided into three groups: postural cases in which the deformity can be easily corrected, and next the cases in which the muscles, ligaments and soft parts have undergone some change, and third those in which there are distinct bony changes.



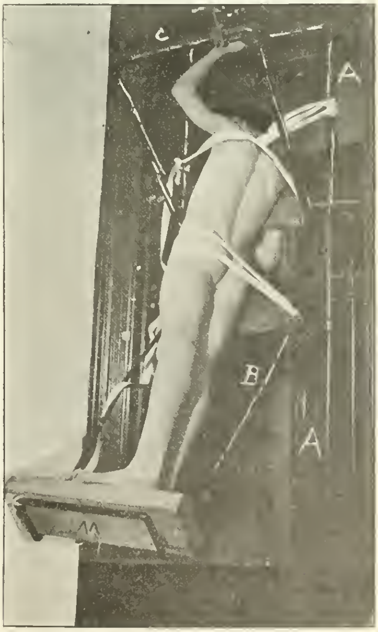
Apparatus applied for antero-posterior flexibility, swinging backward.

In all these cases it is important to increase the flexibility before the deformity can be corrected. While this can be accomplished to a certain extent by exercises, it can be done in a shorter time and with better precision by suitable machines. The writer does not wish to depreciate the value of corrective exercises.

In postural cases the patient may be taught how to stand correctly, but if the case is one of long duration, in measuring the spine, the flexibility will be found to be different for each side at the same level. For this reason the tendency for recurrence and later increase of deformity is great until not only the deformity is corrected,



Apparatus applied for antero-posterior flexibility, swinging forward.



Apparatus applied to increase lateral flexibility.

but until the measure of the flexibility is equal for the two sides.

In those cases in which there is marked change in the soft parts, and also in those cases where the bony structure has changed, the increase of flexibility at definite points and the stretching of muscles is not only a preliminary but a constant factor in the treatment. For these cases machines are particularly adapted and shorten the length of time required to effect a correction of the deformity.

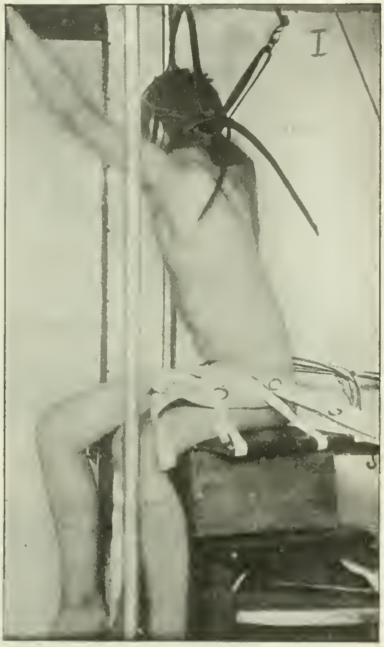


FIG. 1. Side view, showing pelvic twist to the left.

The following apparatus has been used for five years and is adapted to increasing the flexibility of the spine laterally at any level by the pendulum motion of the lower spine while the upper is held stationary, or of the upper spine while the lower is held stationary. The amount of motion can be limited by weights, and the amount of force to obtain flexibility can be lessened or increased.

This apparatus consists of a rectangular frame (A) swung at the middle, inside of which are two half frames, one swinging above and the other below, from a point at the middle of the first frame. The first frame (A) can be allowed to swing while the lower inside frame (B) is made stationary, or the first frame may be fastened and the lower half frame allowed to swing. In this way the upper segment can swing and the lower remain stationary or *vice versa*. The upper half frame (C) is used in connection with the large

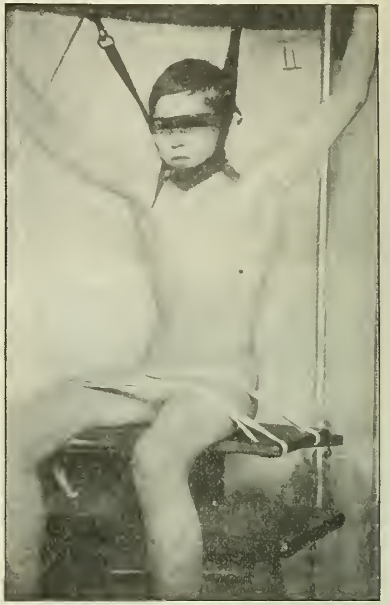


FIG. 2. Patient seated with head traction, but with no pads or straps to the upper spine.

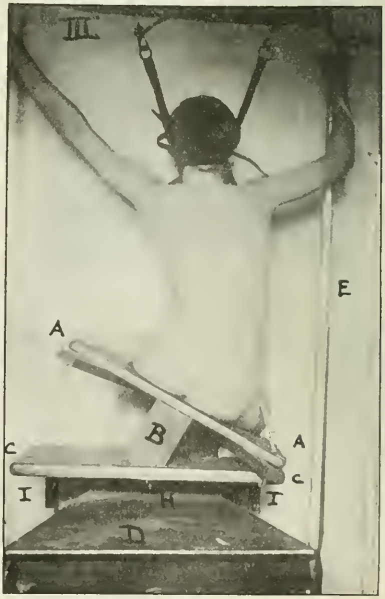


FIG. 3. Apparatus showing side action.

or lower half frame or for the application of pressure pads or straps. It can be placed in any position desired, and pressure pads and rests can be applied at any level to localize or limit the motion.

The apparatus is useful in cases with bony changes as well as in cases where the deformity is limited to the soft parts. In simple curves and round shoulders it has been extremely satisfactory.

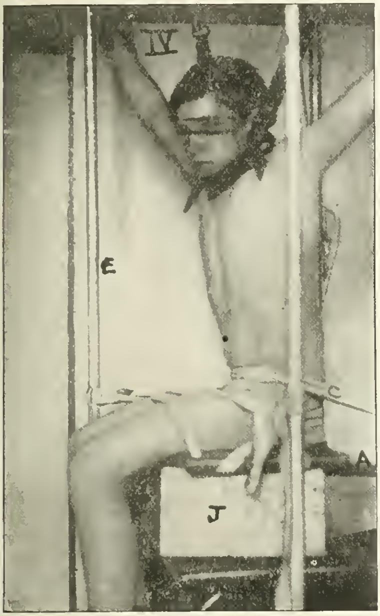


Fig. 4. Side view, showing twist to the right with resistance straps.

A MACHINE FOR ROTARY STRETCHING OF THE SPINE IN SCOLIOSIS.

In curvature of the spine a twist or rotation is almost always present in all cases to a more or less degree. In advanced cases the twist is very marked, and in a compound curve it may be on both sides of the spine at the convexity of each curve. The application of side pressure to correct the curvature, if not carefully applied, will often increase the rotation.

This apparatus has been devised so that the amount of rotation of the spine may be increased or diminished to the right or to the left and at the desired level. Both pressure correction and active or passive rotary movement can be utilized in the treatment. This can be done with the shoulders level, inclined, displaced laterally, or with the pelvis tilted at any angle so that the patient may be placed in as advantageous a position as possible and the corrective stretching applied.

The patient is placed in position and immobilized up to the point where the twist is desired. The twist may be limited to the right or to the left, or the amount of rotation limited in either direction. By a teeter motion the lumbar spine can be treated, and the muscles going to the lumbar region strengthened or stretched.

The apparatus consists of a base D, a double-decked seat A and C. C twists at H on the base D. The motion is regulated by weights and pulleys attached to the arms I and L. The base D is narrower towards the front and broader towards the back to allow for the rotation of the arms I. The seat A teeters on the pivot B until the side of A touches the side of C (see Fig. 3). Blocks J (Fig. 4) keep A steady when the rotary motion is being used. Should it be advisable to increase flexibility to one side, one block only may be inserted. Should resistance to lateral motion be needed in order to increase the muscular work, weights are attached to hooks below the seat A.

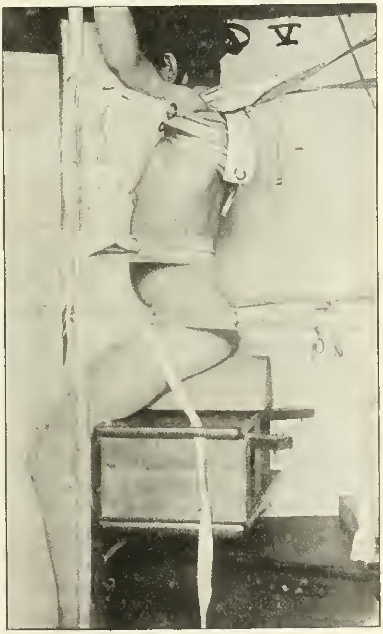


Fig. 5. Side view, with straps applied to the chest.

In Fig. 2 the patient has the spine stretched by the head sling and the pelvis fastened to the seat A. By the lateral motion of the pelvis the muscles are alternately stretched and contracted while the flexibility of the spine is increased.

In Fig. 3 the lateral motion is seen. Notice the action of the muscles to the right of the spine.

In Fig. 4 the patient is rotating the pelvis to the right while the shoulders are held by the arms to the right. As the flexibility increases straps are applied to the shoulders, and more rotary correction is possible.

Fig. 5 shows a method of applying straps. To restrain the motion of the spine at any level, or to limit the amount or position of the motion, straps are applied and fastened to the uprights E. In this way the twist or the lateral flexion can both be increased or limited. A gymnasium suit is worn when using the apparatus.

Fig. 1 shows the patient twisting to the left, with resistance straps limiting the twist to the right. The shoulders and arms are fixed to posts E, and the pelvis is strapped to the seat A.

This apparatus is especially adapted for the correction of rotation, also for lumbar curves and low deformities of the spine. By means of side straps, cross straps and pressure pads, it is also useful in dorsal and dorsal lumbar curves in cases with or without rotation.

The careful use of machines, in addition to other accepted methods of treating curvature, materially shortens the length of time necessary to obtain correction of the curve. In connection with other corrective machines for the treatment of lateral curvature these pieces have been found efficient and serviceable.

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"MATTAPAN DAY CAMP."*

BY DAVID TOWNSEND, M.D.,
Physician-in-Charge.

The Day Camp, which has been so successfully operated by the Boston Association for the Relief and Control of Tuberculosis the past two summers on Parker Hill, in Roxbury, was this year moved to Mattapan. The camp was established on the property of the new proposed Boston Consumptives' Hospital, and this spot was made available through the courtesy of the trustees of this hospital. The camp was opened on June 5, 1907, and at the present writing, Nov. 1, is still in operation. This report, therefore, is in the nature of a preliminary one.

The equipment is practically the same as the two past summers, except that a new administration shack, 10 x 18 feet, was erected to take the place of the tent which was used in the previous seasons. In this building is the matron's office and the medical quarters in which is done the examining, weighing and laboratory work. The whole equipment is as follows:

A lean-to kitchen and pantry with laundry attached; a dining tent, 20 x 50 feet, connecting with the kitchen by a walk; five tents, 10 x 12 feet each, one for the caretaker who is a tuberculous patient and is the only one who spends the nights on the grounds; two rest tents, with two cots in each, for the sicker patients; a tent for storage of the chairs used by the patients; and one for the storage of women's clothes, serving the purpose of a dressing room; and two sanitaries, one for men and one for women.

The staff of the camp consists of a physician-in-charge, two assistants, at least one of whom is constantly on duty each day, a throat specialist who visits the camp twice a week, a matron who is a graduate nurse, and an assistant nurse. In addition there is a cook and two helpers and a caretaker.

The routine of the camp is as follows:

The patients come in the morning as early as possible and spend the day in reclining chairs at rest, or indulge in moderate amusements; those who are able are allowed and encouraged to do light work about the camp. In the late afternoon they return to their homes. Patients with a temperature of 100° or above, or a pulse of 120 or above, are placed in one of the rest tents to ensure absolute rest and quiet. Each patient is weighed once a week; this means body weight, the women are weighed with a sheet, $1\frac{3}{8}$ lb.; examined once a month; their pulse and temperature taken twice a day, morning and evening; and the sputum is examined for the presence of tubercle bacilli, as far as practicable, once a month. All these findings are recorded. The throat physician, Dr. J. T. Sullivan, examines all new cases entered previous to his visit and treats all the old cases who need treatment, at this time. At 9.30 A.M., a lunch of bread and butter and milk is served; at noon there is a dinner of meat or fish, potatoes, another vegetable, and a wholesome dessert (preferably made of milk and eggs); at 4.00 P.M., another lunch of milk and bread and butter. When needed eggs are served in addition to the lunches. No medicine is used except symptomatically. The chief aim of the camp is educational.

The type of cases admitted to the camp are those who, for one reason or another, cannot enter the State Sanatorium at Rutland, to the far-advanced cases for which there are hospitals.

A. From June 5, 1907, to Nov. 1, 1907, 204 were admitted. Up to Nov. 1, 9,591 days' treatment were given as follows:

June (5–30),	934
July,	2,126
August,	2,268
September,	2,026
October,	2,237
Total,	9,591

In addition there were given in this period fully 100 other days' treatment to cases which came as visitors, until other arrangements could be made for them, or who came for examination.

B. The average attendance per month was as follows:

June,	26	days	35
July,	31	,,	$68\frac{1}{2}$
August,	31	,,	$73\frac{1}{2}$
September,	30	,,	67
October,	31	,,	$72\frac{1}{6}$

The weekly attendance was as follows:

1, 158	6, 475	11, 517	16, 472	21, 499
2, 224	7, 499	12, 521	17, 460	22, 509
3, 292	8, 490	13, 518	18, 450	23, 482
4, 387	9, 463	14, 460	19, 543	
5, 462	10, 526	15, 596	20, 529	

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* Presented at the Annual Meeting of the Boston Association for the Relief and Control of Tuberculosis, Nov. 19, 1907.

C. *Predisposing causes:*

a Occupation: One sixth of the cases treated were housewives; the next largest number were school children, the next largest number were factory employees; the next were distributed among various other occupations, to be mentioned later.

b Earnings:

Less than	$10 per week,	36 cases
	$10–$15 ,, ,,	33 ,,
	$15–$20 ,, ,,	20 ,,
	$20–$25 ,, ,,	2 ,,
	$25–$30 ,, ,,	3 ,,
	No record of wage,	110 ,,
	Total,	204 ,,

c Housing and household conditions: The majority of the cases lived in tenements or lodged; an insignificant number owned their own homes.

d There was a previous history of pleurisy, bronchitis, pneumonia and the usual children's diseases in most of the cases.

e Five per cent of the cases gave a previous history of alcoholism or stimulants to excess.

D. *Probable Sources of Contagion:*

a	Definite history of houses which had previously been seats of tuberculosis,	19 cases
b	Other members of the household group afflicted with tuberculosis,	22 ,,
c	Fellow workmen,	5 ,,
d	Unknown,	158 ,,

E. The cause of the disease in most of our cases seemed to be improper methods of living, including food and quarters, occupation, racial susceptibility and in some cases previous disease.

F. *Throat Conditions:*

Normal throats,	126 cases
Evidence of tuberculosis,	56 ,,
Not examined, (Remained too short a time),	22 ,,
Total,	204 ,,

Nativity:

Native born males,	42	
,, ,, females,	49	
Foreign ,, males,	66	
,, ,, females,	47	
No record,	0	
Total males,		108
,, females,		96
Total,		204

There were sixteen different countries represented as follows:

Ireland,	33	United States,	96
Canada,	23	Russia,	25
England,	7	Italy,	5
Sweden,	5	Poland,	2
Denmark,	1	Hungary,	1
Scotland,	1	Germany,	1
Portugal,	1	Austria,	1
Roumania,	1	Japan,	1
		Total,	204

Personal Nativity:

America (including Canada),	119
Ireland,	33
Others,	52
Total,	204

Residence:

Boston,	185
Brookline,	6
Chelsea,	6
Cambridge,	2
Malden,	1
Others,	4
No record,	0
Total,	204

Non-tuberculous cases,	3
Unsuitable,	25
a Hospital cases,	
Regular Sanatorium cases,	4
b (Accepted before entrance),	
c Unmanageable,	6
Total,	35

Housing and Household Conditions:

a Who lived in tenement houses,	132
Boarded,	64
In own house,	8
	204
b Lived and slept in separate rooms,	64
No record,	5
Roomed and slept with some one else,	135
	204

No record was made of the height of each patient.

Age:

1–10	5 cases	Under 14	15 cases
10–20	44 ,,	14–35	135 ,,
20–40	121 ,,	Over 35	54 ,,
40–60	32 ,,		
Over 60	2 ,,		204 ,,
	204 ,,		

The occupations were as follows:

Housewife,	38	Waiter,	7	Barber,	3
School,	17	Laborer,	6	Domestic,	3
Factory,	15	Printer,	4	Packer,	2
Tailor,	10	Dress-maker,	4	Telephone operator,	2
Machinist,	9	Teamster,	4	Farmer,	2
Clerk,	9	Student,	3	Waitress,	2
Painter,	7	Peddler,	3	Stone-cutter,	2
Sales-girl,	6	Laundress,	3	Motor-man,	2

One each:

Machine-operator,
Auto-washer,
Coachman,
Office cleaner,
Car cleaner,
Elevator boy,
Cabinet maker,
Freight handler,
Interpreter,
Silver plater,
Reporter,
Attendant,
Letter carrier,
Engineer,
Electrician,
Freight brakeman,
Switchman,
Butcher,
Office boy,
Salesman.
Carpenter,
Electrotyper,
Fireman,
Marine fireman,
Sailor,
Janitor,
Tinsmith,
Lunch Counter.

No occupation — 13.

Physical Appearance on entrance of the 204 cases:

Well developed and nourished,	25%
Fairly ,, ,, ,, ,,	50%
Poorly ,, ,, ,,	25%

The duration of the disease varies with different individuals, due to the vitality of each patient and his mode of living. Some advance more rapidly than others and some improve more rapidly than others.

The cases may be divided roughly into three classes:

1. Those who want to get well.
2. Those who don't care.
3. Those who do not want to get well.

Class I, as a rule, improve the most rapidly.
Class 2 less so, and
Class 3 almost never.

The sputum examination of the 204 cases showed the following results:

Tubercle bacilli in sputum,	50%
No tubercle bacilli in sputum,	16%
Did not raise,	22%
Not examined,	12%
Tubercle bacilli in feces,	3 cases

The number of cases never treated by sanatorium methods, *i.e.*, new to this form of treatment,	70
Previously treated in sanatoriums, classes or hospitals,	134
	204

Number of ex-Rutland cases at camp,	34
,, ,, cases sent to Rutland,	14

Two other cases were accepted, but as they were non-citizens they were obliged to await a vacancy; one of these improved so much that it was not necessary for him to go to Rutland and he went back to his work instead.

Left against advice,	56
Discharged to Hospitals,	15
Died at home or at institution (11 from tuberculosis, 1 as result of accident),	12
Re-admitted (old camp cases),	11
Remaining at camp,	91

Physical Condition:

Arrested cases,	13
Improved, ,,	90
Stationary ,,	53
(This includes cases in which there was only one examination, *i.e.*, did not remain a month.)	
Advanced,	36
Died,	12
	204

Weights:

Gained in weight,	122
Lost ,, ,,	39
Weighed only once or same as last weight,	43
	204

Striking Gains:

18 lb. in 22 weeks
28 lb. ,, 20 ,,
16 lb. ,, 20 ,,
15 lb. ,, 15 ,,
11 lb. ,, 3 ,,
20 lb. ,, 21 ,,
16 lb. ,, 20 ,,

17 lb. in 16 weeks
18 lb. ,, 18 ,,
16 lb. ,, 16 ,,
18 lb. ,, 21 ,,
12 lb. ,, 11 ,,
10 lb. ,, 6 ,,
8 lb. ,, 6 ,,
21 lb. ,, 10 ,,

Olive or cotton seed oil was not used at the camp because we felt that the patients were receiving a sufficiently varied and nourishing diet and in sufficient quantities to make this unnecessary.

It was not deemed advisable, after careful consideration, to use serum treatment at the camp, as the cases were not of the type which would benefit from such a course of treatment.

In addition to the routine examination of each patient, a complete record of his home conditions is filed with his record. This report is furnished by the nurse who visits each patient in his home.

An examination of the other members of the patient's family was made at the camp, as far as possible, and the results recorded. In addition, other cases have been referred to the camp for opinion by various societies, charity organizations, private physicians, etc.

The result of these examinations are as follows: Children, 96, adults, 36, total, 132.

Children:	
Tuberculous,	7
Suspicious tuberculosis,	4
Bronchitis,	9
Asthma,	1
Tonsils and adenoids,	10
Anemia,	2
Spinal curvature,	4
Normal,	59
Total,	96

Adults:	
Tuberculous,	11
Suspicious tuberculosis,	2
Chronic bronchitis,	2
Normal,	21
Total,	36

At the end of the season the cases will be looked after and kept track of by the various out-patient departments, classes, charities, in their homes by private physicians or nurses, and at the various institutions for these cases. An effort will be made to provide for each case.

The per capita daily cost was as follows:

June, 67 cts.; July, 62 cts.; August, 47 cts.; September, 47 cts.; October, 41 cts.

I desire to thank my assistants, Dr. F. P. McCarthy, Dr. R. H. Houghton and Dr. R. D. Schmidt; also my matron, Miss S. F. Robbins, my nurses, and the friendly visitors Miss A. P. Tileston and Mrs. Carver, whose ceaseless devotion to the work and kindly interest in the patients has added so much to the efficiency and success of the work. I wish particularly to express my gratitude to Dr. J. T. Sullivan for the careful and effective work he has done in the examination and treatment of the throats of the patients and for his interest in the work. His findings and treatment have been most valuable. I also desire to thank the Boston Dispensary for its co-operation in so willingly filling prescriptions, thereby enabling patients to obtain their necessary medicine free or at a small cost.

The consulting staff of the camp is Dr. E. O. Otis, Dr. V. Y. Bowditch, Dr. A. K. Stone, Dr. J. J. Minot and Dr. H. C. Clapp.

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A DIABETIC CHART.

BY ELLIOTT P. JOSLIN, M.D.,
AND
HARRY W. GOODALL, M.D., BOSTON.

The intelligent management of a case of diabetes mellitus requires frequent comparisons between the diet, the urinary analyses and the weight of the patient. These data are often printed or written down in four or five different places, and the labor of uniting them is so great that it is seldom attempted. Any accurate study of a case is thus extremely difficult, and in hospitals past records are almost useless. To facilitate the treatment of diabetic patients and to eliminate some of the annoying sources of error we have used a chart for some years upon which some of these facts were recorded. Our chart was designed chiefly for the benefit of the physician, in contrast to the charts in use in various German clinics, which have a broader application and are of direct help not only to the physician but also to the nurse and the patient as well. By this latter arrangement the chart becomes the nurse's record, and upon it the nurse writes what the patient actually eats. We have attempted to combine the two methods in the following chart and hope that it will be found helpful and suggestive in the treatment of diabetic patients.

Space is reserved upon the chart for the doctor's orders and the nurse's record as well as the urinary analyses. There is given in addition a statement of the foods commonly allowed in a strict diabetic diet, with the per cent of carbohydrates in other foods which are occasionally employed.

A few words may not be out of place in explanation of the details of the chart.

Analysis of urine, acidosis. — The simplest test for acidosis is Gerhardt's ferric chloride reaction for diacetic acid. This may be performed as follows: Add a strong aqueous solution of ferric chloride to one third of a test tube of urine. A Burgundy red color shows the presence of diacetic acid. If the reaction takes place after the urine has been previously boiled for upwards of *half an hour* (Neubauer) it is not due to diacetic acid.

The determination of acetone, except for special study, is not of much value, because Folin and others have shown that it constitutes so small a part (10%) of the total acidosis. It does not even vary with the total acidosis.

The estimation of *B*-oxybutyric acid is still too troublesome for general use, although an approximate idea of the quantity may be easily gained by noting the amount of levorotation after complete fermentation of the sugar in the urine, or by comparing the polariscopic and titrated values. Infusorial earth should be used in preference to lead acetate for clarifying the urine, because the latter, as shown by Magnus Levy, gives a levorotation of itself.

Ammonia. — The total quantity of ammonia excreted in twenty-four hours is the most convenient measure of the acidosis which we have. The Folin method is accurate and consumes but little time when once the apparatus is set up and tested. We would advise physicians accustomed to send occasionally their diabetic urines to a laboratory for examination, to specify the details of the examination which they desire, and to include ammonia, rather than to ask for a complete routine analysis, which so often contains much that is not of direct bearing in the case. The estimation of ammonia in a decomposed urine is valueless.

It should be remembered in this connection that the amount of ammonia in urine is lowered if bicarbonate of sodium is given. Theoretically 5 gm. of bicarbonate of sodium will lower the ammonia by 1 gm. but in practice only by a small fraction of this amount. Thus if the quantity of ammonia has risen from its normal of 0.5 or 1.5 gm. in twenty-four hours up to 5 gm., it would be of less serious import than if that same amount was excreted by a patient while taking daily 12 gm. (three level teaspoonfuls) of sodium bicarbonate. We hope soon to report some observations on the value of the determination of ammonia in the treatment of diabetic patients, and for that reason will not further enter into the subject at this time.

Nitrogen. — The exact determination of the nitrogen requires much time, and can only be done in a well equipped laboratory. If the urine is collected for two or three days and carefully preserved, the average daily excretion of nitrogen can be reckoned, and if this is multiplied by 6.25, the quantity of albumin in the diet is obtained. The simple urea apparatus is of help only in those cases in which there is no evidence of acidosis. As nitrogen forms one half of the urea molecule, the approximate quantity of nitrogenous food in the diet can be reckoned by multiplying the amount of urea in grams by three. Occasionally it is easier to get at the amount of albumin in the diet in this way than by directly calculating the albumin in the food.

Estimation of sugar. — Space has been left for the various methods: reduction by Fehling's solution, fermentation, polarization, but we would still recommend as last year the fermentation test, which recently Christian has shown to be sufficiently accurate. It is unfortunate, however, that the usual specific gravity bulbs are so crude, for they detract from one's pleasure in the study of a case. It would be a great help if some firm would construct a more accurate clinical urinometer, or two urinometers reading respectively 1,000–1,025 and 1,026–1,050.

The Lohnstein fermentation apparatus, so commonly employed in Germany, is neat, fairly accurate, takes but a few hours for the test, and requires but one half of one cubic centimeter of urine.

The polariscopic examination for sugar is the most convenient of all the quantitative tests. Until our attention was called to the matter by Dr. Brügsch we did not realize how frequently one could examine the urine directly by this method, and thus dispense with the use of lead acetate and ammonia. If a clarifying agent is needed, infusorial earth is most satisfactory, and has the advantage of not affecting the rotation.

Levulose. — Levulose is rarely present in urine as the only sugar, but it frequently occurs in advanced cases of diabetes. The Seliwanoff test for it is as follows: a pinch of powdered resorcin is added to equal parts of urine and hydrochloric acid of 1,124 specific gravity, and the mixture boiled. If the solution becomes reddish brown and changes from a clear to an opaque fluid levoluse is probably present. Like glucose, levulose reduces Fehling's solution and ferments with yeast, but in accordance with its name rotates polarized light to the left. One can determine the quantity by the following formulæ: *D* equals dextrose; *L* equals levulose.

$D + L = \%$ by titration.
$D - L = \%$ by polarization.
$2D = \%$ by titration and $\%$ by polarization.

Pentose. — Pentosuria is a rare condition occurring without symptoms, the sugar being found by accident. It is important to bear it in mind lest one treat a patient by mistake for diabetes when he simply has an apparently unimportant anomaly of metabolism. Pentose reduces copper, but not well. The reduction occurs after cooling, and then suddenly throughout all the urine. It does not ferment with yeast. It rotates polarized light either not at all, or in a very slightly dextrorotary direction. For its identification the orcin-HCl test is recommended as the most specific, because it excludes the glycuronic acid compounds. To the urine is added an equal volume of fuming hydrochloric acid and a pinch of orcin. The solution is then boiled. If pentose is present a greenish-gray precipitate occurs. If a positive reaction is obtained the presence of pentose must be confirmed by the spectroscope or by the melting point of the osazones. The orcin-HCl solution may be tested directly with the spectroscope, or if the solution is too opaque after extraction with amyl alcohol. If pentose is present a band will be seen between the lines *C* and *D*. The melting point of the osazones is between 157° and 160° C.

Glycuronic acid. — Glycuronic acid gives the same reaction as pentose, but only after long boiling because its "pairing" must be broken up. It can be differentiated because it is either dextro- or levo-rotary according to the form in which it occurs and also by its different spectroscopic reaction.

Total sugar in urine. — Too much importance cannot be laid on the necessity of recording the total sugar excreted in twenty-four hours. Frequently a urine shows a good reaction with Fehling's test, yet the quantity of sugar for the day is but a few grams; and on the other hand it is not very uncommon to have a urine of normal quantity contain between five and six per cent of sugar. It is the total quantity of sugar in the twenty-four hours which, with the weight and acidosis, regulates the treatment. We are convinced that the reason why this important factor is so often neglected is due to the use of the complicated English system of weights and measures. We are sure that it would be of advantage to all physicians to use the metric system in connection with their diabetic cases. It is only necessary to remember that thirty grams or cubic centimeters are equal to one ounce. Compare the impression conveyed by the report of the presence of sugar in the terms of 24 grains to the ounce with 1.5%, and then consider the difficulty of reckoning or gaining a correct idea of the total quantity of sugar in 53 oz. of urine by the former method, and in 1,590 cc. by the latter.

Nutritive and carbohydrate content of food. — The caloric values are given only in round figures, because it is impracticable to estimate accurately the nutritive values of food at the table. Meat, for example, loses 25% more or less of water in the cooking, and the amount of fat which it contains is variable. Some patients eat a great deal of meat fat, and others little. This fact alone is a caution against attaching too much importance to the caloric values of a patient's diet as determined by this or any other chart.

The foods which are recorded in the "5% or less" carbohydrate column in reality contain much less when served to the patient, and it is usually a safe rule to consider them carbohydrate free, and thus include them in what is known as "strict diet." It is well, however, to bear in mind Professor Krehl's remark to his students that they would be performing a charitable act if they repeated twice a day for a week, "there is no such thing as *the* diabetic diet."

The advantage of tables showing foods with similar carbohydrate values is obvious, because exchanges can thus be freely made. Our table simply follows the example set by Von Noorden in furnishing a list of equivalents. As starch is so much better assimilated than sugar, it is well in progressing from one group of carbohydrate to another of a higher per cent of carbohydrate to begin with those articles which contain starch rather than sugar, in other words, with the vegetables rather than with the fruits. It is, of course, simpler to use household measures than to weigh the various articles of food, but it will be found prudent to ask occasionally the patient to control his observations with the scales.

Quantity of proteid food in diet. — The total quantity of proteid food in the diet should be known in severe cases, because when the albumin has been restricted to seventy-five or one hundred grams, as Naunyn has pointed out, an increasing tolerance for carbohydrates may be observed. The restriction of proteids also may lessen the acidosis.

Carbohydrate balance. — If 100 gm. carbohydrates are included in the diet and only 50 gm. are excreted in the urine, we have an encouraging positive carbohydrate balance. Fifty grams of the quantity taken have been assimilated. If we can render the urine of such a patient sugar free, and then can again reach this same positive balance without the return of the sugar, we have been successful in our treatment. Occasionally we can do better, at times not so well, but we always have a standard set before us for that particular case.

Professor Müller pointed out another value of the carbohydrate balance in the clinic which he gave at the Boston City Hospital last spring. He then showed that it was impossible for the sugar which appeared in the urine of the patient to have been formed from the food which he was said to have eaten. If sugar persists in the urine when a patient is on a non-carbohydrate diet, it must be formed from albumin, and approximately in the ratio of 60 gm. sugar for 100 gm. albumin. Knowing the amount of albumin in the diet, it is easy to calculate how much sugar can be made

60 gm. sugar in the urine for each 100 gm. albumin

No. Name Present Address Permanent Address

									Ammonia				Rotation					DIET							
Date	Vol.	Sp. Gr.	Reac.	Alb.	Acetone	Di-acetic Acid	B-oxy bu'ric Acid	Nitrogen	Total	% of Nitrogen	Fehling's	Fer'tation	Before Fermentation	After	Laevulose	Pentose	Urine Total Sugar	Total Carb.	Protein	Fat	Calories	$NaHCO_3$	Carbohydrate Balance	Weight of Patient	REMARKS

...) are given daily for a whole week. The better the quality of the bicarbonate of sodium, the more

no mistake in mentioning the proto-iodide of determine the quantity by the following formulæ: *D* equals dextrose; *L* equals levulose.

because it is impracticable to estimate accurately the nutritive values of food at the table. Meat,

DIET

STRICT DIET. Meat, Poultry, Game, Fish, Clear Soups, Gelatin, Eggs, Butter, Olive Oil, Coffee and Tea, — and for variety, Tongue, Sweetbreads, Tripe, Kidneys, Pig's Feet, Brains, Bone Marrow, Anchovies, Caviar, Lobster, Crabs, Sardines, Shrimps, Bologna Sausage, Smoked or Pickled Meat, or Fish.

PER CENT. OF CARBOHYDRATES IN

5% or Less		10% +	15% +	20% +
Lettuce	Cauliflower	Onions	Green Peas	Potatoes
Spinach	Tomatoes	Squash	Artichokes	Shell Beans
Sauerkraut	Rhubarb	Turnip	Parsnips	Baked Beans
String Beans	Egg Plant	Carrots	Canned Lima Beans	Green Corn
Celery	Leeks	Okra	Apples	Boiled Rice
Asparagus	Beet Greens	Beets	Pears	Boiled Macaroni
Cucumbers	Watercress	Mushrooms	Apricots	
Brussels Sprouts			Cherries	Plums
Sorrel	Butternuts	Lemons	Currants	Bananas
Endive		Oranges	Raspberries	
Unsweetened and Unspiced Pickle		Cranberries	Huckleberries	Almonds
		Strawberries		
Ripe Olives	Clams	Blackberries	Pecans	
Grape Fruit	Scallops	Gooseberries	Filberts	
	Fish Roe	Peaches	Walnuts	
6% or Less		Pineapple	Pistachios	
Cabbage	Oysters	Watermelon	Beechnuts	
Radishes	Liver	Musk Melon		
Pumpkin				
Kohl-rabi		Brazil Nuts		

FOOD 100 grams	PROTEIN	FAT	CARBOHYDRATES	CALORIES approximate
Beef, Mutton, Fowl, Fish (uncooked)	20	5-10		125-170
Ham	20	25		300
Bacon	12	50		500
1 Egg — about 50 grams, without shell	6.5	5		75
Milk	3	4	5	70
Cream, good	3	20	3.5	200
Cream, very thick	3	40	3.5	400
Butter	1	85		800
Cheese	25	33	2	400
Bread	9	1	60	275
Wheat Flour	12		75	350
Rice	8		80	350
Oatmeal	16	7	66	375
Potato	2		20	90

Vegetables lose carbohydrates in the cooking, especially if the water is changed twice. This affords opportunity for the introduction of butter. Meat loses 25% water in the cooking

Starch is better assimilated than sugar in glycosuric patients.

Potatoes and eggs of similar size weigh about the same.

One egg and 25.g. cooked meat contain equal amounts of albumen.

One gill (3 tablespoonfuls) oatmeal weighs 36 g., and this if cooked amounts to (4 tablespoonfuls) 250 g.

Approximately 60.g glucose can be formed from 100.g. albumen.

1 gram albumen contains 4 Calories.
1 " carbohydrate " 4 "
1 " fat contains " 9 "
1 " alcohol " 7 "

1 kilogram = 2.2 pounds. 30 grams (g.) or cubic centimeters (c.c.) = 1 ounce.

A patient "at rest" requires 30 calories per kilogram body weight.

Consult the Chemical Composition of American Food Materials, Bulletin No. 28,
U. S. Dept. Agriculture, Office of Experiment Stations, Washington.

DATE	ORDERS	BREAKFAST	FORENOON	DINNER	AFTERNOON	SUPPER

and carbohydrate content of food. — The caloric values are given only in round figures,

Knowing the amount of albumin in the diet, it is easy to calculate how much sugar can be made from it. If one then finds that there is more than 60 gm. sugar in the urine for each 100 gm. albumin in the diet, it is evident that the calculations have either been at fault or the patient's report inaccurate.

The following instance is an example in which the analysis of the urine gave results which corresponded to the reports which the patient gave of his diet:

Quantity of sugar in urine =	103 gm.
,, ,, carbohydrate in diet =	37 ,,
Negative carbohydrate balance =	66 gm.

The quantity of albumin in the diet was, however, 120 gm., and from this (120% x 60%) 72 gm. sugar might be formed, or more than sufficient to account for the negative carbohydrate balance of 66 gm. obtained above.

Doubt was thrown upon another patient's report by the following data:

Quantity of sugar in urine =	247 gm.
,, ,, carbohydrate in diet =	83 ,,
Negative carbohydrate balance =	164 gm.

The quantity of albumin in the diet was 150 gm. Sixty per cent of this, or 90 gm., would represent all the carbohydrate which could be formed from it, yet this leaves 164 — 90 = 74 gm. sugar in the urine which could not be accounted for by the carbohyrdate and albumin in the diet combined. The patient's report was, therefore, inaccurate.

Methods of changing the diet.—Changes in the diet of diabetic patients should be made gradually in order to avoid acid poisoning, but it is much easier for the nurse if these changes are only made every two or three days. It is seldom necessary to allow more than 100 gm. carbohydrates at the beginning of the treatment of a case. If this quantity is diminished by 25 gm. every other day, a carbohydrate free diet is reached in just over a week, and if this does not suffice to render the urine sugar free after two days' trial, the simplest procedure, as a rule, is to insert a "vegetable day," a "starvation day," or both. *Each patient, however, is a rule unto himself, and it is manifestly absurd and even dangerous to be schematic.* Frequently, the dangers of acidosis are so great that without the positive knowledge of its extent, as measured by ammonia, one rightly hesitates to proceed with the exclusion of carbohydrates below 50 gm., even if fairly large doses of bicarbonate of sodium are administered. It is always safe to administer as much as 4, 8, 12, 20 or even more grams of the alkali in a day when the ferric chloride reaction has been present in the urine for over forty-eight hours. One is not giving too much if the urine remains acid, which it will occasionally do, even if 40 gm. (10 level teaspoonfuls) are given daily for a whole week. The better the quality of the bicarbonate of sodium, the more agreeable it is to the patient.

THE BEST THINGS IN THERAPEUTICS.*

BY GUSTAVUS ELIOT, A.M., M.D., NEW HAVEN, CONN.

It would be of great advantage to both the science and the practice of medicine if there were more uniformity of opinion among physicians in regard to the therapeutic value of well-known remedies. One drug, which is used frequently and considered of great value by some practitioners, may be rarely used and esteemed of little value by others of equal learning and skill. Another, which was used frequently by one individual several years ago, may be almost never prescribed by him to-day, not necessarily because he has been convinced of its uselessness or its inferiority to others, but simply because he has fallen into the habit of using something else, which very likely, if he stops to think, he does not consider superior to the former.

It is by the expression and comparison and discussion of opinions that greater uniformity of practice may be secured and some definite principles of therapeutics established.

Assuming that some of the conclusions of one who has been in active practice for more than twenty-five years, and who has tried to observe carefully the effects of his prescriptions, might be of some interest to his fellow-workers in the same field, the writer has ventured, at the risk of saying nothing new, to enumerate, with brief comments, some of the remedies for internal use which seem to him most thoroughly established in professional confidence, and to be of the greatest value. This involves a consideration of the drugs which are most useful in particular diseases or pathological conditions, and by the loss of which the profession would be most seriously handicapped in medical treatment.

At the head of the list I am inclined to place the use of mercury and its compounds in the treatment of syphilis. This disease is so common, prevailing as it does in all countries, affecting all classes in the community and sometimes the innocent as well as sinners, and its effects when not treated or when inadequately treated, are so disastrous, that a drug which can be relied upon to have a favorable influence upon it can justly claim a very high rank among drugs when it is attempted to make a comparative estimate of them. Such a drug, of course, is mercury. It has no close rival, although the iodide of potassium is always mentioned in connection with it as a remedy for syphilis, especially adapted to the treatment of the third stage of the disease. But I have never forgotten a statement which I heard the late Prof. Alfred L. Loomis make in a clinic in Bellevue Hospital, New York, to the effect that he had never seen the iodide of potassium do much good in syphilis unless the patient had previously had a thorough course of mercury.

If one were asked to name the single preparation of mercury which is most generally applicable in the treatment of syphilis, he would make no mistake in mentioning the proto-iodide of mercury. This selection might perhaps be regarded as a compromise between mercury and the iodide of potassium. It certainly is an exceedingly valuable one, as the proto-iodide is unquestionably useful in the early stages as a mercurial, and perhaps also in the later stage as an iodide.

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* Read before the New Haven (Conn.) Medical Association, Dec. 5, 1906.

Leaving, then, the first place in therapeutics to mercury in syphilis, I would place next the use of salicylate of sodium in rheumatism. This disease is of very great importance from its frequency, from its prevalence not being especially marked among the wicked, from its duration when inefficiently treated, from the pain which accompanies it, and from its serious cardiac complications and sequelæ. The salicylate of sodium, given in adequate doses, relieves the pain, diminishes the fever, shortens the duration of the disease, and to a considerable extent prevents cardiac complications. Such favorable action in such a serious disease entitles the salicylate of sodium to high rank among drugs.

Another important disease, far less prevalent in this vicinity to-day than it was twenty, thirty, or forty years ago, but which we all occasionally encounter even now, is that due to malarial infection, and characterized by the periodicity of its phenomena. Untreated for even a short time, this disease is capable of producing almost indescribable suffering. The miserable chills, the high fever, the drenching perspiration, the intense headache and the aching all over, the gastroenteric disorders, the jaundice, the anemia, and the enlarged spleen are familiar symptoms, of some of which most of us have had personal experience. What the ultimate result of this infection might be who can tell? For what patient suffering from any of these symptoms for any considerable length of time fails to take quinine, even if his physician neglects to prescribe it? Nothing in the whole range of therapeutics is more wonderful than the prompt action of adequate doses of the sulphate of quinine in completely stopping the manifestations of malarial infection and preventing their recurrence. It is not because its action is less striking than that of mercury in syphilis and of salicylate of sodium in rheumatism, for it is more so, that I rank the use of quinine in malarial infection as third, but because I consider syphilis and rheumatism more important diseases than malarial infection.

Next I would rank the use of the diphtheria antitoxin serum in diphtheria. No one questions the gravity of this disease which formerly produced, and which even now produces, such an appalling mortality among children. The rapidity with which in many cases it produces a fatal result, the suffering which it causes, and the occasional terrible involvement of the larynx, make it a disease which has been feared by physicians and the laity alike. The comparatively recent introduction of the antitoxin serum has placed in the hands of every physician a remedy which we can appreciate the better because the older ones of us have been unhappy witnesses of the inadequacy of other measures of treatment in very many cases of this disease. Those who were in practice even so recently as fifteen years ago can probably recall many cases, a considerable proportion of which, we now feel confident, could have been saved had we then had the antitoxin serum.

The four remedies already mentioned may be classed as specifics. The others of which I shall speak are not used for a specific action in certain forms of disease, but to produce an action upon some organ or some physiological system of the body in certain conditions of disease.

Sidney Ringer, who probably has done more to advance modern practical therapeutics than any other Englishman, introduced the section on aconite in the later editions, including the tenth, of his "Handbook of Therapeutics," with the assertion, "Perhaps no drug is more valuable than aconite." Not to presume to rank myself in the same class with the distinguished Ringer, I may be permitted to venture the opinion that, next to the use of the specific drugs in their special diseases, there is nothing of greater importance than the use of aconite in acute affections characterized by fever. These are so numerous, and the beneficial action of aconite in them is so nearly universal, that it seems to me that nothing else equals it in value. It is not alone in inflammatory affections that its usefulness may be observed but also in many acute diseases which modern pathology teaches us are due to infection, such as measles, scarlet fever, tonsillitis, and even pneumonia. While in some cases aconite may seem to cut the disease short, to abort it, in many other cases, although its action is not so pronounced, yet we may easily be convinced that it diminishes the severity of certain symptoms, notably the fever, and also shortens the duration of the illness.

Turning now from acute diseases to chronic affections, but keeping in view the control of the circulation, the next place may reasonably be claimed for digitalis in uncompensated valvular and muscular disease of the heart. Many an individual is engaged in active life, who, on account of rheumatism, or from other cause, has a damaged heart. When this organ begins to show signs of being unequal to perform the work required of it, either through failure of the valves to perform their function in assisting the circulation, or through dilatation of the muscular wall, the effects of digitalis are generally very gratifying and would be surprising if we were not accustomed to witness them. By its use the lives of many men are prolonged, their comfort restored and their usefulness maintained often for years. A number of drugs have been introduced as substitutes for it, but no one of them equals it in promptness of action, reliability and general availability.

To another cardiac or circulatory remedy may be given the next place, namely, to alcohol in the advanced stages of acute febrile diseases, when the heart shows indications of being unable to continue to maintain the circulation. The most striking example of this is seen in acute pneumonia. It is my firm conviction that there is no similar condition in which the physician can do so much to prevent the death of his patient as by the judicious use of alcoholic stimulants in pneumonia, and I do not believe that, in this condition of impending heart-failure, anything else has done so much to save life or has saved so many lives.

Still keeping in view the circulation, but looking now more especially to the peripheral circulation, there is naturally suggested the use of ergot in hemorrhage from the peripheral vessels, especially of the uterus and lungs. These hemorrhages are so frequent, so discouraging and so debilitating, that a drug which has the effect of diminishing or entirely stopping them, as ergot generally does, is entitled to be held in high esteem. Of course, one does not expect to cure every case of uterine hemorrhage with ergot and without surgical interference, but, on the other hand, it is probable that surgical treatment would be demanded less frequently if ergot were used more often for its prophylactic effect.

Leaving now the heart and blood vessels, one naturally turns to the respiratory organs, and here I believe that it is fair to mention the use of creosote and its compounds, and in particular the carbonate of creosote in affections of the respiratory organs, believed to be due to bacterial infection, and especially in pneumonia. Although creosote has been much used for many years in pulmonary tuberculosis, its value is still underestimated by many physicians, and many more do not appreciate its value in pneumonia and other acute diseases of the respiratory system. The frequency of these affections and the great mortality which they cause render a remedy which offers any hope of usefulness worthy of further most careful consideration.

It would be painful indeed to draw these brief suggestions to an end without having made some mention of the nervous system. I believe that I cannot do better than to give the tenth place to the bromides, and in particular to the bromide of sodium in the treatment of that condition commonly spoken of as nervousness. This condition of nervous irritability combined with nervous weakness and often associated with insomnia is so common in women and so not infrequent in men, it causes so much distress to the victim and often so much annoyance to the victim's friends, and many times so greatly impairs the patient's capacity for usefulness and enjoyment, that a drug which has so uniquely beneficial an action upon the condition as the bromide of sodium is entitled to a high rank among the indispensable medicines.

The list need not be extended further at this time. The object of the paper has been to give personal expression to the writer's opinions concerning the importance of a few drugs which seem to be most useful in the treatment of a few conditions which are strikingly amenable to treatment.

If any one who has read this article will devote a few minutes to considering it in the light of his own experience, and then will decide which drugs he would retain upon the list, which ones he would leave off, and what ones he would substitute for them, his time will have been spent profitably.

No attempt has been made to discuss the dose in which these medicines should be administered, although of course that is of paramount importance. It is undoubtedly true that the value of certain drugs is not correctly appreciated by many practitioners, because they do not prescribe them in adequate doses. On the other hand, it is to be feared that patients are sometimes injured, it is to be most earnestly hoped that they are never killed, by excessive doses.

To recapitulate, the drugs and their uses which have been mentioned as of greatest value, both to us as practitioners and to our patients are:

1. Mercury in syphilis.
2. The salicylates in rheumatism.
3. Quinine in malarial affections.
4. Antitoxin serum in diphtheria.
5. Aconite in the fever of acute diseases.
6. Digitalis in chronic heart disease.
7. Alcohol in cardiac weakness of acute disease.
8. Ergot in uterine and pulmonary hemorrhage.
9. Creosote in diseases of the respiratory organs.
10. The bromides in nervousness.

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KALLAK, AN ENDEMIC PUSTULAR DERMATITIS.

BY JOHN M. LITTLE, JR., M.D., BOSTON.

The cases on which the following paper is based were seen at the Moravian Mission stations at Makkovic, Hopedale, Nain, Okak and Ramah on the East Labrador coast, and at Killinck, Ungava Bay. For much information I am indebted to the Moravian Brethren at these stations, as also to Dr. S. K. Hutton, the medical superintendent, resident at Okak.

When the Moravians translated the Bible into the Eskimo language, they had great difficulty in finding equivalents for many words. Leprosy was one of these. They had to find some word which would be understood by the Eskimo to represent a contagious, disfiguring, chronic disease, and they chose the word kallak, which was the Eskimo word for the disease herein to be described. Broadly translated, it means skin disease. The missionaries thought this disease was scabies, so that to-day in the Eskimo-English-German dictionary Kallak equals Leprosy, scabies, skin disease, but as ordinarily used, it means the one definite thing, the pustular dermatitis, so common among, and peculiar to, the Eskimo.

The typical case is as follows: Some time in the autumn, the patient, after a short period of very slight general malaise, shows an eruption in the dorsal surfaces of the hands and feet, and the upper and under surfaces of the fingers and toes. At first vesicular, it almost immediately becomes pustular. In fact, the vesicular stage is seldom seen. The pustules, of various sizes from a pin head to a ten-cent piece, are not surrounded by the inflammatory zone which one would expect. With the appearance of the eruption, the feelings of malaise disappear, but intense itching supervenes. The pustules then appear in different groups in order, on the elbows, knees and buttocks. From these centers it spreads. This spreading is independent of scratching, and takes place when the part is carefully protected and treated with antiseptics. Generally, however, the scratching and rubbing indulged in produce a generalized dermatitis. Pus is formed. Bleeding takes place. Crusts and scales appear. It is, however, essentially a dry eruption, and never becomes "weeping." Its course is very protracted, and thickening and discoloration of the skin appear. The disease may disappear, only to break out again on cessation of treatment. Of course, a true eczema may intervene and mask the original eruption. In course of time the trouble may disappear, but generally to reappear at some not far distant time. The eruption does not appear on the face or hairy parts, except in babies or small children, in whom it also affects the palms and the soles of the feet. It affects old and young alike, and may be equally severe in both, though death from this cause alone has never been recorded. In some cases the premonitary symptoms are more severe, Dr. Hutton having recorded a temperature of 100° F. in one such case. The main symptom is the itching. There is no inflammatory area around the lesions, and they are not painful except upon the buttock, and where a secondary infection has taken place. Whole houses, and even communities of Eskimos are affected at a time, and sometimes it travels from Ungava in the north to each post in succession, thus seeming to be contagious, or even epidemic. Although there are differences in severity, and on account of age, there is a remarkable uniformity of type in all cases. There is no destruction of tissue unless deeper septic processes supervene, and in all cases involution after cessation of the process seems to be complete.

In a former paper dealing with medical conditions on the Labrador coast I have pointed out some of the peculiarities of the Eskimo from a medical standpoint, among others their susceptibility to contagious diseases, to hemorrhage, and to suppurative processes. In proof of this last I may mention as instances that mumps almost invariably ends in suppuration among them, and that scorbutic abscess is not uncommon. That kallak is not a disease caused by dirt is shown by the fact that the clean Eskimos, and those living in the families of the missionaries as servants and nurses are not exempt. Though dirt does not induce it, it may protract its course. That it is peculiar to the Eskimo is shown by the fact that it never occurs in a European or foreigner, and that the missionaries themselves and their children never contract it while other transmissible diseases, such as the exanthemata and lice, have to be very carefully guarded against. That it is not due to scurvy is shown by the fact that it occurs among Eskimos who have no other signs of scurvy. That it has nothing to do with syphilis is proved by the fact that it occurs among those known not to have syphilis, and was common before the return of the Eskimo from the exhibition in the States, before which time no records can be found to suggest that syphilis existed among them.

The only facts that seem to have a bearing etiologically are that while it may occur at any time of the year, if they have plenty of seal flesh to eat they don't have kallak. Most of the cases, as well as the worst cases, and the epidemics, occur in the autumn after they have been living almost exclusively on a fish diet, and especially after a failure of the berry crops.

No special micro-organism is found in connection with the eruption, nor does it act like an auto-inoculative process, such as impetigo contagiosa. Whether the disease is an essential and specific one I do not know, but I believe it to be a symptomatic reaction to some toxin elaborated on account of the Eskimo diet, perhaps influenced by his known susceptibility to suppuration and epidemics of all kinds.

In its differentiation from other diseases of the skin the following points may be noted:

From scabies it is differentiated by the fact that the acarus is not to be found on repeated and careful examination, nor are lesions resembling the burrows to be found. The itching is not confined mostly to the night, and is confined mostly to the diseased areas. The disease does not occur on the private parts, and only on the breasts and umbilicus very late, and in those cases where it has become universal. Sulphur and other anti-parasitics have no curative effect.

From eczema it differs in its sudden onset, its characteristic distribution, its adherence to one form of eruption, the pustule, and its pandemic character among the Eskimos. Of course, a superimposed eczema is almost always to be seen in the later stages. I at first thought this disease was a pustular form of dermatitis herpetiformis, taking this form persistently owing to the tendency in Eskimos toward suppuration, which I have already mentioned. But whereas dermatitis herpetiformis in its pustular form is accompanied by severe constitutional symptoms, kallak is not; moreover, the former is rare, the latter extremely common, among the Eskimo. Whereas dermatitis herpetiformis is characterized by variability in the form and appearance of the lesions, kallak is not. Moreover, whereas dermatitis herpetiformis is characterized by irregularity of the distribution of its lesions or their general distribution, kallak is characterized by a regular distribution in certain localities, and a general distribution is the result of a secondary dermatitis. I have seen the main characteristics, as described, too often, and with too little variation to enable me for a moment to class this as a special type of a disease with such protean manifestations as dermatitis herpetiformis.

In its differentiation from erythema multiform, its chronicity, long course, intense itching, absence from the face, and, again, the lack of multiformity in the character of its lesions, should suffice.

It differs from impetigo contagiosa in its different distribution, absence from face, shortness or absences of vesicular stage. Also, it is not peculiar to infancy or childhood, nor it is acquired by children or adults of the white races who are brought into contact with it.

The lesions and their distribution are sufficiently characteristic to prevent any need of differentiation from acne or furunculosis, either or both of which may, however, coexist with it.

That it is not to be confounded with a syphilitic pustular eruption has already been mentioned. Though many cases of this last were seen among the Eskimos, there was no difficulty in regard to diagnosis.

As to treatment, the Eskimos themselves were accustomed to apply seal oil on rags without much effect. Dr. Hutton has found the best treatment to be the addition of seal meat and berries to the diet, the application of protective dressings, with a lotion of lead sub-acetate, one part in 300, and on adults in the later stages, an ointment of zinc oxide and tar. In conclusion, let me say that the disease presents the same features, and is as distinct among the uncivilized Eskimos of Ungava Bay as it is further south where their food and habits more nearly resemble those of the white man.

This article is based on studies made and facts obtained during this last summer on a trip made along the Labrador Coast and to Ungava Bay with Dr. W. T. Grenfell, C.M.G., on his mission ship.

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Medical Progress.

REPORT ON PROGRESS IN ORTHOPEDIC SURGERY.

BY E. H. BRADFORD, M. D.

SCOLIOSIS.

Among the many subjects which have attracted the attention of orthopedic surgeons in the past year none have been of greater importance than scoliosis and a review of the prominent articles in regard to this deformity will be of interest.

Following the admirable work of Schulthess, reviewed in the Progress a year ago, Lange[1] of Munich has paid especial study to the simplification of apparatus and the use of direct methods of treatment. As he has approached the subject from the standpoint of an operative surgeon, he has added to it the energy of a man trained to come to conclusions with his problem in as short a time as possible.

The deductions which he has drawn can be briefly quoted as follows:

In the therapeutics of scoliosis not so much has been accomplished as is desired, but more has been done than could have been anticipated ten years ago. Treatment must fulfill two conditions. Scoliotic spines must be corrected energetically, both actively and passively; the appliances which are used for either active or passive over-correction should be as simple as possible. The correction of the spinal column must be adapted to each individual case, and it is important in over-correction that the compensatory curve of the spine should be taken into consideration. This compensatory curvature of the spine is not always seen in the line of the spine but takes place primarily in the torsion of the ribs. This is frequently overlooked, and while the surgeon is correcting the chief curve actively and passively there may be a rapid increase of the secondary curve.

In flexible curves it is particularly important that over-correction should be carried out with great care to avoid the increase of the secondary curve. For this reason many of the gymnastic exercises, especially the creeping exercises of Klapp, are not to be recommended.

The relation of school work to scoliosis is one which cannot be overlooked as, Lange says, the schools are the great factories of scoliosis and it is the duty of instructors to help in the cure of scoliosis. That this may be done without interfering with instruction Lange requires the co-operation of the educator with the surgeon. In Munich this is done by arrangements at the school by which active and passive scoliotic exercises, with and without apparatus, are carried on under the direction of a surgeon. These are practised by the scoliotics half an hour a day, being supervised twice a week by a physician.

Where medical inspection at the schools is not possible, Lange advises the careful management of exercises at home under medical supervision. Results from work carried out in this way have been much better than where active and passive correction was not carried out. He considers that physicians are at fault if they allow the many thousands of cases of light scoliosis to go untreated. By a proper arrangement the tax of time and care is not greater than can be borne by careful physicians. He considers it a social duty to meet the great and increasing number of scoliotics by an increasing energetic effort.

It is of interest to know that the city of Mainz undertakes the treatment of scoliotic school children and at the city's expense; in the year 1906 ninety-seven children were under treatment. The treatment is necessarily long and requires special adjustment of school hours.[2]

Schanz[3] considers that the question of the therapeutics of scoliosis is the question of the corrigibility of severe curves in youth. Orthopedic surgeons in general do not pay sufficient attention to the subject, and the result has been that useless methods have come into vogue. The surgeon forgets that a curve not only indicates a deformity, but in young children it indicates also a deforming process.

Treatment, therefore, should not be directed alone toward the correction of the deformity, but toward the eradication of the deforming process; there should, therefore, be added to every correction the proper measures to prevent a relapse. The plan of treatment should be as follows:

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[1] Lange: Zeitschr. für Orth. Chir., xxiii, Band 1, und 2 Heft, 1907.

[2] Frank: Zeitschr. für Schulgesundheitspflege, 1907, No. 7, p. 433.

[3] A. Schanz: Aus der 79. Versammlung Deut. Naturforsher und Arzte in Dresden, 1907.

The spinal column should first be made as flexible as possible. The trunk should then be put in as correct a position as possible by means of a corset or apparatus. In correction, attention should be paid toward strengthening the spinal column; first, with the use of a corset and, afterwards, by the gradual removal of the corset.

Forcible correction gives admirable results, superior to that of other methods of correction, and can be made permanent with proper after-treatment; but forcible correction is a difficult method and must be supplemented by other milder measures.

A most valuable study of the mechanics of lateral curvature has been carried on by Dr. H. O. Feiss,[4] of Cleveland; he has looked at the subject from a broad point of view and his conclusions may be summarized as follows:

In certain postures the bones tend to deform without actually developing a deformity, and if the force applied by the attitudes assumed is carried on long enough and repeatedly enough deformities must develop, providing the bones do not increase correspondingly in strength, and the changes must take place according to certain definite tendencies. Having studied the strains the scientist can predict the development of such distortions, if the resistance loses its normal ration with the force exerted.

It should be borne in mind that the dorsal spine is to be looked at not separately, but as an integral part of the thorax and that it moves as such with every motion of the body which involves muscular action not only of the muscles moving the vertebræ, but also those attached to the ribs, the vertebræ losing their original relation to each other as well as to the thoracic segments when a distortion of position takes place. This is normal within certain limits, but beyond these limits there is an increase of strain and, under certain conditions, development of deformity; it must be remembered, however, that with the movements of the body and the displacement of the vertebral elements of the thoracic segments there come new strains to which the parts adjust themselves. In other words, the structure equilibrates itself not only according to vicious forces, but also readapts itself to other parts according to the required derangement. It is only by bearing in mind these facts that a thorough knowledge of the mechanics of scoliosis can be thoroughly understood.

Feiss, in two later papers in the *American Journal of Orthopedic Surgery*, 1907, continues his researches on the subject of the mechanics of lateral curvature.

He concludes that the case of the deformity may be reasonably separated from the mechanics; that there is sufficient evidence in the normal to allow grounds for a reasonable hypothesis as to the disfiguration of the abnormal, and that deductions ought to be drawn from the body regarded as a whole, and not from the column alone, because the principles of strains are essential for the comprehension of the phenomena; that the body so studied reveals the thoracic changes as most significant because the results of peripheral stress seem to be permanently impressed on the rib walls.

Hartel[5] claims that it is impossible to tell, in examining a dozen scoliotics of the lighter grades, which will be cured by natural growth and those which will not cause any increasing annoyance. That the affection is extremely common the writer claims, basing his conclusions upon statistics which are taken partly from public schools and partly from private schools. He finds that more than one quarter of all school children suffer from some form of spinal curvature, and that the scoliosis increases three fold during the school period.

CONGENITAL SCOLIOSIS.

CRAMER[6] differentiates two varieties of congenital scoliosis, — endogenous and exogenous. The endogenous scoliosis consists of vertebral defects, deformities, fusion, wedge-shaped vertebræ, cervical ribs and high condition of the shoulder blade.

By exogenous scoliosis the writer classes those which follow intra-uterine diseases.

In the first group rickets, contraction of the muscles of the neck, paralysis, spasms, are to be classed, but a congenital scoliosis which is a pure weight deformity is extremely rare.

Having investigated scoliosis by means of skiagraphy Böhm[7] considered that in a majority of cases it is dependent upon the primary curve of the spinal column. This appears at the period of most rapid development of the spinal column, that is, in the first half of the second decade.

He concludes, after an examination of from 16 to 20 skiagrams, that scoliosis should be termed scoliosis congenita tarda, as it is the outcome of a congenital developmental defect.

Desfoss[8] finds that curves of a lumbar spine were less in ancient peoples than in modern, and are less pronounced in savages of the present type than in civilized nations; also in the blonde type of northern climates. Women and girls in large cities show pronounced curves, with considerable weakness of the abdominal muscles. Lordosis occurs both from atrophy of the abdominal muscles and of the spinal muscles. When the abdominal muscles are at fault the buttock becomes prominent and the chest is thrown forward. When the spinal muscles are at fault the shoulders are thrown back and the buttock is flattened so that a line drawn through the vertebræ falls far behind the sacrum.

The writer[9] has made an examination of the school children of two Finnish cities, in all 8,350 male and female children. In the public schools 8.10% male and 13.80% female children presented scoliosis; in the higher schools 18.8% boys and 38.10% girls were afflicted with scoliosis. Total scoliosis was more common in the lower schools and the multiple scoliosis in the higher schools. In boys total scoliosis was more common than in girls, and double scoliosis more common in girls. Total scoliosis was oftener seen than all the other forms. The frequency of scoliosis increased with the increasing years and in the higher classes. The form most frequently seen was left total scoliosis, which he considers typical for school scoliosis.

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[4] Dr. Henry O. Feiss: Am. Jour. of Orth. Surg., vol. iv. no. 2, Oct., 1907.

[5] Hartel: Internationales Archiv. für Schulhygiene, iii., Band 4, heft mai, 1907.

[6] Cramer: Archiv. für Orth. Mechanther. u. Unfallchir., Bd. v, iv, p. 341.

[7] Böhm: BOSTON MED. AND SURG. JOUR., 1906, p. 598.

[8] Desfoss: Poesse Med., xv. 56.

[9] Grönberg: Zeitschr. für Orth. Chir. xviii, Band 1–2, Heft S. 130.

Flatfoot was common in 17% of the children, but the cases that had flatfoot were not seriously scoliotic, 23% only being scoliotic. Forty-eight per cent of the school children only were free from defect of carriage or some deformity. The flat back was more common in girls than in boys. Only about 9% of the flat back children were scoliotic. Kyphosis and lordosis were found in 8% of the children, more in boys than in girls; deformity increased with the years.

POSITION OF THE STERNUM IN SCOLIOSIS.
FAUCONNET.[10]

In investigation of 189 cases, he finds that the lower end of the sternum is twisted toward the convex if there is a curve in the upper dorsal segment, but the belly muscles show a tendency to pull the sternum back towards the middle line.

RHEUMATOID ARTHRITIS; OSTEO-ARTHRITIS; ARTHRITIS DEFORMANS.

Andrews and Hoke[11] have issued a preliminary report on the albuminous putrefaction of the intestines in arthritis deformans. They consider that in a large number of these cases the condition can be benefited by a diet of fermented milk. Individuals who have been attacked in a number of joints with stiffness, swelling, pain and joint and bone alterations have felt an improvement in a longer or shorter time by a regulation of the diet. The joints may become free from pain, and also become movable as far as existing bone exostoses will permit.

Fecal and urinary examinations are of importance and show fetid, alkaline, albuminous fecal discharges and an indican reaction in the urine. The indican in the urine and the alkalinity of the feces disappear under a milk diet. The diet should be largely of fermented milk, though hydrocarbons, especially fats, are allowable; meat or eggs should be restricted or absent.

In connection with this it is important to observe that Senator[12] is inclined to attribute considerable importance to intestinal indigestion in arteriosclerosis. Carbohydrates and fat should be the chief diet, avoiding nitrogenous foods. A milk and vegetable diet renders the blood more fluid and is for that reason to be preferred. Iodides help in the same way. Arteries can be dilated and blood pressure reduced by hydrotherapy.

TRIGGER FINGER.

The writer[13] reports the experience of a single case carefully studied and, after a thorough investigation of the literature, he finds that the seat of the obstruction is generally found in the space between the digito palmar fascia and the first phalanx of the thumb. When the thumb is affected the location of the locking is at or near the digito-metacarpal articulation.

In this instance a free division of the sheath between the sesamoid bones and gives the most frequent relief, even when no lesion is recognized. Many times a cure is effected where both the tendon and sheath appear normal, if the sheath is widely opened. Occasionally a portion of a thickened sheath has been removed by tenotomy, or the tendon lessened in size by shaving it down. Care must be taken to preserve the arch of the digital sheath at the base of the first phalanx.

TREATMENT OF HIP DISEASE. SINDING-LARSEN.[14]

Statistics of 100 cases treated in the hospital, 56 boys and 44 girls, children between four and fifteen years of age; 99 cases were treated conservatively, but 29 of these were later resected, and 4 were operated upon without conservative treatment; plaster of Paris with a high sole on the well foot and crutches, ambulatory. This was carried on from four to five months. The patients after a while walked upon the lame leg in spite of the high shoe; 69 abscesses were reported in these cases.

Results: mortality from operation, 12½%; 23 reported cured.

Calse[15] writes from the clinics in Budapest and Vienna, fever and swelling are indications for bed treatment and traction, ambulatory treatment following the diminution of pain with plaster without fixation of the knee. Iodoform injections are of little use. Plaster treatment should be followed in three years by apparatus. He reports two cases, the result with good joint use.

Sherman[16] reports against the extra capsular tunnelling for the removal of the circumscribed tuberculous foci, as the diagnosis is not easily made. X-rays in young children are not reliable and the opportunity for tunnelling is rare.

ISCHEMIC PARALYSIS.

This affection, first described by Volkman,[17] has in the last year attracted revived attention by several surgeons. The condition is one which is occasionally seen in fractures or injuries of the upper arm, following overtight bandaging or misapplication of splints. Following this is developed a mild ostitis, or mild degeneration of the muscles; rigidity in the use of the fingers and hands with deformity follows.

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[10] Zentralbl. für Chir. und Mech. Orth., April, 1907.
[11] Andrews and Hoke: Am. Jour. of Orth. Surg., July, 1907, p. 61.
[12] Senator: Therapie der Gegenwart, Feb., 1907, xlxiii.
[13] R. F. Weir: Trigger Finger. Am. Med. Asso., 58th Annual meeting, Altantic City, June, 1907.
[14] Zentralbl. für Chir. und Mech. Orth., April, 1907.
[15] Calse: Modern Treatment of Hip Disease, Diss. Paris, 1906, no. 196.
[16] Sherman: California State Jour. of Med., March, 1907.
[17] C. A. Powers: Volkman's Ischæmic Paralysis and Contracture. H. Hoffmann: Zeitschr. für Orth. Chir., Bd., Heft 1–2; A. H. Ferguson: Annals of Surg, April, 1900; F. Kleinschmidt: Deut. med. Wochenschr., Nov. 17, 1907.

Lesions of the nerves are supposed to exist in a certain number of cases, and massage, passive motion, and the removal of the cause (a tight bandage) will answer in the early cases, but where the structural change is more marked some radical measures are needed, and in the worst cases the prognosis for complete recovery is not good, though relief can be obtained by tendon lengthening, bone resection, etc.

In one case under the writer's observation much benefit was obtained by dissecting the nerve from the surrounding cicatricial tissue of fibrously degenerated muscle. In some instances shortened muscles should be lengthened, and in other cases, where muscular fibrous degeneration is great, relief is afforded by shortening of the bones.

VOLKMANN'S DEFORMITY. ISCHEMIC MUSCULAR PARALYSES AND CONTRACTURES.

In addition to the injury to the muscles in this form of injury, the writer[18] claims, differing from other writers, that the nerve tissue may be involved. There are two types: 1, following fracture of the lower end of the humerus, and 2, injury of the forearm. (Fracture in most instances with three injuries without fracture.) Paralysis and gangrene may follow, tears of the intima and resulting thrombosis without tight bandaging from the pressure of exhavasation. The treatment advised is the dissection of the nerves free from the surrounding contracted mass of hardened muscle and placing it between muscle and fascia. He reports four cases so treated.

In connection with this Rombola's[19] investigation on the interference with a muscle following compression is of interest.

He concluded that compression exerts an influence upon the condition of the muscles which is comparable to that which is effected by tetanus or muscular effort. The longer the compression lasts the greater the diminution of the irritability of the muscle, and this may lead to an entire loss of irritability. Compression in the contractions of tetanus diminishes the duration and intensity of the attacks, and if the muscles are compressed the effect of muscular effort is also diminished.

HYPEREMIA IN TUBERCULOSIS.[20]

In acute infections of mild degree suction is useful and elastic compression stasis. Suction of sinus irritates the foci. Suction after incision of abscess not so good as aspiration and injection of iodoform oil. Congestive treatment in tuberculosis joint affection not beneficial.

Concludes: Heat apparatus for all chronic joint affections. Suction in glandular and breast abscess, boils and superficial skin inflammation. Stasis to check pain in gonorrheal joint affection and by profuse suppuration, osteomyelitis, purulent joints, phlegmon, and after free incisions, suppuration checked.

ACTION OF PROLONGED HEAT ON JOINTS INFECTED EXPERIMENTALLY.[21]

An infective arthritis of moderate severity and not much advanced. Healed by daily and two-hour application of heat, 50° to 55° C. Heat application should be applied twenty-four hours after inoculation.

Gonococcus joint infection almost invariably cured without ankylosis by heat, 50° C. Also pneumococcus arthritis successfully treated in all cases not dying from albuminuria.

Colon bacilli and Eberth's bacillus (typhoid) infection also successfully treated.

Heat of no influence in tuberculous infection.

CONGENITAL DISLOCATION OF THE HIP.[22]

Four hundred and forty-three cases treated by his own method; where the elevation of the trochanter is more than three inches, preliminary continuous traction. After reposition, limb abducted at 70° and flexed but not rotated outward; kept in a plaster bandage. In resistant cases a specially devised subcutaneous dilator used. Success in all of his last 200 cases under seven. Ninety per cent of recovery in cases from seven to twelve. Uncertain prognosis in age above this, though he has reduced one case at twenty-six.

The writer[23] reports four cases.

Treatment was both bloodless reposition and with that recession treatment of corset and apparatus; in early cases, reproduction with tenotomy; in the older cases incision.

Reports of Societies.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

In section I of this association, Thursday, Jan. 2, 1908, there was a symposium on the subject of federal regulation of public health, which was participated in by physicians, scientists and distinguished laymen.

FEDERAL REGULATION OF PUBLIC HEALTH.

DR. WILLIAM H. WELCH, Baltimore, president of the American Association for the Advancement of Science, said there was no force in the community, educational, political or social, which was not concerned with the great problems of public health. There had been numerous efforts made to secure a Department of Public Health, these efforts originating always on the part of physicians who had received little or no attention from those who had the power of instituting such a department. When legislators were told that the death-rate could probably be cut in two if adequate measures, which were well within the possibilities of realization, were inaugurated, it did not seem to make any definite impression on them. They had to be informed in detail as to exactly how the proposed measures were to accomplish the desired result, and if they were so informed could we doubt for a moment that the appeal would be heard? The waste which resulted from the prevalence of diseases which could be prevented was incalculable. The measures which should be adopted to prevent this waste were based upon a knowledge of the origin and mode of spread of preventable diseases. This knowledge was to a very considerable extent of recent origin; but the movement to protect the health of the public was by no means recent. The greatest single incentive to stir up the minds of the public to do something in this direction had been the outbreak of some strange, unusual devastating pestilence.

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[18] Hildebrand: Sammlung Klin. Vortage N. F., 437, no. 122.

[19] Rombola: Archiv. di ortopedia, xxiv, 3, 1907.

[20] Auffret: Rev. d'Orth., Nov., 1906

[21] Bernabeo: Tommasi, 1906, no. 25.

[22] Calot: (Separate publication).

[23] W. Bocker: Paralytic Dislocations of the Hip. Deut. med. Wöchenschr., no. 28, p. 1129, und no. 29, p. 1178.

The beginning of public health reform in England could be traced to the outbreak of Asiatic cholera, which started on its journey around the world during the end of the third decade of the nineteenth century, and made its appearance in Western Europe about 1830. Nothing, since the days of black death, Bubonic plague, had aroused such fears and terrors in the minds of the public as the appearance of this disease, previously unknown in Western Europe. There were other causes at work, great ills resulting from large industrial developments, and factories and conditions of the poor were operative. While Great Britain had not contributed most of our knowledge of the origin and spread of infectious diseases, it had been the country most interested and most effective in applying that knowledge. They conceded that most of the prevailing epidemic diseases were the result of contaminations of water, soil and air, due to filth. They were spoken of as filth diseases. This led to a general cleaning up of habitations and surroundings, and to the introduction of public water supply, the establishment of suitable systems of sewage and drainage. Possibly the greatest single triumph in the direction of reform was the extermination of that disease most directly traceable to filth — typhus fever. The real knowledge on which modern sanitation was based as to the prevention of infectious diseases came from the discovery of the causes of these diseases by such men as Pasteur, and especially Koch.

Professor Welch emphasized the point that the governments of France and Germany were actively concerned in the promotion of the investigations which led to the great transformation in the facts of modern medicine. The discoveries of the micro-organisms of typhoid fever and diphtheria within comparatively few years, perhaps from 1880 to 1884, issued from the laboratory in the Imperial Health Office in Berlin. Preventive medicine and public hygiene were now based on a large mass of ascertained facts, which could be applied in the most direct and effective manner toward the prevention of these diseases, and to the improvement of public health.

One of the most important and interesting outcomes had been the measures adopted for the prevention of most of these diseases, increasing the material prosperity and commercial development of the country. As an illustration, he spoke of the measures necessary for the eradication of malaria, the most effective measures being to drain the swamps and to destroy the breeding-places of the mosquito. That of itself, quite apart from the prevention of malaria and the destruction of the mosquito, led to great enrichment of the material resources of the country.

Tuberculosis is no longer a medical, but now an economic and social problem. Everything that pertained to the improvement of the living conditions of the individual had a bearing upon the great problem of the eradication of tuberculosis,— better houses for the poor; better ventilation; public parks and playgrounds; — everything of that kind which related to and was essential to the improvement of the material conditions of the community.

To what extent was this new knowledge applied in public hygiene and preventive medicine? Only to a limited extent. Any one who was familiar with what was actually known to-day regarding this class of diseases was aware of the fact that even in the most enlightened countries there was not more than a fraction of that knowledge applied. To what extent was this new knowledge applied in America? To a lamentably small extent. We were a reproach to the civilized world by our inattention to matters of public health and the prevention of disease. In England every little town and city had a trained expert in sanitation, one who had the so-called diploma of Doctor of Public Health, indicating that he had a knowledge beyond that of the average physician.

Was it not true that the health of the people was as much the function of the government as the health of animals? Consider the millions of dollars the national government spent for the health and care of animals. If a tithe of what, for instance, was expended in efforts to control the diseases of hog cholera and pleuropneumonia was spent for improving the health of the nation, he said we should not stand where we were, and be a by-word for the nations of the world in consequence of ignorance and indifference in this matter. We had precedent enough in the direction of the control of animal diseases to justify making the strongest possible appeal for the government to do something for the control of human diseases. What could it do? Numberless things. It was not so much the merely executive administrative part of the work which interested those who were engaged in this movement; it was the educational, the co-operative side of the work. Just think of what could be done in the way of collection of vital statistics. It was difficult to make the public understand how vital statistics lay at the basis of it all, just as an intelligent system of bookkeeping did in any business. It was necessary to know the incidents of disease, what the death-rate was, before we could intervene with any intelligence. Only a very limited part of this country had what might be called technically a registration area. In other words, there were few communities that knew anything intelligently and exactly about the health conditions in their respective localities. There were many ways in which the government could prove of great efficiency in this co-ordinating, educational and harmonizing work in the interests of public health. There was no system of economy, apparently, at Washington, and the opportunities were probably greater to-day than ever toward doing something for the welfare of the people of America, by the co-ordination of the forces which already existed there. But back of it all must be an educated, intelligent public sentiment. Under our form of government educated sentiment could be secured by the support of this civic, medical and sanitary movement.

Judge George L. Shiras, of Washington, D. C., who was absent, but sent a written communication, stated that the United States Public Health and Marine-Hospital Service was regarded as the nucleus of the movement looking toward the creation of a centralized bureau of public health. The present bureau is under the Treasury Department, and under the Cabinet supervision of the Secretary of the Treasury, whose training and duties ordinarily do not bring him into close contact or sympathy with work of this character. It is recognized that medical and sanitary research is the first duty of such a bureau, and that its most active function finds expression in interstate and international quarantine regulations, whereby the conditions which result in the transmission of epidemics from one nation to another, or from state to state, can be brought under federal control. At present, the federal quarantine for Porto Rico, for instance, belongs to the Bureau of Public Health; in Cuba the War Department is supreme; in the Panama Zone the Canal Commissioners prescribe all quarantine regulations and the Navy Department prescribes its quarantine regulations. This ought not to be the case, as the more dangerous forms of epidemic diseases, which always come from foreign countries, such as cholera, yellow fever and the plague, cannot be effectively controlled when there are four distinct bureaus of departments that have these matters in charge.

Reference was made to a bill which will be introduced in Congress, creating a standing committee on public health, composed of broad-minded men, who will co-operate in the most effective manner with the federal authorities and citizens at large in all measures to improve the health conditions of the country. The President of the United States, under the existing laws, should, by executive orders, transfer and consolidate the many divisions and bureaus scattered at present through the various departments of the government. When this is done, laws will have to be passed which will still further extend the jurisdiction of the central bureau of health and provide it liberally with means to carry on its many and varied functions.

Dr. J. N. MacCormack, of Kentucky, had been surprised at the existence of the widespread interest of the people in this movement. He had insisted in every community in which he had spoken that to merely arouse public sentiment, to appear before state legislatures or municipal councils, and begin agitation for local, state or national reforms, would accomplish little, unless there was established in each community in each state a permanent office in charge of trained men where facts might be gathered, and where the existing medical knowledge might be collected and presented to teachers, to leaders of public thought, in civic, political and other organizations. To secure this a campaign of education was needed. He thought the time had gone by when men should be sent to represent the people in our legislatures or in Congress, who were not informed on these great questions. It was no longer the medical men who were interested in this great movement, but the lay people; the leaders of public opinion, the press, the teachers, the great university leaders, should be induced to take up this work and to see that in the political primaries men, who did not possess the intelligence to comprehend this movement, were antagonized upon the ground that human life and human health were far more important to people than the question of who should be President of the United States, or what political party should predominate. Partisan politics had no place in municipal health affairs, and it should occupy a far more subordinate place in state and national affairs than heretofore had been the case. The teachers, the newspapers, the great lay leaders of public opinion, should endeavor to create a public sentiment in this country which would make it impossible for a man to secure the support of intelligent people unless he comprehended and made as one of the planks of his platform, as Gladstone and Disraeli and other great European leaders did, the care of the public health the first and most important duty of a statesman. He believed that by co-ordination of interests, both medical and lay, there was promise of the dawn of a new day for the promotion of this great movement.

Dr. F. W. Wesbrook, of Minnesota, referred to the importance of promulgating accurate information concerning the cause and prevention of disease. He did not think America was behind other nations as regarded the prompt application of new facts that were of importance, but we had no governmental recognition. From a governmental standpoint, we were behind Germany in the prevention of tuberculosis. Suitable bulletins were issued by the Bureau of Animal Industry and by other departments of state concerning the stock industry, how to protect cattle from disease, how to improve the live stock of the country, how to improve the wheat-raising industries, dairy products, etc. This was done by federal teaching and by federal publications, in combination with the state experiment stations throughout the country; but of publication which related to the economic importance and protection of human life, there were very, very few, if any. This was almost incomprehensible, but it was true. The Committee of One Hundred had begun to place before the public the latest information bearing on sanitary problems, the protection of human life, the way disease was spread, etc.

As to sanitary experts or professional hygienists, sanitation to-day was a profession. No ordinary medical practitioner knew all about sanitation. To-day it was necessary to have trained engineers who knew the cost of material, so that foolish expenditures may not be recommended. It was necessary to have people who knew something about geology and botany; also to have mathematicians and statisticians. We must have trained social workers, and physicians to make early and accurate diagnoses. Furthermore, we must have the necessary laws and regulations, all of these things being matters of proper federal legislation. In his judgment, it was just as important to have a proper federal department to protect the people against invisible foes, like bacteria and protozoa and their harmful effects, as it was to have a department of war to protect us against human enemies.

Dr. Edward T. Devine, secretary of Associated Charities, New York City, said that what we needed to-day in this country was to create a conception of physical well-being which could be applied to the child throughout its school days and college period, and that could stay with a man to his own enormous advantage through the whole of his life. Cleanliness and personal habits were more important in lowering death-rate than anything the medical profession in its strictly professional capacity could possibly do. He heartily favored the federal regulation of public health matters.

Prof. Irving Fisher, of Yale University, said the Committee of One Hundred was launched a year ago through a paper read by Professor Norton. He outlined the work that was being done by this committee. The sub-committees of this Committee of One Hundred are: a committee on finance; committee on legislation; committee on newspaper publicity; committee on magazine publicity; committee on research. The co-operation of the Committee of One Hundred had been largely with philanthropic associations throughout the country, but also with various other organizations, particularly labor organizations. Co-operation with universities was needed. There were some universities in America that contemplated developing courses which would prepare persons as expert hygienists who intended to enter the federal or state government offices, granting them the degree of doctor of public health, as was now done in England, after they had pursued a certain curriculum. He read a letter from President Roosevelt, who said: "The aid of the federal government was necessary to supplement the work of state and local boards of health. Federal activity in these matters had already developed greatly, until it now included quarantine, meat inspection, pure food administration and investigation of child labor." Whatever further co-operation and co-ordination was desirable toward the promotion of national health and vigor should command the support of all thoughtful citizens.

In order to get practical measures through Congress, it would be necessary to begin work in the different states. The first step would probably be the appointment in the House of Representatives of a Committee on Public Health. There was no such committee there now, but there was one in the Senate. A second step would be the redistribution of the existing health bureaus of the government. It was hoped that this would be accomplished through the endorsement of the Committee of One Hundred. Another step would be taken to increase the appropriations for the existing bureaus and to enlarge and co-ordinate their powers, and finally to establish new bureaus to make the system complete.

As to the future plans of the Committee of One Hundred, the executive office is engaged in organizing a legislative council of persons who can advise with the legislative sub-committee as to the measures to be brought before Congress.

There was a plan on foot to establish a health magazine. An editor had been selected provisionally, and it was intended that this magazine should cover the field of personal as well as public hygiene. Through publicity the Committee of One Hundred hoped to establish in the minds of the American people a national consciousness of the importance of health ideals. Whether the health problem be viewed from an economic or spiritual standpoint, it was certainly true, as Emerson said, "the best wealth of a nation is its health."

Prof. Charles R. Henderson, University of Chicago, said that medical men should have the first word in all questions of hygiene; but students of social institutions and movements also have a rôle in making ideas about health effective in conduct and law. The general public must be taught and be reminded when they forget, that many diseases which originated with the neglected were spread by infection and contagion; that the common air we breathe, the dust of the street, domestic animals and insects, clothing from sweat shops, cigars of rich aroma, might be vehicles of death.

But even when disease was not contagious, it enfeebled the noblest machine of capital — the human life. The seeds of disease were often brought from areas beyond our vision or control — the plague from India, yellow fever from the West Indies and tuberculosis from everywhere. Those who could be producers of wealth we needed to keep at their highest point of industrial efficiency. The victims of bad sanitary conditions were not always the degenerates; often they were the vigorous, the skilled, the competent, whose death was a universal loss. The local and federal governments were essential factors in any adequate effort to investigate the causes and origins of industrial maladies, and we must invoke the most energetic and careful activity of the Bureau of Labor, the census agencies, and State Commissioners of Health and of Labor in the inquiry. In the sanitary measures to prevent disease and the protective laws to avoid accidents, the power of legislatures was rightly made tributary to the policy of maintaining the industrial and spiritual efficiency of the people. But when we asked ourselves where we could secure money for affording prompt medical and surgical care, support of families during tedious illness and convalescence of bread-winners, and opportunities of open-air life so necessary to restore impaired strength, we found but two sources,— humiliating charitable relief or workingmen's insurance funds. Fairly facing this issue, the ultimate course could not be doubted. The American people would never consent to reduce its sons of toil to beggary. America would yet outstrip the other nations of the civilized world in building up accident, sickness, invalid and old age insurance funds, based on just contributions of all parties in interest and obligation, and to such a fund any wounded or sick man could resort in the hour of trial without shame and without dishonor. The fund would be his own by right, for it was built out of the product of his labor when he could labor, and it would be adequate when states and nation perfected the legal arrangements for its creation, maintenance and wise administration. Then also members of the medical profession would be paid for the prevention of disease and for increasing the physical, industrial and moral energies of the nation. At present, the pecuniary interest of the medical profession was in conflict with their social function and their desire to be useful to the race. This conflict should be averted, so far as possible, and when physicians were paid from funds of insurance associations, according to rates equitably fixed, they would be more directly free to put forth all their powers to further the higher interests of mankind.

Dr. George H. Simmons, of Chicago, spoke of the excellent work that was being done in the chemical laboratory at Washington, under Dr. Wiley; also by the bureau of chemistry and drug laboratory with reference to the investigation of frauds in foods, patent medicines, etc., relating directly to the public health.

Vital statistics did not belong to the department of labor, but to the Bureau of Health, if one should be organized, and the details carried out in the Department of Commerce in accordance with census reports. This country had practically no statistics on which to base morbidity and mortality accurately. A majority of the states did not report all of their deaths or births.

Splendid work was being done in the hygienic laboratory in the Public Health Service at Washington. If one would figure out, however, all the work that was being done in all departments which related strictly to the health of the people, he would find that our national government did not spend probably more than $125,000, outside of that which was expended for the United States Public Health and Marine-Hospital Service.

The speaker thought that the Committee of One Hundred could do nothing better than to appoint a committee to investigate what the national government was doing in Washington in the various departments, and finding out the different sums of money that were given to the Department of Agriculture; how much was spent for protecting animals against disease, and what a very small amount is expended for the public health. Congress should be furnished with definite data and facts as to what was being done, so that congressmen might have something tangible to talk about, and then they would learn things they would not learn unless the matter was taken up in such a way as this by outside parties.

Dr. Craig, representing the National Association of Fraternal Societies, said the Association of Fraternities of America comprised 50 fraternal beneficiary associations, with a membership of two million. The Committee on Contagious, Hereditary and Infectious Diseases was now making an effort to secure the co-operation of the papers. Each organization already had an official organ, and these papers or organs were read by approximately five million readers monthly. An effort was being made on the part of this committee to secure the co-operation of the editors of these papers to devote a column or two columns to the subject of public health, these papers to be contributed by medical men and laymen, and to appear simultaneously in these various papers monthly. In the course of a year or so they hoped to be able to launch an effective campaign of education among the different members.

Major Louis L. Seaman, of New York, said the unnecessary loss of human life in war from preventable causes constituted its most frightful aspect, as was proved in the recent war of Japan with Russia, the statistics having been reversed by the application of the principles that had been advocated. In all the records of histories of war there had scarcely ever been one of any magnitude in which five lives had not been sacrificed to disease for every legitimate death as a soldier. A government that did not take advantage of the simple laws of sanitation was reprehensible for its action. In our last war with Spain fourteen men were lost from disease for every one that was killed in battle. He thought it was a disgrace to any government to permit such a condition of affairs to exist. On the other hand, in the Japanese war the figures were reversed, namely, five men were killed in battle for every one who died from a preventable disease. The Japanese accomplished this by the application of modern sanitary regulations and the regulation of the dietary of the soldiers.

Dr. Edwin B. Tuteur, of Chicago, referred to the pollution of streams and of rivers, and said that streams should not be converted into open sewers, as they were a menace to life and health. Polluted waters conveyed virulent bacteria, and all waters once contaminated were dangerous to use by any community. It was well-known that waters were subject to self-purification to a degree, but one could never tell when a contaminated water again became fit for domestic use. Sewage and waste products from factories should not be allowed to enter water supplies that are intended for consumption. This was one prolific source of disease.

The United States government was not sufficiently solicitous as to the health of its first and most valuable asset, — the citizen. One cause was lack of education on the part of the public as well as the representatives of the public. Another cause lay in the fact that in this country trade and commerce overshadowed all else without exception. Still another cause was carelessness and failure on the part of the government to recognize and apply the results of the valuable hygienic work of the scientific physician or bacteriologist. Some of the causes enumerated suggested their own remedy. The treatment of these evils resolved itself practically into a well-directed, steadily progressive, persistent campaign of education. When this was done, the movement for the federal regulation of public health would sweep on with increasing momentum until our fondest hopes of securing good and effective laws would be realized.

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Book Reviews.

Materia Medica and Pharmacy. By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital, etc. Seventh edition, revised. Pp. 490. Philadelphia: P. Blakiston's Son & Co. 1907.

This volume, which constitutes the first part of the previous complete work published in one volume, is devoted to materia medica and pharmacy. In the description of the drugs the subject matter is divided into two heads, the inorganic and the organic materia medica, and a classification is adopted based on a grouping according chemical and physiological action. A brief statement of the action and use of remedies is appended to the more detailed descriptions of the drugs themselves. This volume on materia medica and pharmacy, along with its companion on pharmacology and therapeutics, is designed to cover in a somewhat detailed fashion the whole subject of materia medica and therapeutics. The book, like its companion, is clearly printed in differing type for ease of reference.

Pharmacology and Therapeutics. By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine at the New York Post-Graduate Medical School and Hospital, etc. Seventh edition, revised. Pp. 885. Philadelphia: P. Blakiston's Son & Co. 1907.

In this seventh edition of Wilcox's well-known book a division of the subject has been made necessitated by recent advances. The first part of the work is now included in a separate volume under the heading, "Materia Medica and Pharmacy" (see preceding notice), and the second, "Pharmacy and Therapeutics." This natural division is in general acceptable, and no doubt necessitated by the amount of material covered. At the same time it is somewhat unfortunate to undertake a sharp distinction between the discussions of drugs and the details of their action. In the volume before us a complete list of pharmacopeial drugs and preparation is given, together with certain unofficial remedies and descriptions of action and uses. We have no doubt that the book in the divided form in which it now appears will continue the success of the earlier editions.

The Development of the Human Body. By J. Playfair McMurrich, A.M., Ph.D., Professor of Anatomy at the University of Toronto. Third edition revised and enlarged. Pp. 536, with 277 illustrations. Philadelphia: P. Blakiston's Son & Co. 1907.

The new edition of this work is welcome. In its original form it was excellent, and the improvements in the successive editions have resulted in giving the book so many merits that it may be accepted as the best short treatise on human embryology in any language, at the present time. It is full enough to satisfy all the requirements of medical students and practitioners, and its statements are highly authoritative. The selection of papers to represent embryological literature has been made with great skill, and really indicates the most important investigations. We wish that the illustrations were more artistic; they vary greatly in size and quality and though they may "do" scientifically, many of them lack attractiveness. There are five more figures than in the previous edition. The former cumbrous and useless "List of Illustrations" has disappeared. The book has been thoroughly revised and reset; the new edition is not printed from old electrotype plates revamped. There is not much in the volume about histogenesis; we hope the author will treat that side of embryology more fully in future editions even if it involves some increase in the size of the volume. It is a pleasure to commend the book cordially.

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BILLS BEFORE THE MASSACHUSETTS LEGISLATURE.

Each winter sees a large number of old petitions to the legislature for a change of existing laws or for the enactment of new, together with a certain number of new bills concerning matters which are continually arising under the complex relations in which we live. This year is no exception to the general rule. In fact, the number of bills is larger than heretofore, and especially those relating more or less directly to matters in which the medical profession may be regarded as having special interest. The recent active interest, for example, taken in the betterment of our milk supply and in the purification of food products naturally leads to dissent and controversy, and therefore to the attempt at legislative protection or redress.

Milk is a subject of perennial interest. There are this year upwards of ten bills relating more or less directly to this subject. On the one hand are those who demand high standards, and on the other those whose interest requires a certain disregard of standards. The controversy between consumers and producers, in other words, is likely to continue for many years. An important bill in this connection is House Bill No. 726, introduced by Dr. Charles Harrington, Secretary of the State Board of Health, looking to the proper marking of receptacles containing pasteurized or heated milk. A certain evasion of responsibility has been shown by various contractors who have boiled milk before shipping it into this state, thereby relieving the producers of the necessity for cleanliness, but still permitting the milk to pass the Boston bacterial standard. The object of this bill is simply to demand that such milk be properly marked; and it is evident, if the contractors have no ulterior motives, that they should not object to such marking. That milk producers are many of them disgruntled at the vigorous campaign toward pure milk of high standard is shown by the introduction of bills looking to the repeal of the law relative to the standard quality of milk. Of these there is a large number, none of which should pass. Experience has amply shown that to let down the bars in this matter of pure milk will inevitably reintroduce the evils from which we are at last beginning to see some escape. Certain other laws relating to the milk situation are unnecessary and unimportant, but there can be no question that the whole subject this year will be rediscussed from various standpoints in a thorough-going and we hope useful manner.

The sale of certain drugs and the adulteration of food and drugs is again a subject of legislative investigation. The sale of cocaine, for example, has become a public menace, and a new bill is introduced to prevent the manufacture of cocaine preparations, the sale of which is prohibited, and to provide heavy punishment for those vending such preparations. This bill should certainly pass. Under the general subject of adulteration some good and much unnecessary legislation is suggested. As an example of the latter type is a bill to provide for the appointment of a commission to revise the laws relating to food and drugs. In view of the fact that Massachusetts already has an admirable food law, such projected legislation appears altogether superfluous. A bill with possible pernicious result is one relative to prosecutions for the sale of certain adulterated patent and proprietary drugs and foods. The bill practically provides that persons selling such foods shall be given opportunity to be warned in advance and to become familiar with the inspectors. It is not likely that a considerable number of this group of bills will find favor with the legislative committees.

Expectoration again receives attention this year. House Bill No. 350, on the petition of Mayor Hibbard, of Boston, provides for further prohibition of expectoration in certain public places and conveyances. Another bill provides for receptacles for expectoration in public places, a measure of doubtful advisability, in view of the fact that the appearance of such receptacles in conspicuous places is likely to excite the apparently innate desire to use them. Another bill on this subject desires to do away with promiscuous spitting in smoking cars, as well as in buildings and other places. All of these bills are commendable, perhaps easy of passage, but difficult of strict enforcement.

Petitions are before the legislature for three new boards of registration, two of which are old and one presented this year for the first time. For some years the attempt has been made to secure legislation to regulate the practice of professional nursing through the appointment of a board of registration. This effort has been rather widely opposed, but appears this year to have gained more adherents. It has been our general feeling that such a board is unnecessary. The osteopaths again seek legal recognition. Our opinion that such a recognition should not be given has before been expressed. This system of treatment certainly has no scientific standing which makes it worthy of such recognition. A third bill, and a new one, is for legislation to establish a board of registration in optometry. This bill also will be widely opposed by the medical profession, on the ground, first, that it is unnecessary, and secondly, that it is a menace to the best welfare of the community.

We are naturally altogether in favor of every reasonable method looking toward the prevention of tuberculosis, but we are strongly inclined to think that a bill relative to instruction in the public schools as to the disease, its prevention, its treatment and its remedies is carrying the campaign to a virtual absurdity. A bill to permit the expenditure of a sum of money not exceeding eight hundred dollars for the purposes of medical inspection in the public schools is commendable.

In the great number of bills this year before the legislature there are naturally many which are deserving of comment and which have a somewhat direct interest to the medical profession. Our space, however, does not permit detailed reference to them. It should be a source of gratification to physicians, who look upon their professional work from a broad standpoint, that the public welfare is increasingly demanding their attention, not only in the course of their daily work, but also in the framing of laws for the public protection. The duty of the public-spirited physician during the sessions of the legislature at which these bills are discussed is manifest.

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THE PUBLICATION OF MONOGRAPHS.

A manifest shortcoming in American medical literature has been the practical impossibility of publishing detailed treatises on special subjects. The reason for this is twofold: first, the difficulty of securing a publisher for this specialized sort of work, which will not appeal to the rank and file of the profession, but merely to a relatively small body of men interested in the same general subject; and secondly, as a direct corollary of the first difficulty, such publications must have too small a sale to render their publication profitable. The increasing expense of the proper publication of modern scientific work, demanding, as it does, the use of elaborate illustration, is another manifest drawback to the popularity of the monograph. Germany presents a marked contrast to the English-speaking countries in this respect. There, for many years, elaborate articles on special subjects have appeared independently of medical journals. One reason for this, no doubt, lies in the fact that a very much larger proportion of men are interested in special branches of medical research than is the case in this country. This distinction, however, is disappearing, and we have long awaited the time when the monograph in this country will take the same place of importance that it has long held in Germany and other continental countries.

It is, therefore, with particular satisfaction that we note an undertaking by the *Journal of Nervous and Mental Disease*, of New York, which has for its object the publication of monographs, to be known as the "Nervous and Mental Disease Monograph Series." The editors of this series are Dr. Smith Ely Jelliffe, of New York, managing editor of the *Journal of Nervous and Mental Disease*, and Dr. William A. White, of Washington. The brief announcement accompanying the first issue of the series states that the series will consist of short monographs, translations and minor textbooks on subjects related to neurology and psychiatry. These publications will be issued from time to time as material becomes available. It is asked that manuscripts be submitted with a view to later publication. The editors have evidently allowed themselves, and we think wisely, considerable latitude in the character of the publications in this series. We note with particular satisfaction the fact that along with translations and smaller textbooks, monographs in the ordinary sense of the word are also to be included. This marks a distinct step in progress and should receive the support of the medical profession in general, and particularly of that increasing branch of it interested in the subjects of psychiatry and neurology.

The first instalment of this series is by Dr. William A. White, superintendent of the Government Hospital for the Insane at Washington, on

"Outlines of Psychiatry." This is a brief, clearly written and well-presented textbook of psychiatry, taking, with the index, 232 octavo pages. It is unnecessary to say that the recent generally-accepted classification has been adopted, although the individuality of the author has not been subordinated to the demands of a system. We quote Dr. White's thoughtful definition of insanity: "Insanity is a disorder of the mind due to disease of the brain manifesting itself by a more or less prolonged departure from the individual's usual manner of thinking, feeling and acting, and resulting in a lessened capacity for adaptation to the environment."

Further publications in this series, as announced, are "Studies in Paranoia," by Drs. Gierlich and Friedman, and "Ibsen, the Apostle of the Psychopath," by Dr. Jelliffe. We trust this venture in a somewhat new field may meet with success, and that, as we have implied above, opportunity will be offered from time to time for the presentation and dissemination of detailed reports on special subjects.

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THE AUTOMOBILE.

Pending the advent of the aëroplane as a feasible and safe mode of locomotion, it is clear that the automobile in its present perfected state has come to occupy a perfectly indispensable place in modern life. The doubt and skepticism and occasional reproach with which it was first received has given way in the short space of less than a decade to quite other sentiments. With the increasing reliability of the mechanism, those who demand reliability as a first requisite are rapidly filling the rank of the enthusiasts. Not long ago it was a common complaint on the part of physicians that they would gladly use motor cars in their work were they sure that they would not break down at critical times, but that until such reliability were assured they found the conventional horse and buggy satisfactory. This is evidently now changed. If motor-driven vehicles are capable of crossing the continent of Asia from Pekin to Paris, and the possibility is considered of a successful journey through Siberia, it is evident the country practitioner, however wide his circuit may be, and however impassable the roads, should not be deterred from his allegiance to the automobile. It is becoming increasingly apparent that the automobile can go wherever the horse can and in many places where he cannot, and that the distances covered by the two means of locomotion are not to be compared. As a matter of fact, it is hardly too much to say that the general acceptance of the automobile by physicians has effected a greater change in the possibilities of practice than any innovation of recent years. It is not to be questioned that the automobile vastly increases through the mere saving of time the physician's capacity for work and therefore for usefulness to his fellow men.

We await with confidence the time when the mechanism of motor vehicles will be so completely perfected that accidents entailing material delay will be the rarest of occurrences, and also with a somewhat less degree of hope when the original cost of cars and their subsequent maintenance may be reduced to a more reasonable figure and one more within the reach of all practitioners of medicine. It is rare in these latter days to hear of a return to the more primitive method of getting about by a horse and carriage after the automobile has once been seriously adopted. We are inclined to think that it will soon be not so much a matter of choice as of necessity to conduct our practices by means of this aid. It is hardly to be questioned that the automobile in the immediate future will come to occupy the same position of importance to the ordinary man as does the telephone at the present time. Whatever our wishes in the matter may be, progress demands the acceptance of innovations, and one of these unquestionably is the automobile.

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HISTORY REPEATS ITSELF.

Under the heading, "History Repeats Itself," in the last monthly bulletin of the New York State Board of Health, the fact is deplored that as smallpox appears epidemically in one town after another throughout the state, each in its turn commits identically the same series of costly follies before it finally settles down to intelligently meet the situation. It is nearly forty years since most of these towns have known from actual experience what smallpox means. Among the two generations which have grown up in the meantime a false impression has come to prevail that in some way the advances in medical science and an improved condition of living, which have wrought so many other changes, are accountable for this long period of freedom from the pestilence. Vaccination has been neglected and forgotten, so that fully three fourths of the population are unprotected. When the epidemic first appears, its mildness is likely to mislead, and the careless and irresponsible spread it recklessly. Up to the present time most of the local physicians have never had the opportunity of seeing a case of smallpox, and in every town some few of these err in diagnosis, and subsequently defend their error.

The writer then goes on to describe the spread of such an outbreak and the evil consequences resulting. The opinion expressed by the expert of the State Health Department called in to investigate, that the disease is really smallpox, is received with incredulity by a large part of the community. The town then passes through the bitter experiences which have lately been undergone by Kingston on the Hudson, and finally, after perhaps a couple of months of suffering, the message of the expert, before derided, is listened to. That message is simply, "Vaccinate." Vaccination is then practised generally throughout the community, and the whole trouble ends.

"This," it is remarked in conclusion, "is not a story of some one particular town. It is the history, with hardly the omission of a single detail, of scores of places in different parts of the state enacted during the past six or seven years. Furthermore, it is a history which in all probability will continue to be reported during 1908, and thence forward until some sharp turn in the mortality of the epidemic brings back the ghastly visage of death to sober and inform the foolish minds of men. We have not entered upon a new era in the history of smallpox. We have simply experienced an extraordinary oscillation in the pendulum that has been swinging back and forth for centuries between epidemics of the disease, which have continually varied in severity. If human experience counts for anything, the next epidemic will be severe."

MEDICAL NOTES.

A Centenarian. — Dr. William M. Starr has recently died in Washington, D. C., at the reputed age of one hundred and one years. He was a native of Virginia and served in the Confederate Army during the Civil War.

A German Physician Honored. — It is reported that Emperor William of Germany has bestowed upon his chief physician, Surgeon-General Ilberg, the patent of hereditary nobility.

A New Medical Journal. — The first number of the first volume of a new medical journal, entitled, *The Archives of Diagnosis,* has appeared. The function of this journal, which is edited by Dr. Heinrich Stern, of New York, is the study of the progress of diagnosis and prognosis, although, we take it, the subject matter will not be strictly limited to this field. This first number contains a number of interesting and important articles from the pens of well-known men. In addition to the original papers a section on the progress of diagnosis and prognosis is appended, being abstracts of current articles. There are no editorial pages.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 19, 1908, there were reported to the board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 90, typhoid fever 9, measles 110, tuberculosis 50, smallpox 0.

The death-rate of the reported deaths for the week ending Feb. 19, 1908, was 19.42.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Feb. 14, 1908, was 243, against 262 the corresponding week of last year, showing a decrease of 19 deaths and making the death-rate for the week 20.64. Of this number 133 were males and 110 were females; 236 were white and 7 colored; 151 were born in the United States, 86 in foreign countries and 6 unknown; 52 were of American parentage, 139 of foreign parentage and 52 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 41 cases and 1 death; scarlatina, 54 cases and 1 death; typhoid fever, 5 cases and 1 death; measles, 83 cases and 1 death; tuberculosis, 61 cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 50, whooping cough 2, heart disease 44, bronchitis 6, and marasmus 5. There were 20 deaths from violent causes. The number of children who died under one year was 48; the number under five years 68. The number of persons who died over sixty years of age was 69. The deaths in public institutions were 63.

Nineteenth Annual Meeting of Boston City Hospital Alumni Association. — The Boston City Hospital Alumni Association held its nineteenth annual meeting on Tuesday, Feb. 11, 1908. Medical and surgical cases were shown in the amphitheater of the hospital between eleven and one o'clock, after which the trustees invited the alumni to luncheon in the hospital library.

The annual business meeting was held at the Brunswick Hotel at 6.30 o'clock in the evening.

After dinner, the president, Dr. Samuel B. Woodward, of Worcester, introduced the following peakers: Rev. T. F. Davies, of Worcester; Dr. George W. Gay, president of The Massachusetts Medical Society; Hon. Reginald Washburn, of Worcester; Dr. Charles F. Withington; Dr. Charles M. Green; Dr. Herbert J. Hall, Massahusetts General Hospital Alumni Association; Dr. E. P. Stickney, Children's Hospital Alumni Association; Dr. Morton Prince, president-elect. Dr. Richard C. Cabot and several members of he doctors' chorus sang. The following officers were elected: President, Dr. Morton Prince; Vice-President, Dr. Henry W. Broughton; Secretary, Dr. William H. Robey, Jr.; Treasurer, Dr. Wilam H. Prescott.

NEW YORK.

Bequests. — Among numerous charitable and benevolent bequests left by the will of the late Edward Hall Cole, of Brooklyn, N. Y., are $5,000 o the Chapin Home for the Aged and Infirm, Manhattan, and $1,000 each to the Brooklyn Memorial Hospital for Men and Women and the Brooklyn Home for Aged Men.

Death-Rate in January. — The death-rate n the month of January showed a very gratifying decrease, being 17.85, as against 20.57 in December and 19.69 in January, 1907. This is lower han for the same month in any year, with the xception of one, since 1898. The average rate n January for the past ten years has been 19.86. The low mortality is doubtless due to a considerable extent to the exceptionally favorable weather which prevailed during most of the month, and he most notable decrease is in the number of deaths from pneumonia. While there was some decline in the mortality from cardiac diseases, the umber of deaths from this cause was still coniderably in excess of those from pneumonia (not ncluding bronchopneumonia), a circumstance almost unprecedented at this season of the year. Among the diseases which showed a diminished atality were the following: The weekly average of deaths from typhoid fever decreased from 17.5 n December to 6.25 in January; the weekly average from influenza, from 45.75 to 32; from pulmonary tuberculosis, from 183.25 to 181.75; rom acute bronchitis, from 25 to 23.75; from pneumonia, from 191.75 to 139.25; from bronchopneumonia, from 139.25 to 126.75; from diarheal diseases, from 44.25 to 40.75; from diarheals under five years of age, from 37.5 to 35; from cancer, from 68 to 59.25; from apoplexy, congestion and softening of the brain, from 65.25 to 48.75; from organic heart diseases from 178.5 to 166.75; and from Bright's disease and acute nephritis, from 117.25 to 102.25. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from measles increased from 23.75 to 24.25; from scarlet fever, from 21 to 36; from diphtheria and croup, from 33.5 to 48.5; from whooping-cough, from 1.75 to 2.5; from epidemic cerebrospinal meningitis, from 7.75 to 9.25; and from cirrhosis of the liver, from 24.5 to 28.25. The corrected death-rate for the month (excluding non-residents and infants under one week old) was 17.00.

Tuberculosis Exhibit. — The tuberculosis exhibit of the Charity Organization Society has been on view in the building of the Metropolitan Life Insurance Company at the corner of Madison Avenue and 23d Street, for the past month, and during that time it is stated that not less than 100,000 persons have visited it. Through the courtesy of the insurance company, a large space on the ground floor, with two show windows upon the street, was obtained for the purpose, with the result of prominently attracting public attention. Three new exhibits have been recently added to the collection. One of these is a reproduction in miniature of the block down in the East Side, bounded by Chrystie, Forsyth, Bayard and Canal streets, which is one of the worst tenement blocks in the city. This is inhabited by 2,781 persons; there is not a bathtub in the whole block, and 500 of the rooms are dark and afford little access of fresh air. Another new model shows a tenement built according to the Tenement House Law of 1877, and this is characterized as the worst type of tenement ever erected in New York. The third model is one of a tenement built in accordance with the provisions of the present Tenement House Law, so that a man who looks at this may know whether the house he lives in conforms to the law or not. Every afternoon, between 5.30 and 6 o'clock, a free lecture, illustrated with stereopticon views, is given on the prevention and care of tuberculosis. The exhibit is about to be moved to the Cathedral School on Fifth Avenue, and in March it will be set up at the American Museum of Natural History.

Corporal Punishment in Public Schools. — At a meeting of the Board of Education held Feb. 13, a special committee, which has been making an investigation of the subject, made a report in which it recommended the restoration of corporal punishment in the public schools, but only in extreme cases. In carrying out its work the committee had secured the opinions of many of the principal teachers in the city and the county at large, and the answers to its inquiries, numbering nearly five hundred, were printed in a pamphlet of more than two hundred pages. A summary of the views submitted showed that 270 of those consulted were in favor of such punishment, and 200 opposed to it. The report stated that the committee was of the opinion that corporal punishment should be permitted in the schools in extreme cases only and under strict regulations and that it should be administered by the principal, with the written consent of the parents, or else by a parent in the presence of the principal. Where consent to both of these methods is refused, the committee believes that the principal should at once report such a child to the city superintendent for suspension, and when suspended the child should be sent to a truant school or a school for incorrigibles. In its opinion, the knowledge on the part of the pupils that there is such punishment provided for persistent, disorderly conduct will, to a great degree, prevent the necessity for its use. The Board of Education, after receiving the report, decided to postpone action upon it until a special meeting, to be held on March 4.

Current Literature.

NEW YORK MEDICAL JOURNAL.
JAN. 18, 1908.

1. TOREK, F. *Modern Methods in the Surgical Treatment of Gastric Diseases.*
2. KIVLIN, C. F. *Varicose Veins.*
3. LA PIERRE, J. F. *Sarcoma of Kidney.*
4. STURMDORF, A. *The Clinical Significance of McBurney's Point.*
5. PLEASANTS, J. H. *Prevention of the Nervous and Mental Disorders Incident to School Life.*
6. PENROSE, C. A. *The Psychic Treatment of Nervous Diseases from a Practical Standpoint.*
7. CRISPIN, A. M. *Chorio-epithelioma Malignum.*
8. VEASEY, C. A. *Rhythmical Alterations in the Width of the Palpebral Fissure of Both Eyes Probably Produced by Spasm of the Levator Palpebræ Muscles.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
JAN. 18, 1908.

1. RODMAN, W. L. *A Plea for Early Exploratory Laparotomy in Gastric Diseases of Doubtful Nature.*
2. *WALTON, G. L., AND PAUL, W. E. *Arteriosclerosis.*
3. FAUGHT, F. A. *The Relation of Upper Respiratory Obstruction to Oral Deformity and Simultaneous Treatment by Expansion of the Dental Arch.*
4. BURLEY, B. T. *Subacute Polymyositis with a Report of Three Cases.*
5. CORDIER, A. H. *A Mixed Tumor of the Parotid Gland.*
6. KROST, R. A., MOES, N. J., AND STOBER, A. M. *A Case of Systemic Blastomycosis.*
7. BEESON, C. F. *Heart Block at Ninety-one.*
8. *ROBINSON, W. J. *A Clinical Study of the Bromin Compounds with Special Reference to Strontium Bromid.*
9. CRAFTS, L. M. *Influence of the Ductless Glands on Metabolism.*
10. TALBOT, E. S. *Acid Auto-intoxication and Systemic Disease the Cause of Erosion and Abrasion.*
11. JELLIFFE, S. E. *Some General Reflections on the Psychology of Dementia Precox.*

2. Walton and Paul in their study on arteriosclerosis, found headache in only 22%. They believe that arteriosclerosis does not produce headache except as the immediate result of apoplectiform attacks. Arteriosclerosis appears in a certain proportion of elderly neurasthenics but their observations fail to establish its causative influence.

8. Robinson believes that pure strontium bromid is the best of all inorganic bromin compounds. It has the advantage of not upsetting the stomach, and it does not produce acne.

[R. I. L.]

ANNALS OF SURGERY.
FEBRUARY, 1908.

1. THOMAS, T. T. *Ludwig's Angina. An Anatomical, Clinical and Statistical Study.*
2. *ROBINSON, S. *Experimental Surgery of the Lungs.*
3. DE NANCREDE, C. B. G. *Should Cholecystitis and Cholelithiasis be any Longer Considered Medical Affections, and What are the Usual Consequences of So Treating Them?*
4. *NOCHREN, A. H. *The Value of the Differential Leucocyte Count in Acute Appendicitis.*
5. BARRETT, C. W. *A New Technique for Dealing with the Appendix Stump.*
6. JONES, W. *Obstruction of the Internal Urinary Meatus by Folds of Mucosa.*
7. *BOGGS, R. H. *Postoperative X-ray Treatment of Malignant Disease.*
8. ELDER, J. M. *Endo-aneurysmorrhaphy (Matas) in the Treatment of Traumatic Aneurysm of the Femoral Artery.*
9. WHITMAN, R. *Further Observations on the Treatment of Paralytic Talipes Calcaneus by Astragalectomy and Backward Displacement of the Foot.*
10. *WERMUTH, W. C. *The Trough-suspender Forearm Sling.*
11. MORRIS, R. T. *Partial Resection of the Upper and Lower Maxillæ for Congenital Deformity of the Face.*

2. In a preliminary report of his experimental research on surgery of the lungs, Robinson describes a series of animal operations performed to determine the possibilities of intrathoracic procedure under positive intrapulmonic pressure. For this purpose he devised an ingenious apparatus which automatically maintains at the same time both positive pressure by compressed air and an ether anesthesia which can be controlled by the operator without breaking asepsis. The several manometers of the mechanism may also be suitably connected with sphygmographs so as to record drum-tracings of respiratory and circulatory pressure. With this valuable device, whose air-tight face mask obviates the necessity of tracheotomy, Robinson performed on cats and dogs a series of operations including pleurotomy, costectomy and pneumectomy of varying extent, the results of which seem to go far towards proving that with an efficient positive pressure apparatus, such as his, extensive surgery of the lungs may become relatively safe and practicable. His early high death-rate was due to imperfections of appliances and technic. He has already partly refuted Sauerbruch's objections to the positive pressure method, and the future completion of his investigation promises a contribution of great value to practical thoracic surgery.

4. Nochren's statistics suggest, but are far from demonstrating, that in acute appendicitis the differential count may be more important than the numerical leucocytosis. A polymorphonuclear percentage of 90 or over tends to show a severe spreading infection and calls for immediate operation; one of 78 or less shows a mild infection. Exceptions are so frequent, however, and clinical signs so much more reliable, that it seems doubtful if this test will ever be

of great value in diagnosis or the determination of treatment.

7. Boggs emphasizes the possible value of the anteoperative and postoperative use of x-ray, intelligently applied in therapeutic dose by an expert in certain forms of malignant disease, notably carcinoma of the breast. It seems that perhaps not enough importance has hitherto been attached to this and other prophylactic measures against recurrence, such as the Coley toxin following operations for sarcoma.

10. Wermuth describes a useful forearm sling made of a square piece of compress sewed or pinned into the shape of a trough, and secured by suspenders over the shoulders instead of the familiar knot about the neck. It is cheap, simple, less conspicuous than the ordinary sling and apparently likely to be more efficacious for immobilization in certain cases.

[R. M. G.]

Surgery, Gynecology and Obstetrics.

February, 1908.

1. *Lane, W. A. *Chronic Constipation. A Consideration of its Surgical Treatment.*
2. *Coley, W. B. *Bone Sarcoma: Diagnosis, Prognosis and Treatment.*
3. Morison, R. *The General Principles of Abdominal Surgery.*
4. *Deals, F. *On the Relations Between the Ovaries and Uterus.*
5. *Babcock, W. W., and Pfahler, G. E. *A Conservative Treatment of Sarcoma.*
6. *Scudder, C. L. *Acute Osteomyelitis of the Shaft of the Humerus. Removal of the Shaft. Complete Reproduction of the Bone.*
7. Holden, G. R. *Transperitoneal Ureterotomy for Ureteral Calculus.*
8. *Doederlein, T. J. *Report of a Case of Pubiotomy.*
9. *Bryant, J. D. *Fracture of the Surgical Neck of the Femur with Inversion of the Limb.*
10. *Robins, C. R. *Fracture of the Femur in Forcible Delivery with Presentation of a Splint.*
11. *Lewis, H. F. *Résumé of Some Recent Literature of Pubiotomy.*
12. Withrow, J. M. *Preliminary and After Treatment of Abdominal Section. A Report of One Hundred and Fifty Consecutive Cases of Abdominal Section without a Death.*

1. Though chronic constipation is commonly considered a medical disease, Lane believes that it may have surgical aspects. He describes a series of pathologic changes dependent on protracted intestinal stasis, consisting of progressive adhesions along the course of the colon, resulting in fixation of various viscera, with consequent constrictions and dilatations of the bowel and atrophy of its muscular coats. The stasis, which he regards as primarily mechanical and due to sedentary habits and tight clothing, is followed by toxic absorption, tissue degeneration, pigmentation of the skin, loss of fat, infections, and a host of secondary functional disturbances. For advanced cases of this condition he advises laparotomy, freeing of adhesions, removal of the entire colon, cecum and sigmoid, and ileorectostomy. [Without denying the extreme evils of constipation and the benefits of free, frequent and regular defecation, it hardly seems that so radical a cure of constipation is yet proved justifiable.]

2. In connection with his recent article in this Journal Coley's present paper sums up his experience in the treatment of sarcoma. Notwithstanding his characteristic optimism in their interpretation, the results of his latest series of cases, as stated, certainly seem to show a larger proportion of cures and a longer interval before recurrence, when the mixed toxins of erysipelas and bacillus prodigiosus were used before and after operation, than when operation alone was done. Such use may rarely make amputation unnecessary; but there is enough evidence of its occasional curative and prophylactic value to make it deserving of thorough trial as a therapeutic agent.

4. The results of Deals's experiments on dogs to determine the cause of menstruation are purely negative, and merely tend to disprove Fraenkel's theory that it is due to the action of an internal secretion of the corpora lutea.

5. Like Coley, Babcock and Pfahler note the frequency with which trauma precedes the development of sarcoma, or with which recurrence occurs at the site of subsequent injury. Amputation they regard as a severe form of trauma and therefore advise against its radical employment, citing results of cases to justify their conservatism. They recommend subcapsular enucleation of the growth and painting the cavity with a mixture of alcohol, phenol, and pyoktanin or methylene blue, followed by local application of the x-ray daily for months and less frequently for several years. Though recognizing the value of Coley toxins, they dislike it on account of its disagreeable and exhaustive effects, but employ it when their own methods of treatment fail. Their paper again significantly emphasizes that in dealing with malignant disease surgery must probably supplement operative procedure with other agents, several of which are now undergoing the ultimate clinical test.

6. Scudder reports a case of virulent staphylococcus aureus osteomyelitis of the humerus treated by incision, drainage, removal of the entire necrotic shaft and suture of the periosteum, with complete reproduction of the bone and remarkably successful preservation of function. Particularly notable is the method of suspension by which deformity of the regenerating humerus was prevented. A valuable series of x-rays and photographs illustrates every stage of the process.

8. In reporting a case of pubiotomy, Doederlein does not deny the preferability of elective Cesarian section in an impossible rachitic pelvis, but suggests that after a protracted second stage pubiotomy may be a legitimate alternative to craniotomy, when there is a possibility that the child may still be alive.

9. Bryant collects the literature of fracture of the neck of the femur with inversion and reports a case in which a dorsal hip dislocation was mistaken for this condition.

10. Robins describes an ingenious splint for the treatment of obstetrical fracture of the femur, which, however, does not seem to offer marked advantage over the method of vertical extension.

11. Reviewing the literature of pubiotomy, Lewis concludes that it is not preferable to symphysiotomy, and believes that both operations will ultimately be abandoned.

[R. M. G.]

The Lancet.

Jan. 25, 1908.

1. *Byers, J. *Address. Why is Tuberculosis so Common in Ireland? With Suggestions for its Prevention and Treatment.*
2. Gill, C. A. *Epidemiology of Plague, with Special Reference to its Mode of Spread and the Means by Which it may be Combated.*
3. *Paterson, M. S. *Graduated Labor in Pulmonary Tuberculosis.*
4. *Inman, A. C. *Effect of Exercise on the Opsonic Index of Patients suffering from Pulmonary Tuberculosis.*
5. Robertson, W. F. *Note on the Presence and Significance of Certain Rod-shaped Bodies in the Cells of Carcinomatous Tumors.*
6. Moore, J. E. S., Walker, C. E. *On the Relationship of Cancer Cells to the Development of Cancer.*
7. Moore, J. E. S., Barratt, J. O. W. *Note upon the Effect of Liquid Air upon the Graftable Cancer of Mice.*
8. Edmunds, W. *Treatment of Graves's Disease with the Milk of Thyroidless Goats.*
9. Melandri, F. G., Legg, T. P. *A Case of Acute Suppuration in a Thyroid Adenoma due to the Bacillus Typhosus.*

1. Byers speaks of the appalling state of Ireland with regard to tuberculosis. He does not believe that there is much truth in the theory that the dampness of the atmosphere or the dampness of the soil is the cause of this condition. Many people believe that the emigration of the stronger elements of the race to America has left those that remain especially prone to this disease. He does not agree with this view nor with the view that the Irish race is particularly susceptible to tuberculosis. The real reason he believes is the want of sanitary reform in Ireland, and the home treatment of advanced cases of pulmonary tuberculosis. In the line of practical suggestions for the

prevention and treatment of tuberculosis in Ireland he places: (1) compulsory notification, and legislation for the isolation of advanced cases; (2) education in regard to sanitary home conditions; (3) temperance in all things and a rigid inspection of milk and meat.

3. Paterson describes the treatment of consumptives by graduated labor in the Brompton Hospital Sanatorium. This institution is at an altitude of 380 feet. The objections raised to this treatment at first were that the disease would become active under the strain and that the exertion would tend to produce hemoptysis. He describes the beginning of this system which has now been in effect at this institution for three years. Only those patients are allowed to undergo this treatment who are in good physical condition and well developed, although the pulmonary involvement may be somewhat extensive. The presence or absence of fever is an important point. As long as the temperature remains as high as 99° in the case of men, or 99.6° in the case of women, the patient is not allowed up for any purpose; work is prohibited and reading is the only recreation permitted. After the temperature has been normal for a week or ten days the patient is allowed up for dinner, but returns to bed as soon as the meal is finished. So long as the temperature is unaffected by this exertion the patient is gradually allowed up for longer and longer periods. If the general condition and appetite are good and the patient is feeling well after from ten to fourteen days of this treatment, he is allowed to walk half a mile a day for a week. The work is divided into various grades: (1) walking from one-half mile to ten miles daily; (2) carrying baskets of mould or other material; (3) using a small shovel; (4) using a large shovel; (5) using a pickax; (6) using a pickax for six hours a day. The patients in the first five grades work for four hours a day. He gives the details of these various grades of work. Patients require to be carefully watched, with especial care as regards loss of appetite, the presence of headache, or a rise in temperature. No medicines are given except aperients. The points so far determined as a result of this method of treatment seem to be as follows: (1) Suitably selected patients can be gradually trained to do the hardest labor for six hours a day, the result being that their general condition is much improved, while in some the sputum entirely disappears; (2) certain patients who do not improve on light work showed marked improvement on harder work; (3) patients who have slightly over-exerted themselves and are kept at rest for the few following days are subsequently not only not worse but may be in their own opinion better. He believes that graduated labor is a definite medical treatment for cases of pulmonary tuberculosis and raises the general health and resisting power. He believes further that the combination of rest, pure air and over-feeding is not the only treatment for chronic pulmonary tuberculosis, but he strongly advises those physicians who may adopt the suggestions contained in his paper to pay particular heed to the word "graduated," and to remember the importance of the temperature of 99° F.

4. Inman has studied the effect of graduated exercise upon the opsonic index of patients with pulmonary tuberculosis. Wright has already demonstrated that auto-inoculations follow upon all active and passive movements which affect the focus of infection, and upon all vascular changes which activate the lymph stream in such a focus. This work is further confirmatory evidence of the truth of the above statement. The opsonic index has shown that exercise has supplied the stimulus needed to induce artificial inoculation, and that its systematic graduation has regulated this in point of time and amount. The writer believes that with the aid of the opsonic index the amount of work necessary or wise in any given case can be regulated with scientific accuracy, and that under this guidance results can be obtained more certainly and more rapidly.

[J. B. H.]

British Medical Journal.

Jan. 25, 1908.

1. Power, D'A. *Some Misleading Abdominol Cases.*
2. *Burgess, A. H. *An Analysis of a Recent Series of 100 Consecutive Operations for Acute Appendicitis.*
3. Stretton, T. L. *Intussusception due to Polypus.*
4. Hertz, A. F. *Lectures on the Passage of Food through the Human Alimentary Tract.*
5.* McCardie, W. J. *Status Lymphaticus in Relation to General Anæsthesia.*
6. Hilliard, H. *A Fatal Case of Status Lymphaticus.*

2. Burgess reports a series of 100 cases of acute appendicitis. Out of 45 cases operated on under the fourth day after appearance of symptoms, there were no deaths; out of 55 operated on after this time, there were 9 deaths, five of whom had general peritonitis.

5. McCardie gives the history of status lymphaticus, its frequency and pathology. Deaths have occurred from this condition under all kinds of anesthetics but especially chloroform. The average age in 35 cases was sixteen years. He gives the clinical history and post-mortem findings of 7 cases of death during anesthesia in which this condition was present. Diagnosis prior to giving the anesthetic has never been made, although post-mortem examination showed a condition of enlarged spleen, thyroid or lymph nodes which, if looked for during life, might at least have raised a suspicion that this condition was present. He believes that ether is much the safest anesthetic to use where status lymphaticus is suspected. Treatment is of little avail.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 50.

Dec. 12, 1907.

1. *Albu, A. *Courses in Dieting.*
2. Hilbert, C. P. *The Newer Remedies for Pulmonary Tuberculosis.*
3. *Kausch, W. *Resection of the First Costal Cartilage as a Cure for Incipient Tuberculosis of the Apex.*
4. *Kohler, F. *Ophthalmo-Reaction with Tuberculin.*
5. Schmincke, A. *Stenosis of the Left Conus Arteriosus.*
6. *Schuster, P. *The Mercuric Treatment of Syphilitic and Parasyphilitic Nervous Affections.*
7. Riecke, E. *The Therapeutic Use of Sulphur.*
8. Edlefsen, G. *The Unreliability of Graduated Tubes and Droppers.*

1. Albu reviews the history of the various systems of dieting. He claims that superalimentation is one of the most important therapeutic advances of the day. This can be pushed even when the digestive functions are out of order, especially when the disturbance is motor. Atony and ptosis of the stomach are not unfavorable for "mastkurs." Of course, the food in such cases must be concentrated and the intervals shortened. A vegetable diet is practically a reduction in the amount of nourishment. Grapes, up to three pounds a day, are very useful in chronic constipation. Lemons are also good for the same purpose.

3. Kausch reports what he believes is the first instance of resection of the first costal cartilage for incipient pulmonary tuberculosis. The procedure is founded on the theory of Freund and Hart, that in many cases of apical tuberculosis there is a congenital or acquired abnormality of the first rib which renders it less movable than normally, and consequently restricts the aëration of the apex of the lung. The patient was a woman of fifty-three years, who had distinct signs at the right apex and gave a positive reaction to tuberculin. The operation proved simple and harmless, and is a much less serious one than the multiple resections required in cases of empyema and emphysema.

4. Kohler tested this method on 175 patients. In 169 of this number the clinical diagnosis was pulmonary tuberculosis; in 5 it was doubtful and in 1 it was not tuberculosis. The reaction was performed with 1%, 2% and 4% solutions of old tuberculin, of which one drop was placed in the eye. Of the 169 certain cases 51% reacted to the 1% solution; 41% to the 2%; 8% to the 4% after the other two had failed. Of the entire number 4.7% did not give the reaction. Of the 5 doubtful cases 2 reacted to the 1% solution; 3 to the 2%. The patient who was surely not tuberculous reacted to the 4% solution. The author considers that about 95% of tubercular patients give the reaction but that it has not yet been determined whether the method is a reliable diagnostic measure, particularly in early cases, as Schenk and Seiffert have reported positive reactions in 50% of non-tuber-

culous cases. It is also uncertain to what extent the reaction occurs in tuberculosis of organs other than the lungs.

6. Schuster tabulates the data regarding the preceding mercurial treatment in his cases of parasyphilitic nervous affections. No cases are included except those in which the history of syphilis could be verified. Of 75 cases of tabes 58 had had previous mercurial treatment, of whom 31 had taken a single course; 13 two courses; 14 three to eight courses. In 35 cases of general paralysis after verified syphilis, all but 3 had had specific treatment, 21 having taken one course; 5 two courses; 6 three to nine courses. Of 76 cases of cerebrospinal syphilis all but 10 had had mercurial treatment; 36 having had one course; 15 two and 15 three to six courses. These statistics bring out the surprising fact that the interval between the syphilis and the development of the nervous affection was longest in the untreated cases and shorter in proportion to the number of courses of mercurial treatment taken. In Schuster's tables the untreated cases averaged thirteen and four-tenths years before development of nervous lesions, while the treated cases averaged only seven and nine-tenths years. Therefore he concludes that these nervous affections are due to antibodies and not to the syphilitic virus itself. Experiments have already proved that mercury has no influence on the antibodies of the disease and does not expel them from the blood. [L. G. M.]

No. 51. Dec. 19, 1907.

1. Ahlfeld, F. *The Prevention and Treatment of Perineal Lacerations.*
2. *Elsaesser, M. *The Treatment of Tuberculosis with Marmorek's Serum and "New Tuberculin."*
3. *Creite, O. *The Treatment of External Anthrax.*
4. *Heinsius and Lissauer, W. *Experiences with Mammitis, Especially Treatment by Bier's Congestion Method.*
5. Neubürger, T. *Wright's Opsonic Method.*
6. Schur, H., and Wiesel, I. *Pressure-Raising Substances in the Blood of Chronic Nephrities.*
7. Quadflieg, K. *A Case of Torsion of the Left Testis.*
8. Becker, P. F. *The Treatment of Psoriasis with Ultraviolet Rays.*
9. Davidsohn, F. *Two Rare Cases of Burns.*

2. Elsaesser has used Marmorek's serum in 25 cases with rather indifferent results, and concludes that treatment by inducing active immunity is to be preferred to the method of passive immunity, recommending for this purpose "new tuberculin" emulsion of the bacilli. He believes that in many of the cases in which success has been ascribed to Marmorek's serum, especially in bone and joint tuberculosis with suppurating sinuses, the good effect has been due to the streptococcus antitoxins also present in the serum, rather than to any protective substances against the tubercle bacillus. He has treated 353 patients with "new tuberculin," and he regards it as better than "Perlsucht" tuberculin, which he has used in 50 cases. The tuberculin treatment should be employed more widely than it is, both in pulmonary and in bone and glandular tuberculosis of children, since by this means, combined with good care, cures can be effected at home in many cases. Hospital treatment in cities can be advantageously carried out by this method in patients of the second and third stages, if not too far advanced. In this way the sanatoriums would be able to take care of a larger number. Relapses are also lessened.

3. Creite says that mutilating operations are not necessary in the treatment of external anthrax. He reports 13 cases treated by quiet in bed, suspension of extremity when possible, and poultices of a disinfectant solution, preferably a 2% solution of aluminum acetate. These cases all made complete recovery without loss of function in the affected part.

4. Heinsius has used Bier's cupping-glass treatment in 15 cases of mastitis with uniform benefit. The pain was relieved at once and healing hastened. In advanced cases only a small incision was necessary. The great advantage is that it does not impair the function of the breast later, but it has the disadvantage in that it requires constant oversight by the physician. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 51. Dec. 17, 1907.

1. Bine, R., and Lissner, H. *The Technic of Estimating the Opsonic Index and its Application in Tuberculosis of the Lungs.*
2. Schrumpf, P. *A Comparison of Ficker's Method of Diagnosis and the Widal Reaction in Typhoid.*
3. *Curschmann, H. *Researches on the Functions of the Blood Vessels in Trophic and Vasomotor Neuroses.*
4. Nuernberg, F. *The Diagnostic Value of Bacterial Examinations of Blood from the Sinuses in Certain Ear Conditions.*
5. Bircher, E. *The Treatment of Tuberculosis of the Kidney by the X-ray.*
6. Gehle, H. A. *Radical Operation for Diverticulum of the Esophagus.*
7. Gellhern, G. *Treatment of Inoperable Cancer of the Uterus, by Acetone.*
8. Mühlig. *Infarcts of the Lung as a Complication of Gonorrhœa.*
9. Hanasiewicz, O. *Gangrene of the Scrotum caused by Tincture of Iodine.*
10. Heiberg, K. A. *Hypertrophy of the Islands of Langerhans.*
11. V. Franqué, O. *Methods of Education in Gynecology.*

3. O. Müller, in 1903, studied the reaction of the peripheral arteries, normal and in sclerotic conditions, under different irritations, recording his results with the plathysmograph. He found that in the normal vessel the reaction to cold and pain lessened the volume of the artery, and that heat increased it slowly. In arteriosclerotic vessels these reactions were lessened or absent, depending on the amount of sclerosis. The author has employed this method in researches on certain trophic and vasomotor neuroses (*i.e.*, Raynaud's disease, acroparesthesia with erythromelalgia, intermittent claudication, scleroderma and angioneurotic edema). In Raynaud's disease and scleroderma, Curschmann found, at all stages of the disease, an absence of the above described vessel reactions, probably meaning a permanent vaso-constriction. The idea that this failure of reaction was connected with atrophy of the muscular system, including the vascular muscles as well, cannot be held, as in all such conditions without signs of trophic neuroses the vessel reactions were normal. The author considers these conditions to depend on primary disturbances of the innervation of the blood vessels. In acroparesthesia and intermittent claudication the temperature irritation did not cause the normal reactions, placing these conditions also under disturbances of vessel innervation. In angioneurotic edema, on the other hand, all reactions were normal. The similarity of the other conditions seems to show a closer relation between Raynaud's disease and acroparesthesia than has before been recognized.

[R. D.]

No. 52. Dec. 24, 1907.

1. *Cohnheim, O. *Observations on Gastric Digestion.*
2. *Mainini, C. *Skin and Ophthalmo-Reaction in Tuberculosis.*
3. *Wiens and Günther. *The Ophthalmo-Reaction in Tuberculosis.*
4. Kleinberger, C. *A Critical Study of the Clinical Value of the Ophthalmo-Reaction.*
5. Much, H. *The Antitoxic Function and Albumin.*
6. Uffenheimer, A. *New Observations on the Recognition of Toxin in the Blood of Diphtheria Patients.*
7. Ehrmann, R. *The Excretion of Salicylic Acid in Health and in Acute Articular Rheumatism.*
8. Tottmann. *The Sahli Desmoid Reaction, the Schmidt Test Diet, and the Test Breakfast.*
9. Lindner, E. *The Diagnosis of Epidural Hematoma.*
10. Grünebaum. *Hemorrhage from Vaginal Varices in Pregnancy.*

1. Cohnheim has made observations on gastric and duodenal digestion by means of the duodenal fistula. In a normal dog he found that two to three minutes after the animal had received a meal of coarsely chopped meat, the pancreatic juice began to flow, as well as bile. This lasted about twelve minutes. After about fifteen minutes, gas-

tric juice began to flow through the canula inserted in the pylorus, after which spirts of gastric juice appeared with great regularity about once in fifteen seconds. This lasted about fifty minutes, then there appeared pieces of meat, partially digested, and rendered slippery by the gastric juice. In order that the food and gastric juice be expressed out of the stomach by the pyloric reflex, it is necessary to inject HCl, or gastric juice previously obtained, into the duodenum, or else the pyloric reflex stops and the normal function of digestion does not continue, and the secretion of bile and pancreatic juice ceases. It takes the stomach (dog) about one and one-half hours to empty itself of 50 gm. of meat. The flow becomes more irregular, and there appears a mucous secretion, probably from the antrum pylori, followed by a secretion of saliva. In dogs fed with bread a great amount of pancreatic juice and bile was excreted immediately after feeding, and continued during gastric digestion without need of the injection of juice into the duodenum. The bread did not stay so long in the stomach as the meat, and was not so finely divided when it entered the duodenum. The secretion from the stomach after a bread meal showed a reaction for free HCl, whereas after the pure meat meal no free HCl was demonstrable. When water was poured into stomach during digestion, it was surprising to find that it was spirted through the pylorus unmixed with digested contents. This finding is at variance with the preconceived ideas of water absorption. The author believes that the duodenal fistula opens the way to great advances in our understanding of gastric and duodenal digestion, and also to the action of many drugs.

2. Mainini has made a comparative study of the Pirquet skin reaction and the ophthalmo-reaction to tuberculin. He finds that they both appear in cases of certain tuberculosis with great regularity. The specificity of the reaction is highly probable, but not absolutely proven. In suspicious cases the skin reaction appears some six times more often than the ophthalmo-reaction. It seems that the ophthalmo-reaction appears more often with active demonstrable processes, and that the Pirquet reaction points to small latent foci of disease.

3. Wiens and Günther, after some experience with the ophthalmo-reaction, have come to the conclusion that it is by no means so harmless a procedure as was thought. They insist that the reaction is absolutely out of the question in cases which have chronic conjunctivitis. The practising physician, using this method in cases unfit for it, may bring on a severe and obstinate inflammation of the conjunctiva.

[R. D.]

Berliner Klinische Wochenschrift. No. 51.

Dec. 23, 1907.

1. Schrötter, H. *Foreign Body for Two Years in Left Bronchus, Extraction, Cure.*
2. Wassermann, A. *The Development of the Serum Diagnosis in Syphilis.*
3. *Meier, G. *The Technic, the Value and the Clinical Importance of Wossermann's Reaction in Syphilis.*
4. Lidermann, R. *The Therapeutic Use of the Quartz Lamp.*
5. Grünwald, L. *Suboccipital Inflammations.*
6. Albu, A. *Neuralgia of the Large Intestine.*
7. Saito, S. *A Rare Case of Nervous Belching.*
8. Kron, N. *Basedow's Disease and its Relation to the Sexual Life of Woman.* (Concluded.)

3. Meier has made a large number of observations on cases of syphilis with reference to the Wassermann reaction. He describes his technic at length. He believes that a positive reaction is proof of the presence of syphilis. Out of 181 cases of syphilitics 81.7% gave positive reactions. It will be of great aid in the diagnosis of obscure syphilitic lesions.

[R. D.]

The Ophthalmo-Reaction in Typhoid Fever. Kraus, of Vienna (*Wiener Klinische Wochenschrift*, No. 45, 1907), reports the result of a series of tests and controls on the value of the ophthalmo-reaction in typhoid fever recently suggested by Chantemesse, of Paris, and abstracted in the Boston Medical and Surgical Journal, Dec. 5, 1907. He injected into the conjunctival sacs of a series of typhoid and healthy individuals an extract of typhoid bacilli; a second series was injected with extract of paratyphoid B. bacilli; a third with colon bacilli, and a fourth with attenuated tuberculin (1 to 50, 1 to 100). He found that when these extracts were injected into the conjunctival sacs of healthy individuals no inflammatory changes followed or only did so rarely, but when these same extracts were injected in typhoid individuals, inflammatory processes took place, which remained chiefly localized on the conjunctiva of the lower lid. Thus of 12 patients with a positive Widal reaction, 11 gave a more or less markedly positive reaction to attenuated tuberculin. Such a test Calmette and others would call positive for tuberculosis, yet these patients showed no sign of and never gave any other test to tuberculosis. Therefore we must conclude that the conjunctiva of persons suffering from typhoid reacts not only to typhoid but also to paratyphoid, colon, tuberculin, and probably other bacterial poisons. Kraus accordingly concludes that the Chantemesse ophthalmodiagnosis reaction is not specific for typhoid, and that the Gruber-Widal reaction remains the surest and most exact diagnostic help we have.

[L. G. M.]

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Correspondence.

LETTER FROM LONDON.

[From our Special Correspondent.]

The Colon and Chronic Constipation: Subphrenic Abscess: Contact Infection among the Tuberculous.

London, Feb. 1, 1908.

Mr. Editor: It is doubtless within your recollection that Metchnikoff, in his "*Études sur la nature humaine: Essai de philosophie optimiste,*" published in 1903, hinted pretty plainly that the secret of longevity lay, not in the capture of any will-o'-the-wisp elixir, but simply in complete elimination of the auto-intoxications we all suffer by reason of the bacterial multitudes inhabiting our colons. It is possible that Metchnikoff had in mind Æsop's fable of the snake warmed back to life in some foolish fellow's bosom; at any rate, it seems a little ungrateful on the part of the poisonous little wretches to whom we have all our lives so unsuspectingly played the part of hosts, that all the while they should have been secretly plotting against our lives. Still, now we know it is the case, nothing remains but relentlessly to eliminate them. How is it to be done? Metchnikoff, in a half-hearted kind of way, hinted that it might be possible to eliminate the colon altogether; and not only was his idea put into practice, but we are now at length in a position to estimate the value of the measure. I hasten to satisfy the anxiety you must have experienced.

When this city was visited, a few years ago, by a large and distinguished party of French physicians and surgeons, you will readily understand that they did not escape without having to try to satiate the desire of the press for an account of their impressions. Upon one point they seemed to be agreed, and that was upon the operative dexterity of two London surgeons, Mr. Arbuthnot Lane and Mr. Charles Stonham. What then could be more fitting than that one of them — Mr. Lane — should carry out Metchnikoff's bold idea? As a matter of fact, Mr. Lane does not give as his reason for excising the colon the quest of perpetual youth; he claims only to have discovered a cure for chronic constipation. Whatever may be the case on your side of the water, in this country chronic constipation cannot be said to be a rare complaint; indeed, a distinguished clinician was in the habit of teaching his students that "every woman is constipated," so there would seem to be a fair field for the new remedy, even short of the attainment of longevity.

And now we have the results of Mr. Lane's operations on thirty-nine patients. In an airy fashion we are told that the author does not believe in statistics. Well, of course we all know that statistics play superlative to the forcible but impolite comparative "damn'd lies," and yet, like the bald head that nobody cares to have, but having, nobody cares to lose, we can't very well do without them. If we apply the rude statistical method to Mr. Lane's results, it appears that those who submit to the operation stand a one in six chance of very early decease, so it seems as if we sha'n't attain longevity by this plan without risk. The cases are published under the heading, "The results of the operative treatment of chronic constipation," but in many instances the patients were suffering in addition from symptoms only indirectly, if at all, due to constipation, or from other serious lesions besides the fixation or undue relaxation of the large intestine to which intractable constipation may owe cause. Apart from an operative mortality of eighteen per cent, the complications are by no means negligible: they are due for the most part to bands of adhesion, and in some cases may represent the original condition causing the constipation, rather than a direct result of the operation. Two patients subsequently required a gastro-enterostomy, three laparotomy for adhesions and one for suspected rupture of a gastric ulcer. Many of the patients declare themselves greatly benefited by the operation, but some of these are quite recent cases; in a few instances there has been complaint subsequently of constipation, whilst I am told by those who attend Mr. Lane's clinic at Guy's that some complain bitterly of diarrhea As to this point, however, my evidence is only hearsay.

What Mr. Lane has not yet done is to describe the exact clinical picture to which he refers vaguely as "auto-intoxication," or to detail the criteria by which he decides that so severe an operation is the only reasonable hope of procuring a livable existence for the patient, and therefore justifiable.

In the Section of Surgery of the Royal Society of Medicine Mr. Barnard of the London Hospital read a paper on seventy-six cases of subphrenic abscess occurring in that institution; his definition includes any collection of pus in connection with the under surface of the diaphragm, whether intra- or extra-hepatic in origin. Liver abscesses of various kinds were responsible for one sixth of the cases; gastric and duodenal ulcers for one third, appendicitis for one third and the remaining sixth were accredited to the most various causes. The total mortality was 47%, but twelve of the thirty-six who died were not operated upon (none of those not operated on recovered), and after a close examination of all the records, Mr. Barnard was of opinion that the ideal or unavoidable mortality for this series was 16%. Spontaneous rupture occurred in twenty-three of the seventy-six cases; four into a bronchus, two into the right pleura, three into the left, one into the general peritoneal cavity, eight into the stomach, one into the intestine, two into the colon, and two upon the surface. The author much prefers the posterior route for operating, and finds the mortality less than that of the anterior, whether abdominal or pleural. The main point of his paper, however, was to demonstrate that both accurate diagnosis and correct operative treatment depend primarily upon a clear understanding of the anatomical relations of the various situations in which such collections of pus occur. He described exactly six definite locations, of which four are intra- and two extra-peritoneal; the sources of infection for these several locations of the pus are distinct and for the most part constant: equally definite were his directions for the correct site of incision and drainage, being based on the surgical anatomy of the respective pouches.

In my last letter I referred to Sir Shirley Murphey's views as to the comparatively slight risk of contact infection amongst the tuberculous, and some further light on the question is shed by the recent report of the Local Government Board "On Sanatoria for Consumption." Dr. Bulstrode, who is responsible for the work, has spent the last five years in personal investigations among the whole of the public sanatoria in England and Wales, but besides a most valuable digest of data thus obtained, the report deals in a broad way with the aspects of the tuberculosis question as a whole. In the first place, contrary to expressed opinion, far from being on the increase, there has been so steady a decline in the prevalence of consumption during the last fifty years, as to suggest the possibility of extinction within measurable time. In 1838, the deaths from consumption numbered 39.9 per ten thousand living; in 1855, 27.7 per ten thousand, and in 1906 only 11.5 per ten thousand; moreover, the decrease has been maintained, with few exceptions, steadily throughout; and not even the four events on which Dr. Bulstrode lays particular stress, the passage of the Public Health Act, 1875, the discovery of the tubercle bacillus, 1882, the Housing of the Working Classes Act, 1890, and the beginning of notification and sanatoria, 1890, had any manifest effect in hastening the decrease. Again, for the five decades, 1851 to 1900, all the counties showed a substantial and fairly uniform decrease, although none of them were taking special measures to check the disease. As regards age and sex incidence, it is remarkable that whilst in 1851–60 the maximum mortality among males was from twenty to twenty-five years, and among females from twenty-five to thirty-five, it is now from forty-five to fifty-five for men and for women from thirty-five to forty-five. Whereas in the fifties the greatest incidence was upon females, the reverse is now the case. Dr. Bulstrode makes what seems to be a fair deduction from these facts, namely, that the factors outside the bacillus itself deserve close consideration. On the question of communicability Dr. Bulstrode is a little diffident, but reading between the lines of his references to Behring's views on "latency," and to the possible rôle of tuberculous milk as a factor in the spread of the disease, it appears that he shares the opinion of Sir Shirley Murphey His discussion of the value of sanatoria as curative agents and as agents for the prolongation of life and of working-capacity of the tuberculous is too lengthy for me to go into now; it is enough to mention that the ultimate fate of those who have been treated is far from satisfactory. To give one example: from one institution 183 patients were discharged between 1902 and 1905: 43 of them were admitted in an "early," 98 in a "moderately advanced," and 42 in an advanced stage; on Dec. 31, 1906, 32, or 12.6%, had maintained their improvement; 5 were "worse," 103 were dead, and of the 52 thus unaccounted for, the majority were believed to be dead. The effect of sanatoria upon the death-rate, as indicated in the figures for counties with and without such provisions, it is as yet perhaps too early to judge, but so far as they go they are not encouraging.

C.

SMITHSONIAN INSTITUTION HODGKINS FUND PRIZE OF $1,500.

Washington, Feb. 3, 1908.

Mr. Editor: In October, 1891, Thomas George Hodgkins, Esq., of Setauket, N. Y. made a donation to the Smithsonian Institution, the income from a part of which was to be devoted to "the increase and diffusion of more exact knowledge in regard to the nature and properties of atmospheric air in connection with the welfare of man."

In the furtherance of the donor's wishes, the Smithsonian Institution has, from time to time, offered prizes, awarded medals, made grants for investigations and issued publications.

In connection with the approaching International Congress on Tuberculosis, which will be held in Washington, Sept. 21 to Oct. 12, 1908, a prize of $1,500 is offered for the best treatise that may be submitted to that Congress "On the Relation of Atmospheric Air to Tuberculosis."

The treatises may be written in English, French, German, Spanish or Italian. They will be examined and the prize awarded by a committee appointed by the Secretary of the Smithsonian Institution in conjunction with the officers of the International Congress on Tuberculosis.

The right is reserved to award no prize if in the judgment of the committee no contribution is offered of sufficient merit to warrant such action.

The Smithsonian Institution reserves the right to publish the treatise to which the prize is awarded.

Further information, if desired by persons intending to become competitors, will be furnished on application.

Charles D. Walcott,
Secretary, Smithsonian Institution.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 8, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	10	3
Chicago	727	267	Waltham	4	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	7	—
Baltimore	195	18	Brookline	8	—
Cleveland	—	—	North Adams	8	2
Buffalo	—	—	Chicopee	6	3
Pittsburg	—	—	Northampton	12	0
Cincinnati	—	—	Medford	8	1
Milwaukee	—	—	Beverly	2	—
Washington	—	—	Leominster	2	—
Providence	65	32	Hyde Park	7	2
Boston	212	78	Melrose	1	0
Worcester	55	16	Newburyport	—	—
Fall River	59	31	Woburn	3	0
Cambridge	27	7	Westfield	3	—
Lowell	49	17	Marlboro	4	1
Lynn	22	10	Revere	4	1
New Bedford	39	22	Attleboro	5	1
Springfield	35	2	Peabody	—	—
Lawrence	30	7	Adams	2	—
Somerville	20	7	Clinton	4	1
Brockton	17	3	Gardner	4	1
Holyoke	21	6	Milford	5	—
Malden	10	5	Watertown	4	3
Chelsea	9	3	Plymouth	—	—
Newton	9	1	Weymouth	3	1
Salem	18	5	Framingham	6	2
Haverhill	13	5	Southbridge	5	2
Fitchburg	13	2	Wakefield	—	—
Everett	5	2	Webster	—	—
Taunton	13	3	Arlington	2	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED FEB. 5, 1908.

STONER, G. W., surgeon. Directed to proceed to Malone, N. Y., for special temporary duty; upon completion of which to rejoin his station at Ellis Island, N. Y. Jan. 31, 1908.

CARMICHAEL, D. A., surgeon. Directed to proceed to St. Louis, Mo., and to Fort Stanton, N. Mex., for special temporary duty; upon completion of which to rejoin his station at Buffalo, N. Y., returning via Washington, D. C. Feb. 1, 1908.

BROOKS, S. D., surgeon. Granted an extension leave of absence on account of sickness for ten days. Feb. 5, 1908.

YOUNG, G. B., surgeon. Detailed to represent the Service at the third annual convention of the American Society of Inspectors of Plumbing and Sanitary Engineers, to be held at Chicago, Ill., Feb. 10-12, 1908. Jan. 30, 1908.

SPRAGUE, E. K., passed assistant surgeon. Granted leave of absence for ten days from Feb. 11, 1908. Feb. 5, 1908.

WICKES, H. W., passed assistant surgeon. Granted leave of absence for two days from Jan. 28, 1908, under paragraph 189, Service Regulations.

CORPUT, G. M., passed assistant surgeon. Directed to proceed to Austin, Tex., for special temporary duty; upon completion of which to rejoin his station at Galveston, Tex. Jan. 29, 1908.

MCLAUGHLIN, A. J., passed assistant surgeon. Relieved from duty at Naples, Italy, and directed to proceed to Manila, P. I., reporting to the Chief Quarantine Officer for duty. Feb. 4, 1908.

EARLE, B. H., passed assistant surgeon. Granted leave of absence for seven days from Feb. 4, 1908. Feb. 3, 1908.

FRANCIS, EDWARD, passed assistant surgeon. Granted extension leave of absence for seven days. Jan. 30, 1908.

BOGGESS, J. S., passed assistant surgeon. Relieved from duty at St. John, N. B., and directed to proceed to Chicago, Ill., reporting to the medical officer in command for duty and assignment to quarters. Jan. 29, 1908.

FOSTER, A. D., passed assistant surgeon. Granted leave of absence for one month from Feb. 10, 1908. Feb. 5, 1908.

SPRATT, R. D., assistant surgeon. Leave of absence granted Assistant-Surgeon Spratt for twenty-one days from Jan. 14, 1908, amended to read for eleven days only. Jan. 30, 1908.

WOLLENBERG, R. A. C., assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Naples Italy, for duty. Feb. 4, 1908.

BLOUNT, B. B., acting assistant surgeon. Granted leave o absence for thirty days from Jan. 31, 1908. Feb. 1, 1908.

HICKS, W. R., acting assistant surgeon. Excused from duty without pay, Dec. 15 to 23, 1907, inclusive. Feb. 3, 1908.

KEATLEY, H. W., acting assistant surgeon. Granted leave of absence for five days from Jan. 14, 1908, under paragraph 210, Service Regulations.

MONCURE, J. A., acting assistant surgeon. Granted leave of absence for thirty days from Feb. 20, 1908. Jan. 30, 1908.

WALKER, R. T., acting assistant surgeon. Granted leave of absence for four days from Feb. 18, 1908. Feb. 5, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at San Francisco, Cal., Feb. 3, 1908, for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Surgeon H. W. Austin, chairman, and Passed-Assistant Surgeon C. H. Gardner, recorder, Feb. 8, 1908.

CASUALTY.

Acting-Assistant Surgeon Stacy D. Williamson died Jan. 25, 1908.

SOCIETY NOTICE.

NORFOLK DISTRICT MEDICAL SOCIETY. — There will be a meeting of the society in Masonic Temple, 171 Warren Street, on Tuesday evening, Feb. 25, 1908, at eight o'clock. The following papers will be presented: "Methods of Administering Anesthesia," Dr. John E. Butler; "Some of the Rarer Forms of Anesthetics," Dr. William H. Robey, Jr.; "Local and Spinal Anesthesia," Dr. Joseph C. Stedman. Light refreshments will be served. WILLIAM H. ROBEY, JR., *Secretary.*

RECENT DEATHS.

DR. **FAYETTE E. SCHLEY**, of New York, died suddenly from cardiac disease on Feb. 8. He was graduated from the Albany Medical College in 1881.

DR. **AARON K. BALDWIN**, a prominent physician of Newark, N. J., died from cirrhosis of the liver on Feb. 9. He was sixty years of age, and was graduated from the medical department of the University of the City of New York in 1871. For twenty years he was connected with the New Jersey National Guard, as regimental and brigade surgeon, and at the time of his death he was attending physician to the City Hospital, Newark.

DR. **WILLIAM BADGER**, formerly of Manhattan, died from the effects of cerebral apoplexy, on Feb. 13, at his residence in Flushing, Borough of Queens, New York City. He was seventy-five years of age, and a son of the Rev. Milton Badger, D.D., for thirty years secretary of the American Home Missionary Society. He was born at Andover, Mass., and fitted for Yale at the Phillips Academy there. He was compelled to leave college in his second year on account of ill health, and later studied medicine, being graduated from the College of Physicians and Surgeons, New York, in 1861. During the Civil War he had charge of the Army Hospital on David's Island, and also organized the State Hospital for Soldiers at Manchester, N. H.

DR. **HENRY NEWTON HEINEMANN**, formerly of New York, died suddenly in Paris on Feb. 11, at the age of fifty-five years. He was graduated from the College of Physicians and Surgeon, New York, in 1874. Dr. Heinemann was an attending physician to the Mount Sinai Hospital, and was known among his professional brethren as a brilliant diagnostician, as well as esteemed for his skill in therapeutics. He was the first to present to the New York Academy of Medicine a report on the Bad Nauheim and Schott treatment of cardiac disease, which he had studied while on a trip to Germany. Ten years ago he settled at Bad Nauheim, where his practice became extensive, and he was accustomed to spend his winters in Paris.

BOOKS AND PAMPHLETS RECEIVED.

Hypnotic Therapeutics in Theory and Practice. By John Duncan Quackenbos, A.M., M.D. New York and London: Harper & Bros. 1908.

Confessio Medici. By the writer of "The Young People." New York: The Macmillan Co. 1908.

The Mechanics of Lateral Curvature. By Henry O. Feiss, M.D. Five Papers. Four Reprints.

Syphilis. A Treatise for Practitioners. By Edward L. Keyes, Jr., A.B., M.D., Ph.D. Illustrated. New York and London: D. Appleton & Co. 1908.

Original Articles.

THE BENNETT FRACTURE OF THE FIRST METACARPAL BONE. DIAGNOSIS AND TREATMENT.

BY SAMUEL ROBINSON, M.D., BOSTON.
(From the Division of Surgery of the Harvard Medical School.)

There is a certain form of fracture of the proximal end of the metacarpal bone of the thumb which, if not early recognized and properly treated, may lead, not only to deformity, but to marked impairment of function and to partial disability of the hand. I refer to the Bennett fracture.

The basis of this paper is an accumulation of 92 cases of all fractures of the thumb metacarpal, from the skiagraph collections of the Massachusetts General Hospital, the Boston City Hospital, and from the private collection of Dr. Percy Brown.

The purposes of this discussion are as follows:

1. To correct the erroneous idea of some writers that the Bennett fracture is the most common fracture of this bone.

2. To emphasize the necessity of a radiograph of all fractures of the thumb, in order to determine whether or not the Bennett fracture is the one at hand.

3. To propose a form of treatment which seems imperative in cases of this particular fracture.

At a meeting of the Dublin Pathological Society, in 1881, Dr. E. H. Bennett presented nine dissecting-room specimens of fractured metacarpal bones. Five of these he found to be of the first metacarpal and of one type, "allowing for shades of difference such as must always exist." He describes the lesion as follows:

"The fracture passes obliquely through the base of the bone detaching the greater part of the articular facet with that piece of bone supporting it which projects into the palm. The fragment displaced is not the smaller but the larger, in fact to the extent that the irregularity of the surface indicates that the metacarpal bone of the thumb undergoes subluxation backwards."

In the absence of the diagnostic assistance of the x-ray at this time the above writer was obliged to draw his conclusions as to the relative frequency of this particular form of fracture from these few specimens and from clinical observations. It is the x-ray alone which now enables us to recognize the error in Dr. Bennett's statement to the effect that this is the "commonest fracture, certainly the most common of the thumb, probably, of all the metacarpal bones taken together."

Disregarding for a moment the comparative frequency of different types of fracture of the bone in question it may be of interest to review the statements of writers, past and present, as to the relative frequency of fractures of all five of the metacarpal bones.

Of the older authorities, Boyer, Delpech and Chelius state that the fifth is most commonly fractured.

Stimpson and Power write that the third and fourth are most frequently involved.

Scudder, in his edition of 1907, is of the same opinion.

Of those writers who give figures as a basis for their conclusions the following statistics may serve as a summary:

Before drawing conclusions from the statistics below the question may justly be raised as to whether a hospital collection of radiograms is a reliable source from which to estimate the comparative frequency of fractures of the small bones.

Date.	Writer.	No. of cases.	First met.	Second met.	Third met.	Fourth met.	Fifth met.
1847	Malgaigne,	9	55.7%	22.2%	11.1%	0.0%	11.1%
1870	Hulke,	78	34.6%	20.5%	11.5%	15.3%	17.1%
1875	Hamilton,	15	6.6%	46.6%	6.6%	20.0%	20.0%
1882	Bennett,	9	55.5%	11.1%	0.0%	11.1%	22.2%
1906	Russ,	27	29.0%	15.0%	11.0%	15.0%	26.0%
1908	Author:						
	Boston City Hospital,	45	64.4%	4.44%	8.8%	4.4%	17.7%
	Mass. Gen. House,	74	26.7%	21.8%	9.1%	14.3%	27.8%
	Mass. Gen. O. P. D.,	114	28.0%	24.8%	6.4%	10.5%	30.0%

The factors which may be said to determine the number of x-ray plates which are made in hospital clinics are the following:

1. The degree of the attending surgeon's confidence in his own clinical diagnosis. 2. The expense to the hospital. 3. The expense to the patient.

There seems to be no reason to believe that these factors should restrict the number of radiographs of one metacarpal bone more than of another. Furthermore, the x-ray plates which were the basis of the author's data were requested by at least thirty different visiting surgeons, thus allowing us to rule out the comparative familiarity of any individual with fracture of one metacarpal over another.

It will be noted that the majority of the above writers, including those giving statistics from clinical observations and those obtaining data from skiagraphs are of the opinion that the first and fifth metacarpals are most frequently broken, and it seems reasonable to accept this conclusion.

As to the comparative frequency of varying forms of fracture of the thumb metacarpal, there has also been some difference of opinion.

Bennett was forced, by the predominating character of his own lesion in the specimens which he had obtained, to conclude that practically all fractures of this bone are characterized by the split into the joint with subluxation.

Miles and Struthers, reporting fifteen Bennett fractures from their cases, are of the mind that this is the usual lesion of the bone.

Raymond Russ, in February, 1906, states that this fracture is extremely rare, and allows that he has seen but two cases and found two only in the literature. In a later publication of the same year he changes his opinion, reporting eight cases and concluding that this fracture is the usual form.

In the general surgery and fracture books I find mention of the Bennett lesion, but ordinarily no description of other forms of fracture of this bone.

Roberts, and later Beatson, describe a case of Bennett fracture intimating that such is of rare occurrence.

From the examination of the x-ray plates of 92 fractures of the first metacarpal bone, I find that 28 (30%) are of the Bennett type. Of the remaining 64 cases, 5 are fractures near the distal end of the bone and 59 are varying forms of fracture at the base, none of which are accompanied by involvement of the joint with the trapezium nor by subluxation, the latter being characteristic features of the Bennett type.

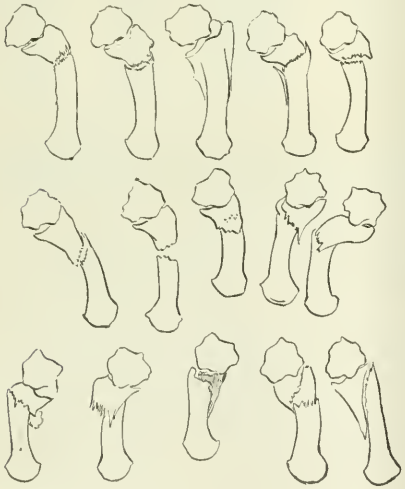

Fig. 2. Varying forms of fracture of first metacarpal: not of Bennett's type.

The outline drawings of figure 2 were made from the radiographs examined and serve to illustrate the principal types of fracture of the base of this bone which cannot be included in the class of Bennett fractures, and I would emphasize again at this point that of the total number examined 64% of the fractures were of one of these transverse forms.

Bennett's Fracture.

ANATOMY.

The articular surface of the base of the first metacarpal bone is army-saddle-shaped, with a dorso-palmar concavity and a slight lateral convexity. The trapezium is normally seated in this saddle, and its metacarpal articular surface presents, of course, a concavo-convex aspect in the opposite direction. It is important in this connection to note (see Fig. 1 of normal bones) that while the posterior or dorsal elevation in the metacarpal saddle is almost a direct continuation of the shaft, the anterior or palmar horn constitutes a projection or process from the palmar aspect of the shaft which is not in like degree supported by the shaft. It is conceivable that if undue force is brought to bear by trauma on the distal end of this metacarpal, in certain positions of the thumb, a strain is thrown upon this unsupported end of the articulation which might readily cause its fracture and dislodgement.

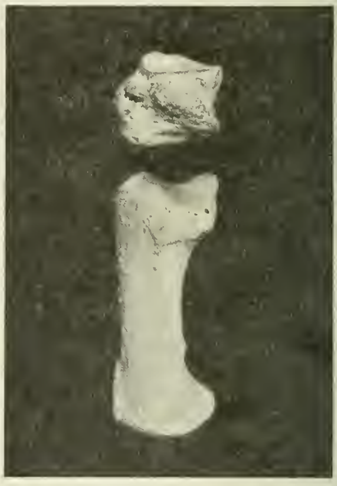

Fig. 1. Normal 1st metacarpal bone and trapezium. Note lack of support to palmar end of metacarpal articular surface.

PATHOLOGY.

The oblique or perpendicular split which occurs under such circumstances constitutes the fracture which bears Bennett's name. The break extends from a point near the center of the articular surface to some point distally along the palmar surface of the shaft. The direction of this slant as proposed by Miles and Struthers is dependent on the amount of abduction of the thumb at the time of injury. If the abduction is marked, the diagonal split is likely to reach the shaft even at its surgical neck, as shown in Fig. 3, plate 3. Adduction, on the contrary, would bring the palmar half of the metacarpal articular surface more in line with the shaft, and the obliquity of the fracture would be less marked; in other words, the crack would extend from the articular surface to a point well down along the shaft of the bone. (See Fig. 3, plate 4.)

This palmar projection in the metacarpal saddle is to prevent anterior displacement of its

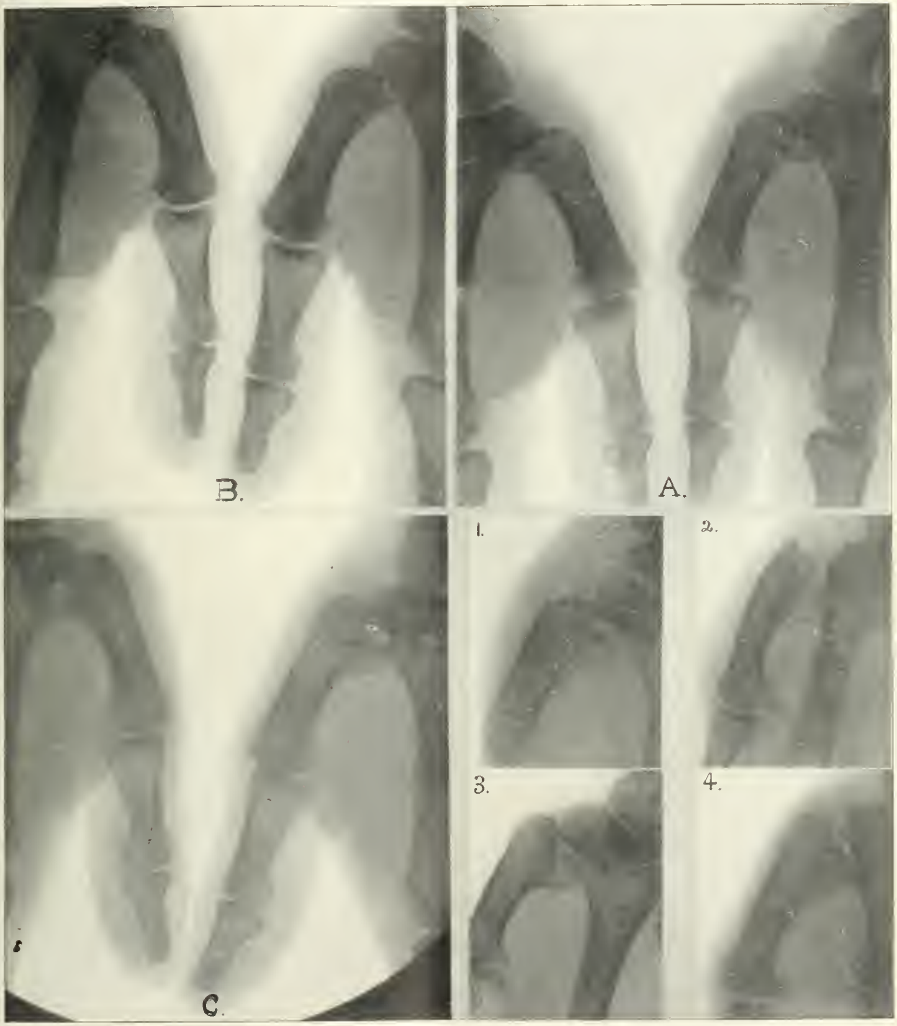

Fig. 3. A, B, C, Skiagraphs in case of Philip S. (See text.)

1, 2, 3, 4. Several types of Bennett's fracture.

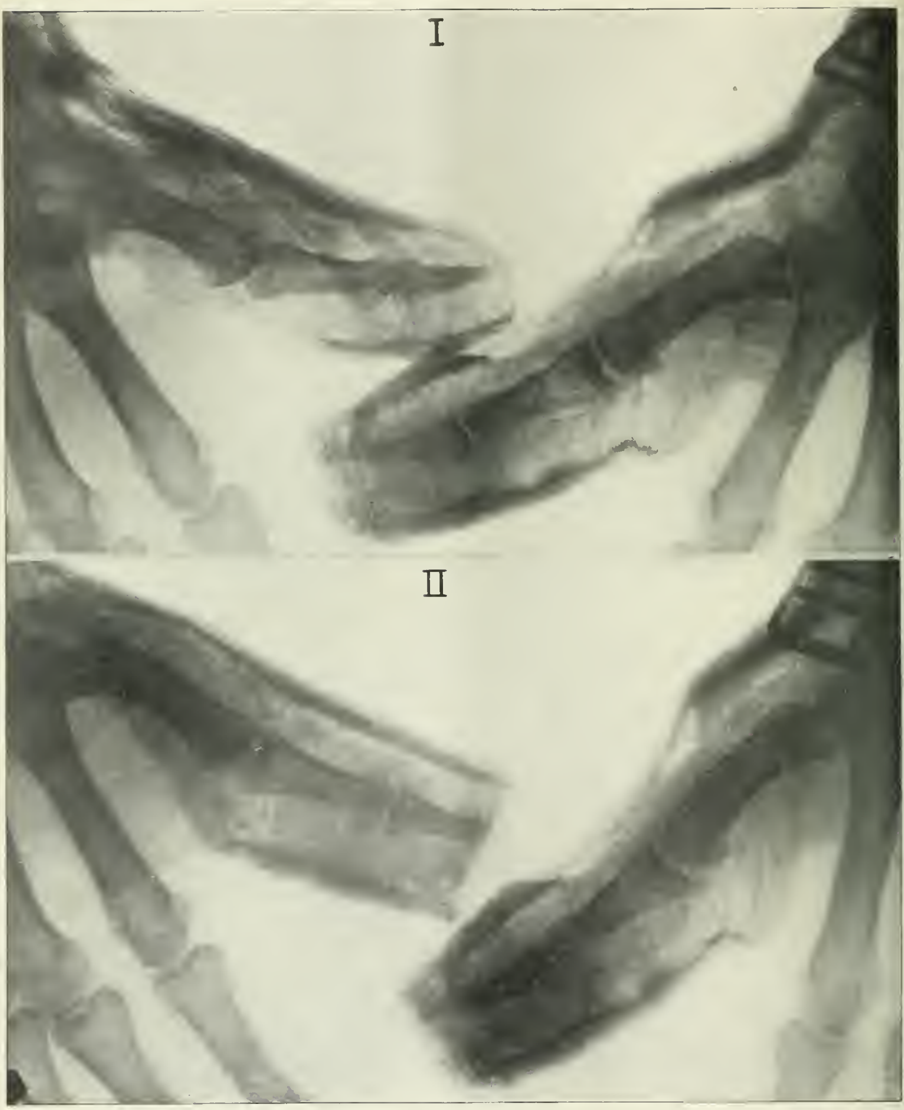

Fig. 4. I (to left of plate). Simple plaster spica without extension. Fracture not reduced. II. Plaster spica with extension apparatus. Both thumbs reduced.

ider, the trapezium; but here our analogy fails nasmuch as the trapezium is held firmly in lace by its neighboring carpal bones so that the eal object of this projection is to prevent dorsal ubluxation of the more movable metacarpal. Splitting off of this fragment, then, admits also of n outward and backward dislocation of the first netacarpal. This is the crucial factor in the njury, inasmuch as the dislocation cannot be ept permanently reduced until union has been stablished between the bone and its dislodged ragment which constitutes the palmar support o the joint.

CLINICAL ASPECTS AND DIAGNOSIS.

The etiology of fractures of the Bennett type s described in most of the cases which have been itherto reported. Suffice it to say that direct violence expended on the distal end of the metaarpal or indirect trauma through the phalanges of the outstretched thumb is responsible for a arge proportion of the fractures at the base. Just which form of injury will produce the Bennett fracture rather than some one of the more frequent transverse forms, I am unable to state; but judging from the anatomy and pathology of the lesions I am inclined to believe that the abducted thumb is more prone to the oblique Bennett type while the transverse forms result from trauma in the neutral or adducted position.

As frequently as fractured scaphoids are taken for sprained wrists, so are breaks in the base of the first metacarpal often assumed by patient and physician as sprains or "staves" of the thumb. Resultingly, the patient usually presents himself only after several days of pain, lack of function and no signs of improvement.

Differential diagnosis is of the greatest importance. Simple sprain of the first metacarpal joint, subluxation of the first metacarpal backwards and outwards, fracture of the surgical neck of this bone, and oblique fracture into the joint with or without subluxation are the forms of injury to be differentiated. The absence of crepitus and bony deformity suggests at once simple sprain. A dorsal prominence distal to the level of the trapezium articulation and attended with crepitus and local swelling would point to one of the transverse fractures in the surgical neck. If a high dorsal prominence is palpable at the level of the trapezium articulation which can be readily reduced with slight traction and pressure, usually accompanied by crepitus, and if the prominence readily recurs as the pressure is omitted, one should strongly suspect the Bennett fracture with subluxation. If such a prominence at a high level can be reduced with a grating sound and only with considerable traction on the thumb, and the subluxation shows no tendency to recur it is probable that a dislocation of the joint without fracture is present. This condition is rare, however, and as pointed out by Bennett and Russ it is very highly probable that the subluxation of this joint described in the older classics is the Bennett type of fracture.

The absence of an actual subluxation is, however, no contra-indication to a fracture into the joint, for frequently the thumb is first examined in the reduced position. Radiographs are taken when the dislocation is not present, although the conditions which favor it are evident from the dislodgement of the palmar support to the saddle.

I would therefore emphasize the importance of a radiograph in all lesions at the base of the first metacarpal to determine whether or not this tendency to dislocation is present. If positive, a special form of treatment is indicated. If, on the contrary, some form of surgical neck fracture is revealed which does not involve the joint, a simpler treatment of shorter duration is justifiable.

TREATMENT.

For transverse fractures without much deformity (Fig. 2) any simple immobilization splint is sufficient to produce union. Such methods of fixation have also proved adequate in certain oblique fractures into the joint where subluxation had not already occurred, and owing to ligamentous support remained in position until maintained by bony or cartilaginous union of the fragment to the shaft.

For the Bennett fracture with fracture and subluxation, different methods have been employed. Miles, Struthers and Bennett claim: "The best splint is a palmar one extending from the tip of the thumb across the base of the hand, and projecting beyond the ulnar side of the wrist. The lower end of the splint is first fixed firmly to the end of the thumb by a few turns of adhesive plaster, or of a bandage. The thumb is then fully abducted and extended, and the long dorsal fragment of the metacarpal made to resume its normal relation to the trapezium, and the short palmar fragment by pushing the splint downwards. The abduction and extension are kept up by applying a bandage round the wrist and hand so as to catch in the end of the splint which projects beyond the ulnar margin of the wrist, and push it downwards and to the radial side. An alternative method is to mould a poroplastic splint to the wrist and thumb after reducing the displacement, the splint being moulded to the fully abducted thumb, and bandaged firmly in position."

For the obstinate subluxated forms of Bennett fracture, I regard the above two methods as inadequate to reproduce normal relations. In Figs. 5, 6, 7, 8 are photographed the four steps in a method which seems to me essential.

Fig. 5 (A). Two narrow strips of adhesive are first applied to the lateral surfaces of the thumb with free ends about six inches long. These strips are held in position by circular turns of adhesive.

Fig. 6 (B). In preparation for the spica, the thumb, metacarpal region and wrist are bandaged with cotton sheet wadding. To provide space between the thumb and plaster spica in which the thumb may be later extended, two narrow pieces of splint wood, such as are used as tongue depressors, are laid laterally against the cotton. They should extend an inch beyond the tip of the thumb in order that the circular turns of the plaster spica may continue the extension cylinder beyond the tip.

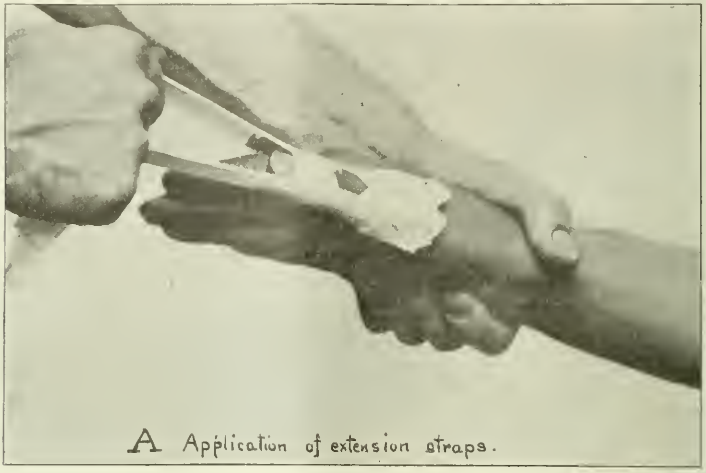

Fig. 5. (A.)

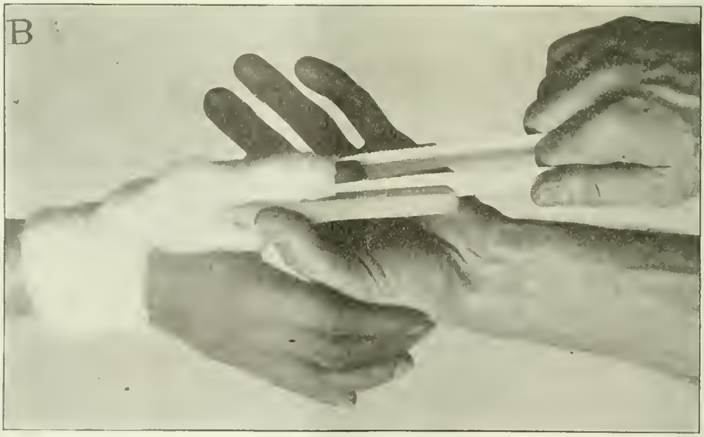

Fig. 6. (B) Application of splint-wood strips to enlarge and lengthen extension trough in plaster spica beyond tip of thumb.

Fig. 7 (C). With the thumb well abducted a plaster-of-Paris bandage, cut to width of two inches, is then firmly applied as spica from the wrist. As the plaster hardens, extension should be maintained by the operator with traction on the adhesive strips. At the same time pressure should be applied with the thumb over the proximal end of the subluxated fragment, and the forefinger against a point corresponding to the upper inner palmar surface of the thenar eminence. In this manner the deformity is held reduced by the depressions in the plaster. The operator's left hand is not properly illustrated in the photograph. Fig. 7 (C).

Fig. 8 (D). A second layer of plaster bandage should then be applied for added support and for the incorporation if so desired of two buckles. The splint-wood is then withdrawn through open end of cylinder. Traction is exerted on the adhesive extension strips which are turned backward over the now firm edge of the extension trough, and held in position by the buckles, or, if the latter are not available, a circular turn of adhesive around he hand outside the spica will answer the urpose.

The following day the pull on the extension trips should be increased to make up for stretch n material, for yielding in the grip of the strips n the thumb and for muscle relaxation. This hould be repeated every two days for at least a week.

Four or even five weeks is none too long a time or the maintenance of this apparatus. At the end of three weeks to make up for reduced swelling the spica may be carefully removed and a new plaster spica restored with the same moulding over the seat of fracture but without the extension apparatus.

To illustrate the difficulty of maintaining reduction of the subluxation and displaced fragment, and to show the result of incomplete treatment I will cite the following case which, by the courtesy of Dr. R. B. Greenough, of the Massachusetts General Out-Patient staff, I was able to follow. Fig. 3, plates A, B, C, and Fig. 4, plates I and II, were taken at different stages in the treatment and convalescence.

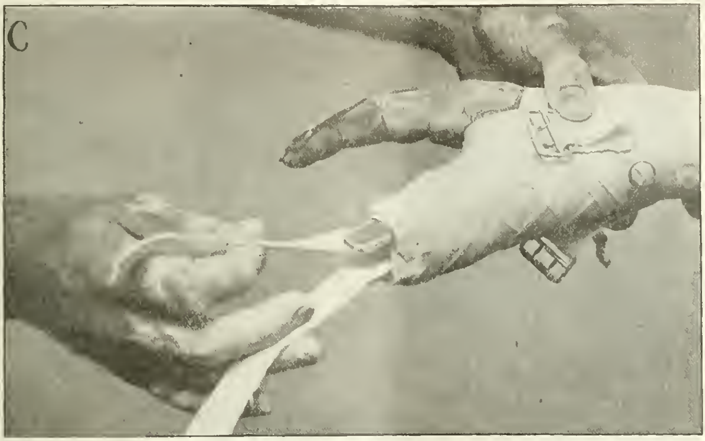

FIG. 7. (C). First plaster-of-Paris spica applied. Operator's left thumb should be at point O to depress plaster over subluxation.

Philip S., age thirty-two, entered the clinic two days after a street fight, in which both of his thumbs were injured, probably from direct violence to the distal ends of the first metacarpals. The signs and symptoms of fracture of the Bennett type were pathognomonic. Prominences over both trapezium articulations, which could readily be reduced with crepitus, but would with equal promptness return to the subluxated position. The patient complained of a grating feeling in this region and was unable to grasp objects firmly with the thumb in abducted position. Pain had been constant in attempted motions. Fig. 3, plate A, shows skiagraph at time of entrance. Note dislodged fragments at bases of both metacarpals, with abrupt oblique fractures into the joint. To the right hand was applied a simple plaster-of-Paris spica with thumb in abduction. To the left was applied the apparatus shown in Fig. 8 (D). Fig. 4, plate I, taken the following day, proves the inadequacy of the simple plaster splint to the right hand with the consequent lack of reduction and persistent dislodgement of the fragment. The correction of the left was, however, successful. The right hand was then redressed with the recommended extension spica. (Fig. 8.) The positions in both hands were then satisfactorily maintained, as seen in Fig. 4, plate II.

Patient was seen from time to time and the extension maintained. At the end of two weeks patient refused to be splinted any longer on the grounds of poverty and threatened loss of his job. Both splints were removed. The swelling and deformity had disappeared and Fig. 3, plate B was taken, showing good apposition of the fragments and reduction of the dislocation, but no shadows of bony union.

The day following, patient returned to the clinic, saying that while at the station on the previous day, waiting for a train home he felt both thumbs "slip out again." A radiograph was again made showing the identical condition as at time of entrance. (Fig. 3, plate A.) Patient was urged without avail to repeat treatment.

Eleven months later he reported by request. Patient stated that both thumbs, especially the right, had given him a great deal of trouble. Use of the thumbs had caused fatigue and pain. Grasping objects with the thumb and forefinger was very difficult. He had devised a leather thumb brace to support the trapezium joint on the right side. On examination of the right thumb a reducible subluxation was found to persist with even less tendency to stay reduced than at time of injury. There was also a grating crepitus. The left thumb still presented a prominence which could not be reduced. Plate C, Fig. 3, shows the condition by radiograph at this time: some tendency to bone formation, but not enough to bridge the gap between the dislodged fragment and the remainder of the articular surface. The patient preferred not to have further treatment.

This case serves to illustrate the importance of prolonged and careful treatment to this obstinate form of fracture; and the disability present in this case, after almost a year's duration, is evidence of the disaster which may befall a case of typical Bennett fracture.

Thanks to privileges extended to me by Prof. Thomas Dwight, I examined thirty isolated hands from the dissecting room of the Harvard Medical School, and also fifty separate metacarpals from the anatomy department collection. Five cases of old fractures of the Bennett type were found among these specimens. In most of them there was marked widening of the articular surface in the dorso-palmar direction usually with signs of new joint formation. Such cases illustrate the eventual outcome of neglected or incompletely treated fractures of this sort. Although I question whether normal function was ever present up to death of these cases, we may at least be sure that there were probably years of disability, during the process of bone and joint formation, with the usual accompanying arthritic changes.

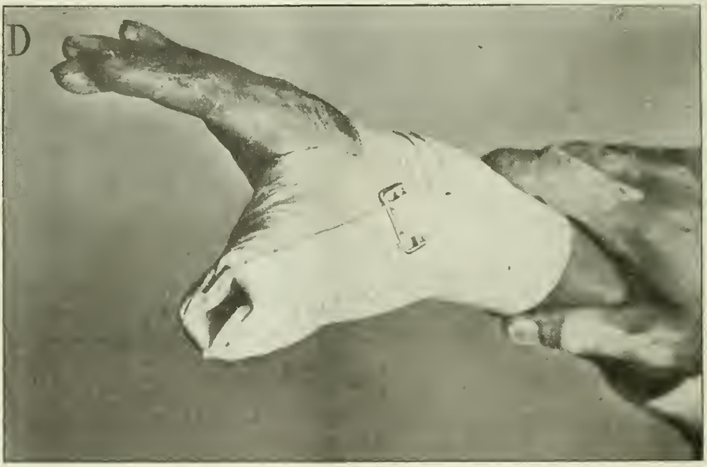

Fig. 8. (D). Dressing completed. Splint-wood withdrawn. Extension strips drawn tight over end of trough, and buckled.

To sum up: The first and fifth metacarpal bones are most frequently fractured. Sixty-four per cent of fractures of the first metacarpal are of a less obstinate transverse type.

Twenty-eight per cent are oblique fractures into the joint, with or without subluxation of the metacarpal (Bennett type).

Certain forms of the Bennett lesion are difficult of treatment and render all injuries to the base of the thumb worthy of a skiagraph for their early detection.

I would express my gratitude to Dr. Cheever and to Drs. Thorndike and Williams and to Superintendent Rowe for allowing me to increase my collection of cases by examining the radiograms at the City Hospital. I am indebted also to Drs. Greenough and Codman and to Superintendent Howard for the use of the Massachusetts General plates and for clinical experience with these fractures.

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The seventh lecture in the Harvey Society Course was given by Prof. Otto Folin, of the Harvard Medical School, at the New York Academy of Medicine, Feb. 22, on the subject, "Problems of Chemistry in Hospital Practice."

THE TREATMENT OF TROPHIC NERVE LESIONS: A STUDY BASED ON A CASE OF MAL PERFORANS; OF ISCHEMIC PARALYSIS; AND OF ERYTHROMELALGIA.*

BY WILLIAM C. QUINBY, M.D., BOSTON.

Disturbances of the nutrition and of the function of the skin and subcutaneous tissues, whether they exist as signs of a general disease process, such as Raynaud's disease, syringomyelia, erythromelalgia, etc., or as independent lesions, are commonly classed under the head of "trophic nerve lesions." Thus we find glossy, shiny or bluish skin, hyperidrosis, ulcers, striæ and disturbed growth of the nails, alopecia areata, mal perforans, and varicose veins and ulcers, all described by various writers in the past as due to lesions of a supposedly anatomical entity, the so-called "trophic nerve." Physiologists are in agreement to-day, however, that with a rare exception, such as in the case of the salivary glands, there are no special "trophic nerves," whose function is to maintain the nutrition of a part, in the same sense that there exist sensory or motor nerves. In accordance with these findings, therefore, the conception arose that such nutritive disturbances were the result of trauma in an area which had lost its sensory nerve supply. But this view, also, is not borne out by the facts. Normal nutrition is a more complicated phenomenon than either of these older views would make it. Thus Starr says: [1] "The true explanation of trophic changes is to be found, not in the hypothesis of injury to trophic nerves, but in the fact that the ordinary sensory impressions are interrupted or perverted, and nature, lacking its accustomed guide to repair and misled by abnormal impressions, produces effects which are needless under the circumstances, or fails to produce those which would ordinarily be required." Furthermore, Oppenheim [2] is of the opinion that "the spinal ganglion can experience a pathological alteration, a morbid irritation or stimulus; and that the ganglion can only functionate normally when, without hindrance, it can propagate centrally stimuli reaching it from the periphery. Diseases of the cord which hinder the transmission of sensory stimuli cause a piling up of such stimuli in the cells of the ganglion. This alters its trophic function, so that there is caused a pathological increase in the nutritive changes at the periphery. In the same way lesions of the peripheral nerve, without a complete break in conduction, cause irritative conditions which, propagated as stimuli to the spinal ganglion cell, so alter it that there results a disturbance of the nutrition in the corresponding nerve distribution at the periphery."

It is furthermore evident that since all nutritive processes are dependent primarily on the blood supply, the efferent nutritive path, so to speak, for the skin, bones and joints is found in the vaso-motor system, with its center in the medulla.

In other words, nutrition of these structures is now held to be accomplished by the interdependent action of the sensory-motor nerves on the one hand, with the blood vessels as regulated by the vaso-motor system on the other, *i. e.*, it is preserved by a reflex action. As an illustration, consider the blanching effect of cold applied to an extremity. This pallor is not due to a local action on the walls of the blood vessels, but to a reflex activity which, ascending by means of sensory fibers, stimulates the vaso-constrictor center which, in turn, through its own efferent fibers, stimulates the circular muscle of the arterioles to contract.[3]

It is by interruption of some part of this neuro-vascular mechanism that trophic lesions are brought about. Such interruption may take the form of a break in the continuity of the chain, such as when a mixed nerve has been cut or severely compressed, or, as pointed out by Oppenheim above, it may be of an irritative nature. Also it may predominate on the side of the blood vessels and their vaso-motor control, as in Raynaud's disease, or erythromelalgia, or on the side of the sensory-motor path, as in ischemic paralysis.

Though the exact location of the disturbing element in a given case may be impossible, or, if located, be beyond the reach of any form of treatment at our command, the writer feels convinced that if, in each case, the above outlined view that nutrition of the skin, bones and joints is conserved by a neuro-vascular mechanism be held constantly in mind, and an attempt be made to determine the nature of the disturbing element, a basis will be formed for the rational treatment of these trophic lesions as opposed to the empirical treatment so often employed.

The methods of treatment at our command, which are other than those applicable to the general condition of the patient, will naturally group themselves under two headings, according to whether they have more especial influence over the vascular side of the neuro-vascular mechanism or over its neural portion. Under the first heading we have active and passive hyperemia standing forth most prominently of all the measures which increase the local supply of blood to a part. On the other hand, a lessening of the amount of blood in the part may be brought about by generalized peripheral pressure. This may be made by careful bandaging, or by inserting the extremity into a cabinet and subjecting it to positive air pressure; or, possibly, by immersing the extremity in mercury.[4] The means at our disposal which are applicable to the neural side of the chain are, first, suture of the nerve, if it be divided; second, neurolysis and nerve disassociation; third, nerve stretching; and finally electricity.

Of all of the above methods of treatment, the most interesting is that of nerve stretching. This form of treatment, after having been advocated previously by Billroth, Nussbaum and Langenbuch,[5] was extensively employed by Chipault and his followers in 1894, and reported in 1899.[6]

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*Read before the New Bedford Medical Society, Nov. 25, 1907.

Following exposure and stretching of various nerves, cures were reported of mal perforans ulcer, varicose ulcers, Raynaud's disease, and circumscribed edema.[7] That this procedure did not gain popular favor, however, is evident from the fact that, between this time and 1905, when the method was again taken up by Dr. J. B. Murphy,[8] the literature contains but very rare instances of its use. Indeed, except for the empirical evidence of reported cases, there does not seem to be any logical argument for the procedure. Experimental work on the subject[9] shows that if the stretching be done with the amount of force advocated, the resulting condition in the nerve examined under the microscope is very similar to that seen after nerve section. In each instance there is fragmentation of the myelin and of the axis cylinder. On the other hand we have the clinical reports of nine cases of varicose ulcer, one mal perforant ulcer, one case of "trophic ulcers" and one case of Raynaud's disease, operated on by Dr. Murphy,[10] by nerve stretching, with excellent results. It is only fair, however, to call attention to the fact that other treatment, such as ligation and excision of the veins, was often employed, besides the nerve stretching.

The following case, operated on by the writer, is of interest in this connection:

J. A., thirty-three years old, a negro from the West Indies, entered the Out-Patient Department of the Massachusetts General Hospital, April 30, 1906, complaining of an ulcer on the bottom of the right foot, which had persisted for about a year. Five years before, the same foot had been caught beneath a barrel, breaking the ankle. He uses alcohol in moderation, has never had typhoid; admits two attacks of gonorrhea, but has no knowledge of lues.

Examination showed a rather deep ulcer over the heads of the outer two metatarsals, about the size of a twenty-five-cent piece, with sharply defined edges and sluggish base. Neurological examination, confirmed by Dr. E. W. Taylor, demonstrated slight rheumatic pains in the legs from time to time; slight difficulty in micturition; absent knee jerks; pupils reacting to light slowly and but little; accommodation active, Romberg sign and lancinating pains present.

Diagnosis: Old fracture of ankle; tabes; mal perforans.

On May 1, under ether, the internal popliteal nerve was exposed behind the knee joint, and by means of a folded gauze and a hand scale, stretched both peripherally and centrally, with a pull of twenty to twenty-three pounds, lasting about two or three minutes. A simple dressing of dry gauze was applied to the ulcer, and the patient kept in bed for three days. For ten days following there was present some anesthesia and paresthesia in the supply of the nerve; motor paralysis was absent. On May 11 the following note was made: "Wound of incision healed by first intention; ulcer seems to be closing in slowly; patient about on crutches." On the 18th the ulcer was reported, "about the same."

From this time until Aug. 4, the patient was lost sight of when he returned stating that though the ulcer had improved for a short time, it had never healed, and had recently become worse. Examination showed joint serum coming from the ulcer. An x-ray examination showed beginning disintegration of the bones of the tarsus and metatarsus.

Diagnosis: Charcot joint.

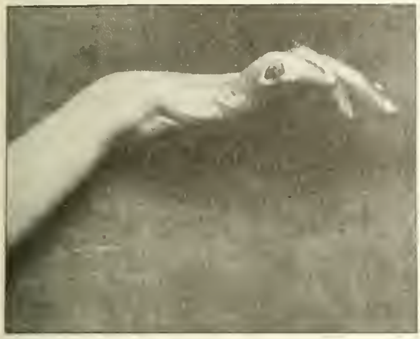
On Aug. 9, he was admitted to the house service with regard to the advisability of amputation. This was deferred, however. The ankle was encased in plaster of Paris, and the ulcer treated by suspension in the horizontal posture, and with local dressings. On Aug. 30, the ulcer having made some slight improvement, the patient was discharged to the out-patient department, but did not return.

It seems clear that in this case, at least, nerve stretching was of little or no avail. The most characteristic and constant nerve lesion in tabes being a degeneration of the postero-median columns and root zones of the cord, we have, in such a case, an interruption of the above mentioned neuro-vascular chain in its afferent spinal course.[11] Viewed in this light, the writer now feels that more is to be expected from attempts to alter the blood supply to the part by passive hyperemia in such a case than from nerve stretching.

When, however, the lesion causing the disturbance in nutrition is situated in a peripheral nerve, the freeing of such a nerve may be expected to be of avail. The interesting observations of van Lier[12] bear directly on this point. By means of delicate physiological apparatus, he demonstrated that when the frog's sciatic is subjected to a pressure varying from 60 to 120 gr., it loses its conductivity. If under these conditions the stimulus be increased, muscular contractions again occur; thus proving that there is no break in the continuity of the nerve. Fibers which had thus been subjected to pressure were examined microscopically. They were found irregular in outline, with the axis cylinders hardly to be distinguished the one from the other. This was due to the fact that the axoplasm had been pressed out, leaving the axis cylinder crowded against the myelin sheath. He therefore finds the reason for loss of function of nerves caught in scars to be this local absence of axoplasm.[13] These experimental data are confirmed by a case of paralysis of the median nerve, of three months' standing, due to its involvement in a scar. By dissecting the nerve free, and disassociating its fibers by longitudinal incisions, into its substance there was brought about early and complete restoration of function.[14]

A striking clinical example of neurotrophic changes due to involvement of peripheral nerves is found in cases of ischemic muscular paralysis. The condition here, though primarily due to interference with the blood supply to the muscles involved, is also accompanied by changes in the nerves from pressure. Resulting changes in the nutrition of the epidermis are common.[15] Such a case is the following:[16]

F. M., a boy of fifteen years, broke his right elbow by a fall, in November, 1905. Two splints were used; an internal right-angled one at the elbow and an anterior straight one on the forearm. Though the hand became blue and painful at first, these splints were allowed to remain in place for two weeks. At about this time, a sore appeared on the outer side of the little finger, which has never healed since. Motion of the elbow, at first very painful, has slowly become more possible. On April 20, 1906, he came to the Massachusetts General Hospital, Out-Patient Department, where it was found that there was almost complete loss of sensation over the typical distribution of the ulnar nerve in the hand and fingers, while on the ulnar side of the little finger was a shallow ulcer about 1 cm. in diameter, with rather sharp edges. The flexor muscles at the forearm showed a moderate amount of the so-called Volkmann's contracture. (See Fig. 1.) Extension at the elbow joint was slightly limited as was also flexion; pronation and supination were normal. An x-ray plate showed that probably the fracture had involved both the condyles, running above the trochlear surface of the humerus. Under ether the ulnar nerve was exposed, lifted from its groove behind the condyle, and subjected to slight tension. It was then dislocated into a smooth fascial plane, above the condyle, and the wound of incision closed without drainage.



Following this operation, the ulcer steadily improved, and was completely healed by May 9. No local treatment was used, other than a simple gauze dressing. The case was then transferred to the Neurological Department for electrical treatment. On July 2, sensation had partially returned, although the fingers were still in the characteristic position of ulnar paralysis. There was no recurrence of the ulcer.

On April 13, 1907, a year after operation, the boy was again seen, when it was found that except for a slight diminution in the temperature of the little finger, the hand and arm were practically normal.

In this case it would seem probable that, in accordance with the above quoted findings of van Lier, whatever small amount of stretching was done to the nerve had but a negligible influence in the final outcome. Referring to our above outlined suggestions, we have here a case where the neurovascular chain had been interrupted in its afferent peripheral course, with symptoms predominating on the side of the nerve supply to the ulnar area. These were relieved by neurolysis.[17]

A further example of trophic disturbance, unfortunately still uncured, is the following:

A man of seventy-seven years, of good past history, and prominent in business circles, has suffered from about 1900 from erythromelalgia. He states his case as follows: "There is intense burning in the soles of the feet; oftener one at a time, but sometimes both. There are swelling and burning of feet and ankles. This has continued day and night, with slight remissions in the winter. The only relief I have yet found has been to use very cold water with ice in it. This reduces the burning until it becomes painful from the cold, and then I get to sleep. At least three times every night I go through this performance, and it has ceased to be amusing. As I am writing here at my office, I have both feet on a tube of ice under my desk."

Physical examination showed a well-developed man, in strikingly good physical condition for one of his age. Heart, lungs and abdomen were negative. Digestion and bowel action were excellent. There was but very slight sclerosis of the radial and temporal arteries. The urine was negative. No varicosities were present. Both feet, extending up as far as the outer side of the malleoli, showed a redness, more vivid below and fading out above. The skin over this area was moist and hot. The nails of the toes were thickened, striated and brittle. While there was no true edema present, still pressure caused a shrinking in the size of the foot, apparently by emptying arterioles and capillaries which were everywhere seen to be dilated. The pulse in the dorsalis pedis arteries was full and bounding. After being held in the horizontal position for a few moments the feet gradually lost their intense red color, changing to a slightly cyanotic, bluish hue. The swelling also decreased somewhat, but never sufficiently to approach normal.

It seemed that, were it possible to decrease the amount of blood in the feet temporarily, the vaso-motor control over the blood vessels might possibly be regained, at least in part. Before any satisfactory method of treatment could be adopted, however, the patient passed into the care of another physician, who divided, under local anesthesia, the superficial sensory nerves supplying one foot. This procedure was wholly without benefit.

Since, according to the views of recent authorities [18] in erythromelalgia, there is probably present some central disturbance besides those manifest at the periphery, it may very well be that this disease is not amenable to any form of treatment which we can at present command. It would certainly seem, however, that periodical removal of blood from the affected member (the reverse of the treatment by passive hyperemia) might be of some avail.

In view of the above considerations and cases, it seems justifiable to advance the following conclusions:

A. That the so-called trophic nerve lesions of the skin, bones and joints are due to a break in what we have called, for convenience, the neurovascular mechanism of the part involved.

B. That this break may be situated centrally, or on the neural side, or on the vascular side.

C. Hence, rational treatment of such conditions will be directed toward modification of (*a*) the blood supply; or (*b*) the nerve function of the part.

D. For modification of the blood supply, we have active and passive hyperemia increasing it, and positive pressure by bandaging, pneumatic cabinet or the immersion in mercury, decreasing it.

E. For modification of the nerve function, we have nerve stretching, neurolysis and nerve disassociation and electricity.

F. Nerve stretching is probably to be condemned, similar results being obtainable by the simpler passive hyperemia.

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Ferguson, A. H.: Ischemic Muscular Atrophy, Contractures and Paralysis. Annals of Surgery, 1906, vol. xliii, p. 599.
[16] Both this and the following case are reported from the Massachusetts General Hospital, Out-Patient Clinic, of the late Dr. Walter B. Odiorne, whose friendship and kindly interest placed the writer under deep obligations which he here gladly acknowledges.
[17] It would seem to be wise to add to such dislocation of nerves as above a longitudinal disassociation of its fibers, if there be any evidence of scar compression. This procedure has met with success in the hands of Delbet and of Babcock, as quoted above.
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PULMONARY EMBOLUS FOLLOWING OPERATIVE INTERFERENCES.

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

THE publication of surgical disasters is of as great, if not greater, importance than a series of brilliant results, and much benefit would accrue if mistakes and failures were recorded more frequently. I recall one instance of probable pulmonary embolus occurring in my practice several years ago. The patient was a frail woman of some fifty years of age, upon whom I did an exploratory laparotomy for Dr. C. R. Capelle, of Roxbury, which resulted in a most beautiful demonstration of a proliferating papillomatous cyst of the ovary, with generalized secondary growths on the peritoneum. About one gallon of fluid was let out from the peritoneal cavity. The recovery was uneventful, until the fourteenth day, at which time the patient was to leave the hospital, when, after being dressed by the nurse, she suddenly developed an intense dyspnea and dropped dead beside her bed. As no autopsy could be obtained, the diagnosis of pulmonary embolus can only be probable, but not certain.

However, quite recently it has been my misfortune to have a young, healthy woman for operation, who successfully underwent the removal of an ovarian cyst, but who suddenly died without warning, a victim of pulmonary embolus. No external nor visible signs, no Mahler's symptom, no general disturbance gave a warning as to the ultimate outcome, but, in this case, the autopsy revealed the indefinite, and I may say the hidden, state of affairs. In this particular case, there certainly were favorable conditions for the formation of a thrombus, which I shall ultimately point out. However, the original site of the primary thrombus was not ascertained, as it probably had been completely swept away. The case once more teaches how far we are still from finding an explanation of the real cause of this condition, in spite of Mahler's work and many other researches, for elucidating an explanation of the process, and what is by far of greater import, a prophylactic treatment of pulmonary embolus which, in most instances, terminates fatally.

The patient, a female, twenty-nine years of age, was referred to me with excellent family history. She was single. Menstruation commenced at the age of thirteen and was always regular every twenty-eight days up to the age of twenty-three, at which time the amount of blood lost began to increase. A little before this increase in the amount of menstruation, the patient had begun to complain of backache and some pain in the left side. Two years before the patient came under observation the menses became irregular, sometimes appearing every three, at others every five or six, weeks, but during the interval she did not suffer. She had never been pregnant. She never suffered from constipation, but latterly had complained of discomfort in the abdomen as if distended by gas.

Examination showed a strong, well developed young woman. The heart was somewhat enlarged, the apex being to the left of the nipple in the sixth intercostal space. The cardiac sounds were weak, but no murmur was detected. The heart was also somewhat enlarged towards the right. Lungs normal. Liver and spleen were normal.

The abdomen was distended by a tumor about the size of a fetal head at term, this being located to the left. The neoplasm was very movable, fluctuation could be easily detected, but the growth was not painful on pressure. The transverse colon lay above the tumor and there was no evidence of ascites. The uterus was normal in size, but by careful palpation, the right ovary appeared somewhat enlarged and a little sensitive on pressure. In the left side the tumor already described filled it completely. A diagnosis of probable ovarian cyst was made.

At operation, a few days later, an ovarian cyst was found, having a very long narrow pedicle, but perfectly free from adhesions. It was easily drawn outside the abdomen after puncture and the pedicle was ligated with kangaroo tendon. Duration of the operation twenty minutes.

Recovery was uneventful and the patient was allowed to sit up on the twelfth day. At no time during convalescence did the pulse reach above 80 and the temperature never exceeded the normal. On the twentieth day following the operation the patient, after being dressed and seated in a chair, without any warning suddenly developed intense dyspnea; she became cyanotic and unconscious, while the pulse was so small that it could not be counted. In spite of the treatment at once intelligently given by the nurse the patient died in ten minutes.

Autopsy was done twenty-four hours after death. On opening the abdominal cavity the peritoneum was found perfectly normal; the omentum slightly adherent to the abdominal incision. There was no liquid in the small pelvis and the right adnexa were perfectly normal. Careful examination of the stump of the pedicle showed that it was in perfect condition. The liver, spleen, intestine and appendix were normal. The diaphragm was quite high on both sides, reaching the lower border of the fourth rib. Both pleural cavities were free from fluid and the external aspects of the lung appeared normal. The pericardium contained a few drops of serous fluid, but its aspect was glistening and there was absolutely no trace of pericarditis. The right lung was contracted, slightly pigmented and with a smooth, glistening pleura. At the junction of the middle lobe with the lower lobe there was seen a dark, sub-pleural discoloration of the pulmonary tissue, and on section of the pulmonary parenchyma this was found still to contain air. The parenchyma was of a brownish red hue and contained a little blood. A large branch of the pulmonary artery, which extends along the lower portion of the lung, contained fresh, brownish-colored thrombi, slightly adherent to the vessel walls, and corresponding to the above-mentioned dark discoloration of the pulmonary parenchyma is found a black focus about the size of a hen's egg. The bronchi present nothing of note. The left lung was very similar to the right one; its parenchyma was somewhat collapsed and of a dark, brownish-red hue. The large branches of the pulmonary artery were thrombosed, but would not here have resulted in an infarct. The heart was somewhat enlarged; the epicardium was smooth and shiny, while the cardiac parenchyma was fatty, especially in the muscular structures of the right ventricle. The right heart was somewhat enlarged, but the endocardium and the valves on both sides were perfectly normal. The cardiac muscle was reddish yellow in color and soft. The aorta was rather narrow and its walls were thin. The anatomic diagnosis was laparotomy for left ovarian cystoma, pulmonary emboli, with infarcts.

It will be assumed that all are familiar with the important studies of Virchow and Cohnheim on thrombosis and embolism, which form the basis for the more recent researches on this question, so that no reference will be made to them. But, after these important writings, many other painstaking investigations have been carried out. Aufrecht on the whole agrees with the theories advanced by Virchow, although he is of the opinion that primary coagulation in the pulmonary artery is quite possible. Most interesting and varied are the opinions relative to the cause of death in pulmonary embolus. The most important early works on the subject are those from the pen of Virchow, Pannum and Cohn, but I will only refer to the results obtained more recently by Kose. He believes that the immediate cause of death is due to the disturbance arising in the action of the left ventricle, this being caused by its being insufficiently filled with blood, while the cessation of the functions of the respiratory organs, resulting in asphyxia, is, as far as the time of occurrence is concerned, secondary. The systole becomes weaker on account of the lack of blood entering the heart, but the heart begins to contract more rapidly as in cases of serious hemorrhage; nevertheless, the increased rate of pulsation is not in itself sufficient to cause paralysis of the systolic action. The circulatory cycle is, according to this authority, inhibited. However this may be, it would appear that most investigators concur in the opinion that death is the result of obstruction of the trunks of the pulmonary artery, or one of its main branches, or of several small branches, resulting in the manifestations of asphyxia or syncope. In the case of a small embolus, dyspnea is alone evident, while disturbances in the cardiac functions are not marked and the patient complains of some vertigo. Since, however, pulmonary embolus, with its various results, is a secondary manifestation, I would refer for the time being to its primary cause, namely, the thrombi and their development and particularly the principal etiologic factors.

Here, also, as already stated, Virchow's writings have been the foundation for the study of thrombus and embolus, but opposed to him is Rizor and many others before him, who proved that blood coagulation never arises in a healthy blood vessel. Brücke particularly points out as a cause changes in the vessel walls, this in turn acting on the fibrin contained in the blood. Our most accurate knowledge of this subject is probably due to the researches of Eberth and Shimmelbusch. Their experiments have shown that (1) a simple uncomplicated slowing down of the flow of blood, whether it causes migration of the leucocytes towards the vessel wall, or forces the blood corpuscles toward it, cannot in itself result in the formation of a clot within the vessel when no other lesion is present; (2) that when the vessel walls are injured the blood plates may appear in the upper strata of the stream, due to a slowing of the latter, and they come in contact with the injured portions of the vessel walls, becoming adherent there, and, in this way, more or less extensive agglomerations of blood plates develop; (3) the blood plates in the development of these thrombi are the integral etiologic factors, and the white as well as the red blood corpuscles merely represent accidental factors; (4) with a circulation in good condition the development of continuous and obstructing thrombi, even in instances of severe injury to the vessel walls, is a rare occurrence, which is always dependent upon some further local complications.

This process, however, is still more complicated, because changes in the density of the blood, as well as in its anatomic elements, likewise cardiac lesions, favor the development of the process. Such conditions are present, particularly in thrombus arising during the puerperium and the post-operative type.

The slowing of the circulation may occasionally arise from pathological changes in the heart, which I shall discuss in more detail later on. As a second cause, may be mentioned an increased resistance in the peripheral circulation, which occurs in pregnancy and in pelvis neoplasms; the positive intra-abdominal pressure increases, resulting in diminished movements of the diaphragm, there are neo-formed blood vessels, and the anatomic position of the veins results in pressure upon them between the growth and the pelvic bones. In addition, in the veins of the lower limbs, when the patient is confined in bed for any length of time, there is a change in the natural position of the former, resulting in a reflux of the venous blood. Then, again, changes in the muscular and valvular contractions of the heart, which become insufficient on account of the overflow of venous blood, result in the ultimate development of varicose veins.

The changes in the composition of the blood are various. From pressure on the intestine, digestive disturbances arise, which naturally influence the quality of the blood. From the growth of a neoplasm, — especially when there is profuse hemorrhage, — as well as from chemical influences, anemia occurs and may frequently reach a very marked degree. Then, again, the changes in the blood occurring during pregnancy have been satisfactorily demonstrated of late years.

We now have to consider changes arising in the heart. On account of the development of neoformed vessels and the circulatory difficulties, there are increased demands made upon the heart, to which the organ first reacts by hypertrophy, but, on account of the changes in the composition of the blood, the cardiac muscle is insufficiently nourished and, as a result of this, fatty degeneration and brown atrophy occur. Hofmeier was the first to call attention to brown atrophy of the heart, particularly in cases of uterine fibromata, and Oppenheim points out that cardiac neuroses not infrequently arise in chronic appendicitis. Dr. Herman Boldt, of New York, and the writer have each contributed articles on the effect of uterine myomata on the heart, both these papers being published in the New York *Medical Journal*, 1906.

Besides thrombosis, which may be accounted for by the above mentioned conditions, cases have been reported where other etiologic factors came into play. I do not here refer to inflammatory processes arising around the veins, or thromboses in the placenta, processes which are easily explained, but to those which occur after simple, aseptic surgical interferences. It might be supposed that labor or the removal of a large abdominal neoplasm would improve the conditions of the circulation and would prevent the existing predisposition for thrombosis formation. This would indeed be the case if labor or the laparotomy did not produce other causes which act favorably on the formation of a thrombus. After labor, or after the removal of an abdominal tumor of some size, the abdominal walls retract and the intra-abdominal pressure decreases, this giving rise to enlargement of the pelvic veins and, as a consequence, the flow of blood through them is slow. On the other hand, if there is a considerable loss of blood during labor or the operation, anemia will result, depression of the nervous system will take place and consequently there will be a weakening in the cardiac action. Therefore, it may be assumed that labor and abdominal operations give an impetus to thrombosis formation when the blood is in poor condition, the heart somewhat pathologically changed leading to the resulting disturbances in the circulation.

There are other instances, few in number, it is true, in which none of the above-mentioned factors could be found. It is difficult to account for the occurrence of pulmonary embolus arising after operation for hernia in young, healthy individuals, in which only very small veins are ligated when, after a perfect aseptic healing of the wound, evident signs of pulmonary embolus occur. One of the first cases reported, in which a pulmonary infarct occurred after operation for hernia, is due to Bayer. The patient was a male, twenty-two years of age, with a left funicular inguinal hernia. The operation consisted in transfixion of the isolated neck of the sac, its extirpation and removal, followed by careful suture of the canal. On the day following the temperature was 38.6° in the morning, and 39° in the evening and the patient was troubled with a cough. On the next day there was fresh and clotted blood in the sputum and the temperature was still up. Auscultation showed that over the right lung posteriorly there was a circumscribed dullness and bronchial breathing. Healing occurred perfectly. As the hernia was perfectly free and no bowel was seen during the operation, the author believes that the embolus was caused by the dissection of the venous plexus, this process having detached the existing thrombus.

I have practically nothing to say relative to thrombosis formation in the right ventricle or pulmonary artery, because these cases are extremely rare and no satisfactory explanation of their pathology has been given.

Opinions vary as to the cause of separation of a thrombus or portions of it. Some accept the theory of inflammatory softening and degeneration of the thrombus, but the question is, Where do these inflammatory products come from if no inflammatory process is present in the body? Others believe that, when the thrombus has reached the orifice of the nearest vessels, particles are little by little torn off from the constant washing of the blood stream against it. This would also explain the fact that pulmonary emboli usually occur directly after some violent exertion on the part of the patient, this usually taking place the first day or a few days later after the patient gets up, thus causing an increase in the strength of the flow of blood through the vessels. This may also, perhaps, be explained from the fact that a pulmonary embolus occurs much more frequently in cases of pelvic thrombosis than in thrombosis of the veins of the lower extremities.

The diagnosis of pulmonary embolus cannot be made with exactitude in slight cases and, in those that are fatal, if it cannot be made during life, it can always be demonstrated by autopsy. However, an early or immediate diagnosis of pulmonary embolus is of little value, because there are few means at our disposal which will remedy the state of affairs. One should rather endeavor to prevent the process from occurring, and this can be accomplished if a diagnosis of some existing thrombosis can be made. This, of course, is an easy thing to do in the case of thrombus of the saphenous vein, or other superficially situated ones. When this occurs the vessels can be palpated and there is more or less pain along the vessels and edema of the limb. The edema, of course, must be differentiated from that arising from cardiac or renal diseases. On the other hand pelvic thrombi give rise to no such symptoms, unless the clot extends down to the veins of the thigh. Tenderness on pressure, pain, enlargement of the superficial abdominal veins and gastric disturbances would seem to point to the presence of thrombi, but these symptoms have so many indications that they, in themselves, are of no particular value. It has been pointed out by Dohrn that euphoria often follows an embolus and causes the patient to make exaggerated movements.

In 1885, Mahler pointed out certain characteristic conditions of the pulse arising in thrombosis, a symptom which, however, is not always to be found, but, of recent years, seems to me to have been forgotten or overlooked and, for this reason, I am desirous of calling attention to it, for if its presence is detected, it may be of considerable diagnostic value. I will give a literal translation of Mahler's own words: "In a typical thrombosis the pulse rises and continues to rise while the temperature remains perfectly normal. If there is edema a thrombotic strand may be palpable, or, if pulmonary symptoms arise, the pulse beat reaches its highest point and occasionally the temperature goes up at the same time; but, while the temperature will be found to fall during the next few hours, the pulse will remain rapid for several days. Sometimes the recognition of thrombosis is made more difficult by a gradual increase in the pulse rate, simultaneous with a slight rise in temperature at the very commencement of the process. In such cases, however, the diagnosis is pretty certain when there is a marked divergence between the pulse and temperature curves. On the other hand, there are cases where the gradual increase in the pulse rate is not marked, the temperature is normal; and then, again, there may be a small and very rapid pulse, and in these cases one should also take into consideration the possibility of a thrombosis."

We also have to deal with instances of pulmonary embolus, such as the case here reported, where, without any warning, the patient, after getting up after an operation, suddenly develops alarming symptoms, which prove fatal in a short time. In closing, I would also point out that Oppenheim has stated that a perityphlitic abscess can cause a compression thrombosis, and in cases of interval operations, where the appendix is buried in adhesions and firmly bound down to the iliac fascia, the blood vessels are naturally ruptured during the dissection, so that a disturbance in the circulation arises and, added to this, on account of a long continued intra-abdominal suppurative process, the heart undergoes changes and we have thus all the conditions favorable for thrombosis formation.

PSYCHOLOGY IN MEDICINE.

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The importance of psychology as an adjunct to the usual courses in medicine, especially to neurology and psychiatry, is not yet fully appreciated. We are taught the rudiments of chemistry as a necessary step to physiological chemistry that we may understand the food stuffs and analyze the body excreta, etc.; other elementary subjects are required, as botany, biology and zoölogy, as leading logically to the more specialized kindred medical subject. But psychology which would give us the training and terms with which to analyze the mental characteristics of our patients, a factor to be considered in at least half of our cases, is recognized by only a few medical schools either as a prerequisite for entrance or as a curriculum subject. The extremely material turn from which medicine is just recovering is doubtless responsible for the awakening interest — not in a vague soul or spirit hypothesis, an aversion to which was the cause of the materialistic swing of the pendulum, but in a mind resulting from the sum of the activity of cortical nerve cells,[1] cells which can be stained and studied microscopically, and whose activities are almost as subject to accurate experiment and analysis as are those of the liver and stomach. When we consider the wonderful complexity of the brain structure, its manifold activities and the difficulty of accurate experiments on the one hand, and the confusion which theology and metaphysics of the past has created on the other as well as the difficulty of breaking away from traditional trains of thought, it is not to be wondered at that a careful analysis and tabulation of our mental activities with laboratory verification has waited until our physical methods had reached a high degree of perfection.

In this paper our object is to point out wherein a knowledge of psychology is of practical use to the physician by offering a better set of terms and a clearer conception of the processes of the mind. Thus he may clarify his records, and render greater service to his patient.

Psychology deals with the normal states and activities of the mind. That is, it discusses the normal responses of the mind to stimuli (light, sound, touch, etc.) received from its environment, and the states produced in consciousness as the result of these stimuli (memory, thought, judgment, emotions, etc.).

Applied psychology seeks by scientific methods to split up these reactions into their elements (perception, apperception, attention, association, etc.) and to interpret them for the purpose of scientific application. In order to do this it has recourse to the same elementary subjects, anatomy and physiology, upon which medicine has reared its superstructure. Thus the two subjects are genetically related.

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[1] In the future, this view may be modified by the investigations now going on regarding the neuro-fibrils, an able study of which was presented by Dr. Solomon C. Fuller, at the Medical Psychological Association at Boston, in June, 1906; but at present it is generally conceded that neuron hypothesis offers the best structural theory of the nervous system for teaching purposes.

Psychology, treating as it does of the normal responses of the mind, has evolved a series of terms and classifications which are necessary for accurate definition and description. The psychiatrist and neurologist, approaching the subject from the study of abnormal minds, have at times found these terms inadequate to express the varied play of ideas and bizarre excursions of the mind which develop in the neurasthenic, hysteric or otherwise mentally deranged patient. Thus terms used by Janet, as a student of abnormal psychology, to express these weird mental pictures are criticized by the psychologists as being inaccurate. It is true that the records of many keen medical writers suffer for lack of accurate tests and terms. Naturally, for the new psychology is a very young science in its present form. Of late, however, there have been many hopeful signs of growing exactness in this particular among medico-psychological workers. Cases of amnesia, obsessions, ambulatory automatism and multiple personality have been put on record in which the mental states have, as far as possible, been reduced to their elements according to modern psychology. And we now have published in Boston a journal devoted exclusively to abnormal psychology. Physicians should become better acquainted with the exact meaning of psychological terms with which to express the mental state of their patients. Every asylum superintendent will testify to the vagueness of the terms frequently used on the commitment papers in describing " what the patient said " and " what the patient did."

It was once thought that the understanding of mental states might be left to the psychiatrist. Patients were either sane or insane. If sane they were responsible for their acts; indeed this is still true in the eyes of the law.[2] Neurasthenia and hysteria formed a vast dumping ground for a host of cases varying from persistent fatigue to mild mania and melancholia, from forgetfulness and pathologic suggestibility to amnesia and dual personality. These "functional neuroses" are now being carefully dissected, and one needs but little experience in medicine to know that the distinctly insane patient presents a simple problem psychically as compared with some cases of psychasthenia, hysteroid, hypochondria, obsessions and epilepsy with a psychic equivalent or even some cases of arteriosclerosis where the end arteries of the brain and kidneys bear the brunt of the disease. These compose most of the so-called border-line cases and a clear technical statement of the mental symptom complex would go a long way towards clearing up the old dumping ground.

As one runs his eye over the average case record in a nervous clinic he is struck with the barrenness of the case picture on the mental side. Heredity is considered, accidents and injuries are reported as is also a physical examination, but the one item that would make the picture vivid, give it personality, a statement of the mental life, is omitted or at most is put down as nervous, irritable, depressed, etc. If we should attempt to prescribe solely from such reports without seeing the case we should have to minister to the disease name and not to the patient.

As Germany has so often done in things scientific, she has led the way in applying psychology to medicine. There, however, it has been especially used as a basis for rearranging the nomenclature and nosology of psychiatry. Wernicke, Mendel, Kraepelin, Kahlbaum and others have, through psychological methods of analysis, simplified and made more intelligible many morbid mental states which were before confused and ill defined. Words such as " melancholia " and " mania," which used to cover a multitude of vague states of depression or exhilaration, have taken on new meaning; many conditions formerly thus classed are now found under other headings. Kraepelin's analyses of dementia precox will serve to illustrate the way in which he applies the psychological method. "He studies first (1) the comprehension of external stimuli (light, sound, touch, smell), and finds them not deeply interfered with; (2) orientation, surprisingly intact; (3) perception, often concealed by perceptional delusions; (4) hallucinations of hearing, vision, touch or contact usually present. Next he takes up the higher reactions: (1) Consciousness, good. (2) Memory, little disturbed. (3) Course of thought, suffers profoundly with final dilapidation of thought. (4) Judgment, seriously damaged resulting in (5) delusions, transitory or lasting. (6) Emotions, profoundly distorted. (7) Demeanor and activity show reduction of voluntary impulses." This is, of course, only a brief synopsis meant to illustrate the method and not the deductions. Kraepelin then goes on to describe the state by the usual medical phrases, " senseless sudden outbreaks," "negativism," etc. One can readily see how the trained eye, glancing over such a systematic record, would read it as readily as we now read a typhoid chart and would soon learn to single out the usual combinations and variations.

Many objections will be raised: the method requires special training, it takes too much time, it requires special apparatus and offers nothing to the patient which cannot be obtained by our present methods, etc. A working knowledge of psychology may be obtained from a good summer or winter course, or even from a home study of a good textbook on the subject. The practical examination of the patient's mind does, of course, require a little time, but with experience one learns to bring out the essentials in about the time that might be consumed in a thorough physical examination.[3] The apparatus required is simple and inexpensive. As to its value, it is too soon to speak. In education, psychology has long played an important rôle. In business, especially in the art of advertising, its principles are in constant use. Prof. Münsterberg has lately shown in a fascinating article in *McClure's* how the association test may be used in law and medicine. In medicine psychology should certainly find a wide application. Already it has rearranged our ideas of insanity and given us new terms and better nosology. Sidis has given us, in a series of articles in the Boston Medical and Surgical Journal, an illustration of the application of psychology to a variety of peculiar neuroses as well as the more common psychasthenic and hysterical states and described a method of treatment which is the logical outcome of his laboratory work in psychology.

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[2] The general trend of the law, however, is towards a more careful consideration of the exact state of the criminal mind, especially in the juvenile courts, and a more scientific basis for the establishment of personal responsibility.

In the *Journal of Nervous and Mental Diseases* for February, 1907, Dr. Sidney I. Schwab tells of the results obtained in St. Louis by three alienists appointed without compensation to assist the judge or jury in determining the question of the personal responsibility of criminals. Such assistants should be well versed in abnormal psychology.

[3] This does not apply to some delusional states which may need prolonged observation in an institution.

Any one who has followed the ups and downs of the psychasthenic on his progress towards health, and who has felt in his heart the uncertainty of the final outcome, will, I am sure, welcome any tangible guidepost to which he may point to support his contentions of ultimate success. I believe we shall find in a weekly recorded analysis of the patient's power of attention, fatigue, memory, etc., a prognostic sign of value. And since knowledge is power we shall be able to lend to our words of cheer and encouragement a decisiveness which will redouble their value and bring hope and persistence-in-well-doing to these tired, fearful, indecisive, morbid minds.

When the case history has been carefully recorded, including the hereditary strains for at least two generations and a detailed account of the environment and emotional occurrences of the patient's early life, together with a careful physical and psychical examination, I can conceive of no more fascinating problem than the untangling of some of these snarled mentalities.

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Medical Progress.

PROGRESS IN GYNECOLOGY.

BY W. L. BURRAGE, M.D.

THE DEGENERATIONS AND COMPLICATIONS OF FIBROID TUMORS OF THE UTERUS.

Pellanda[1] thinks that fibroids may be a direct menace to life. In a study of 171 cases of death from fibromyomata without operation he states that in 6.4% of the fatal cases death was due to hemorrhage. Acute abdominal emergencies due to torsion and infection of a tumor are by no means unknown. Rupture of the uterus due to fibroids obstructing labor has occurred. As a rule, however, it may be stated that these tumors endanger life indirectly through their degenerations and complications, through interference with the function of other organs, and by their effect on the general health, anemia and its consequences.

There are certain alterations of structure occurring in fibroids of the cause of which we are ignorant, except that sometimes they are explained by arteriosclerosis and a diminished blood supply. An *increased formation of fibrous and hyaline tissue* occurs in practically all myomata. When the process is extensive, necrosis of the center occurs with a resulting cyst cavity, with walls of irregular outline. *Hyaline degeneration* was noted in 3.1% of 2,274 cases of fibroid tumor collected by Noble[2] from the literature.

Often the tumors become *progressively indurated*, especially after the menopause. Small, hard tumors are found at autopsies on old women, their presence not having been detected during life. *Calcification* is a rather rare transformation. Noble[3] found it in 1.7% of his cases. Deposits of phosphate and carbonate of lime are formed near the periphery or center of the tumor and make either a bony framework (not true bone, however), a shell, or, rarely, entirely solidifying, the tumor forming the so-called uterine stones. *Softening* of a fibroid tumor may be due to several causes. It has been noted that fibroids increase in size during pregnancy. Doléris[4] observed a proliferation of connective tissue becoming colloid in such tumors. After delivery it is supposed that the diminution in size is due to fatty degeneration. Gusserow[5] has called attention to the fact that fatty degeneration of a fibroid tumor has been determined microscopically in only three instances, namely, those of Freund, A. Martin and Brunings, where there had not been at the same time resulting diminution in the size of the tumor also.

There is a variety of fibroid tumor called *lipomyoma*, in which a portion of the tumor is composed of fatty tissue. R. Peterson[6] has described such a case.

A single case of *amyloid degeneration* of a fibroid polypus has been recorded by Stratz.[7] *Edema* is often present in fibroids and may be considered a beginning stage of necrosis. It most often affects the subserous tumors. *Colloid or myxomatous degeneration* is characterized by the effusion of mucous material between the muscle bundles, the mucin and the proliferation of round cells in the interstitial tissue distinguishing it from edema. Noble[8] found myxomatous degeneration in 3.4% of 2,274 cases.

Fibro-cystic tumors result from the different sorts of degenerative processes just enumerated when the partitions between the loculi formed in the tumor by the degeneration are broken down. The degenerated areas are separated not by distinct walls but by portions of the fibrous structure of the tumor. These tumors are not, as formerly thought, a separate class of tumors.

Suppuration, a rare complication, is the result of the infection of the tumor tissues with bacteria derived from the intestinal canal, the genital tract, or the blood stream. Prolonged pressure of the tumor on the bowel, or an appendix vermiformis adherent to the tumor, may permit easy penetration of micro-organisms into its tissues. Instrumental or digital invasion of the uterine cavity for exploration or curetting may infect a fibroid, especially a submucous myoma. *Gangrene* may result when a tumor is undergoing degeneration or when there is torsion of its pedicle. Bacteria may or may not play a part in the necrobiotic process. The mechanism is obscure. There may be thrombosis as a beginning stage. It is probable that the tumor is tolerated as a foreign body for a long time after the blood supply is cut off before it becomes infected. *Sarcomatous degeneration* occurred in 2% of the cases collected by Noble.[9] Winter,[10] in 253 cases of fibroid tumor in which sections were taken systematically from different parts of the tumor, found sarcoma in 4.3%. Sarcomatous degeneration a distinct histological process is a true degeneration and is to be contrasted with *carcinoma*, which occurs as an associated lesion, a complication, and not as a degeneration. In a study of 4,880 consecutive cases of fibroid tumor Noble [11] found that cancer was present in 2.8%. In his personal experience with 337 fibroids cancer of the corpus was present in 2.6% and cancer of the cervix in 1.4%, hence he argues that as women not the subject of fibroid tumor have cancer of the cervix ten times to once for cancer of the corpus uteri there is a causal relation between fibroma and cancer of the corpus (adeno-carcinoma of the endometrium). In other words fibroid tissue can be invaded and destroyed by an epithelial growth, and the most frequent combination is the occurrence of carcinoma of the body of the uterus coincident with fibromyoma. Sometimes a fibroid tumor includes in its tissues glandular elements derived from the ducts of Muller or Wolff. If these elements are the seat of carcinomatous transformation cancer may be said to originate in the tumor. The point of origin is not always plain. X. Bender and G. Lardennois,[12] two of Pozzi's pupils, have shown that uterine fibroids may be invaded by metastases from cancer of some distant organ.

Extreme torsion of a fibroid causing stasis of the blood supply and necrosis or gangrene of the tumor is a rare complication. Zangemeister thought that the fibroid uterus showed commonly a tendency to turn to the right side, 21 times to 3 in his observations. N. Ivanoff [13] reports an interesting case of torsion of a fibroid uterus three months pregnant. The patient, twenty-four years old, recently married, had noticed for seven years that she had an abdominal tumor. During the last years it had increased in size until it was as large as a man's head. She entered the hospital in Moscow complaining of pain in the abdomen. There had been amenorrhea for two months. At operation the tumor was found to consist of the uterus much enlarged, and having on its lower left side an excrescence the size of a large orange, a subperitoneal fibroid nodule. The tumor was twisted on its axis, in this case the cervix uteri, through 180°, the left ovary being on the right side, and the right ovary on the left side. Supravaginal amputation was practised, the tumor weighing 7 kg. when removed.

Diseases of the tubes and ovaries are not infrequent complications of fibroids. Daniel [14] studied this subject in Pozzi's clinic. In most of the cases studied either the ovaries or the tubes and ovaries were diseased. Rarely the tubes alone were affected. Among 139 cases of fibroid tumor gathered from the literature and from the cases in Pozzi's clinic, he found lesions of the tubes 32 times, alterations of the ovaries alone 79 times, and tubo-ovarian disease 28 times. Among Pozzi's cases the most common lesions were catarrhal salpingitis, purulent salpingitis, hematosalpinx and cystic degeneration of the ovaries. In Noble's 2,274 cases of fibroids [15] complications in the uterine appendages or in the pelvis existed in 37%; in Pozzi's clinic lesions of the tubes and ovaries occurred in 59% of the myoma cases. In the analysis of these statistics it is not to be forgotten, however, that the large percentages were among women whose fibroid tumors required surgical treatment; they had submitted themselves for operative treatment because of distressing symptoms. It is manifestly unfair to assume that all fibroids are subject to complications to the same extent; in fact this same objection applies to most of the statistics published, for they have to do only with tumors causing symptoms of a severe grade, and we know that such tumors are by no means all of the tumors.

The uterus being attached to the vagina and its ligaments it is limited in its movements. If a fibroid tumor develops in the substance of the uterus it may by its bulk *displace the bladder, or press on the urethra or ureters*, crowding them against the bony walls of the pelvis. Tumors developing from the lower uterine segment and the cervix are most apt to interfere with the urinary organs. In the case of a fibroid of the posterior uterine wall the cervix may press on the urethra causing retention of urine, but this is a rarity. The bladder is extremely tolerant to misplacements caused by a tumor. However, retention is caused sometimes in this way, and the congestion of the vesical mucosa which exists in the case of fibroids, as determined by Zuckerkandl,[16] who recorded the results of a series of cystoscopic examinations, furnishes a soil favorable for the growth of bacteria introduced into the bladder by the catheter. It would appear that cystitis, except in conjunction with disease of the ureters and kidney or as a post-operative complication, is relatively rare.

Injury of the ureters and kidneys from pressure on the ureters is much more frequent than thought formerly. Knox [17] reported a series of cases of compression of the ureters observed during operations on fibroids at the Johns Hopkins Hospital. Of the different varieties of tumors intraligamentous growths and those springing from the cervix he found most likely to compress the ureters and to displace them upwards. A. Vénot,[18] in a series of 25 cases of compression of the ureters, found that 16 of them were bilateral, and 9 unilateral. In four cases of bilateral compression it was said that the right ureter was more dilated than the left. In no case was the left said to be more dilated than the right. It is difficult to say even approximately what is the frequency of renal disease caused by pressure on the ureter. J. C. Webster found renal complications due to fibroids in 30% of 100 cases, whereas Haultain in 120 cases never met renal complication. Cullingworth found hydronephrosis due to compression in 2 out of 100 cases; Sarwey, 1 in 430 cases; and Knox, 3 in 400. Vénot points out that the compression of the ureter is probably intermittent in character due to the mobility of the fibroid, therefore symptoms due to the compression are not present with any definite regularity.

It is a well known fact that constipation due to *pressure of a fibroid on the rectum* is a common symptom of fibroids. Just as in the case of the bladder the rectum is very tolerant. Here it is the tumor wedged into the pelvis that causes the most interference. So also tumors in this situation are more apt to *obstruct the enlargement of the uterus during pregnancy* and to *interfere with delivery.* Lefour,[19] out of 307 cases of pregnancy complicated by myomata, noted 39 abortions, 12.7%, the mother dying in 14 cases. Nauss,[20] out of 241 cases, found that abortion took place in 47 or 15%. The tumors situated low in the pelvis obstruct delivery; if situated elsewhere they generally interfere with post-partum involution and may occasion post-partum hemorrhage.

Although the presence of a fibroid is by no means a bar to the occurrence of pregnancy it is a frequent *cause of sterility.* Olshausen [21] gathered the statistics of nine different observers, including Scanzoni, von Winckel, Schroeder and Hofmeier, and found that out of 1,731 married women with fibroid tumors 520 or 30% were sterile. He considered this figure too high, however, because many women having fibroids came only under a physician's observation because of sterility, and those who have become pregnant often do not consult a physician at all.

When we consider the effect of fibroids on the system there is one state which is pretty constant in the case of bleeding tumors and that is *anemia.* The hemoglobin may be reduced as low as 30%, or even less, and the red cells to 1,000,000. The affection is a serious one and difficult to correct often, even after the drain of blood has been stopped, several years elapsing frequently before a profoundly anemic patient regains good health after the removal of a tumor. The gradual loss of blood over a series of months and years is of far greater import than an acute hemorrhage. The continued loss of blood produces a condition of lowered vitality and a disposition to thrombosis, embolism and phlebitis, that counter-indicates in many instances an operation for the removal of a tumor. Many authors state that the hemoglobin should be at least 50% before a hysterectomy is undertaken.

The somewhat common *association of heart disease with fibroid tumors* led to the belief that there is a causal relation between the two. Fifteen years ago the French writers referred to the frequency of palpitation in fibroids; Apostoli found it a common symptom; American writers noted it also.[22] Certain degenerative changes in the heart and the blood vessels, such as brown atrophy, fatty degeneration and fatty infiltration of the heart muscle, also chronic endocarditis, and arteriosclerosis of the arteries, have been found in the subjects of fibroid tumors by different students of this question, notably by Hofmeier, Fenwick, Strassman and Lehmann, Boldt, Pellanda, Winter and Fleck.[23] On *a priori* grounds it is possible to reason that these pathological processes are caused by the presence of the tumor, as it undoubtedly causes obstruction to the circulation and favors thrombosis and embolism, Pellanda stating that death in the natural course of fibromyomata occurs from thrombosis of the sinuses of the pelvis and pulmonary embolism, cardiac lesions and sudden syncope in 11.1% of all cases. The chief objection to most of the observations is that they were not checked by experts in internal medicine. All of the pathological changes noted are common enough in patients not the possessors of tumors, and they occur in both sexes. In the present state of our knowledge we must take our stand with Winter [24] who examined 266 cases with reference to this point having the assistance of a specialist in internal medicine. He found the heart perfectly normal in 60%, valvular disease in but 1% and dilatation and hypertrophy in but 6%. Anemia with consequent derangement of the nervous system will account for most of the cardiac symptoms in the case of fibroid tumors. It is probable that *thrombosis and embolism* are not uncommon in conjunction with fibroids. Thrombosis and phlebitis occur not infrequently following operations on fibroids. Schenck [25] has reported 19 cases of post-operative thrombosis in 727 operations on fibroids in Kelly's clinic at the Johns Hopkins Hospital, whereas there was only one case of thrombosis following the large number of operations for pelvic inflammation.

THE CLASSIFICATION OF ENDOMETRITIS.

A good deal has been written of late on the classification of endometritis, and the subject is not in a clarified state at the present time. Assuming that most forms of endometritis are due to the invasion of some form of bacterium a bacteriological classification would seem to be a proper one. The following bacteria have been found in the endometrium in cases of endometritis, seldom in pure cultures, and, for the most part, in mixed infections: staphylococcus pyogenes albus, citreus and aureus; streptococcus pyogenes; gonococcus; colon bacillus; tubercle bacillus; diphtheria bacillus; typhoid bacillus; pneumococcus; bacillus aërogenes capsulatus; spirocheta pallida. To show the confusion that exists, a recent writer on the subject gives a pathological classification containing eleven different forms of endometritis, according to the macroscopic or the microscopic appearances, and a clinical classification of ten different varieties.

At the meeting of the American Medical Association in June, 1906, a committee appointed to consider the nomenclature of endometritis, the committee consisting of E. F. Tucker, H. O. Marcy and J. G. Clark, reported partly as follows:

"The classification of endometritis should be purely anatomic. In other words, it should be divided into the acute and the chronic forms. While acute endometritis involves all of the component parts of the endometrium indifferently, the chronic form may affect especially the glands or the stroma. Any classification of endometritis based on etiologic factors is faulty, because the etiology of chronic forms cannot always be determined, and, therefore, the classification in many cases would be useless. There is also no relation in the chronic form between the cause and the form of the anatomic change in the endometrium. A classification based on clinical symptoms, as catarrhal or hemorrhagic, is also bad, for such terms might be easily applied to different stages of the same process, and a classification based on symptoms leads to an almost endless variety of forms. The age of the individual affected should be given no place in the nomenclature. Senile endometritis conveys no pathologic meaning."

"Endometritis, except in the acute form, rarely exists alone. It is usually complicated by inflammatory lesions of the cervix or the pelvic viscera; lacerations of the cervix or of the pelvic floor; retrodisplacements of the uterus; chronic pelvic congestion; uterine or ovarian tumors. Except in the acute form, therefore, which is incident to gonorrhea or to infection following labor, abortion or instrumentation of the uterus, it has in itself little clinical importance. It should be considered and treated with the exceptions noted above only in conjunction with the lesion which produces it. In many textbooks this fact is not pointed out, and the student is led astray as to the frequency and the significance of the disease, and as to the necessity of its individual treatment."

From a pathological point of view there are certain distinguishing processes occurring in the endometrium aside from the normal increase in thickness before each menstruation and the atrophy of old age that form a basis for a classification. The difficulty seems to lie in the determination of what is beyond the normal. Cullen[26] refers to this when he asserts that the endometrium of the fibroid uterus is normal and adds, "It must be borne in mind that polypi may also be present," and he notes that there are varying degrees of atrophy and glandular hypertrophy and mild degrees of endometritis in some cases. It is safe to say that one cardinal form of disease of the endometrium is *hypertrophic glandular endometritis*, in which the mucous membrane is soft and thickened and the microscope shows a pathological increase in the size of the glands, the *hyperplastic glandular endometritis* being the form where the glands are increased in number. If the interglandular connective tissue is affected by an inflammatory process it is an *interstitial endometritis*, the late stages of which are disappearance of the infiltration of the stroma by round cells and a serous exudate, and atrophy of the newly formed connective tissue with resulting compression of the utricular glands, and, in the last stages, atrophy of the endometrium.

Of these three forms many subdivisions are made according to the special conditions present in each case. In interstitial endometritis retention cysts may be formed in the interglandular spaces of the connective tissue, and so-called cystic interstitial endometritis results, or the glands may be obstructed by the pressure of the connective tissue about their mouths, cystic glandular endometritis. Hitschmann and Adler[27] state that there is only one form of endometritis, the interstitial. The endometritis glandularis hypertrophica and endometritis glandularis hyperplastica have nothing at all to do with inflammation. The hypertrophic form is not even a pathological condition of the uterine mucosa but is similar to the premenstrual state of the normal endometrium; the hyperplastic variety consists partly of normal premenstrual conditions, partly of variations in the number of glands within physiological limits and, in addition, it includes instances in which there is a glandular hypertrophy of the uterine mucous membrane, all entirely independent of inflammation. Real inflammation, an interstitial process, is determined by finding in the tissues the infiltrating plasma cells.

It remains to be seen whether their observations will be confirmed by later researches. Certain it is that the pathological reports on tissues from the endometrium submitted for examination have been very unsatisfactory to clinicians in the past, every pathologist having his own classification. Some noted practitioners have gone so far as to maintain that there is no such disease as endometritis. We look for more light.

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Reports of Societies.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Seventeenth Annual Meeting, Held at St. Louis, Mo., Dec. 30 and 31, 1907.

The President, Dr. Chas. W. Oviatt, of Oshkosh, Wis., in the chair.

After a brief address of welcome by Dr. John Young Brown, on behalf of the local profession, which was responded to by Dr. Charles E. Bowers, of Wichita, Kan., the reading of papers was begun.

THE LARGEST COMMON DUCT STONE ON RECORD.

Dr. Willard Bartlett, of St. Louis, Mo., reported this case, and exhibited the stone. The patient was a man forty-six years of age, with a history of gallstone disease extending over twenty years, which was plainly referable to the common duct. The stone in the duct could be palpated through the abdominal wall; still the man was jaundiced only at times. The stone measured four inches in length by one inch and a half in diameter, and weighed two and one-half ounces. The duct was partly sutured and drained for one month. Five months later the patient was in better shape than he had ever been in his life before.

THE PATHOLOGICAL GALL BLADDER.

Dr. B. B. Davis, of Omaha, Neb., in a paper with this title, said that, because a patient had lived through an operation, it did not necessarily mean that he was cured. Unless the gall bladder continued to functionate normally and painlessly, the patient was not willing to consider himself cured. Many cases in which drainage was instituted had a recurrence of the symptoms and a secondary cholecystectomy became necessary. This usually produced a relief of all symptoms.

The following conditions in the writer's experience called for extirpation: (1) Adhesions between the gall bladder and the stomach, colon or omentum; (2) stenosis, or even narrowing of the lumen of the cystic duct, due to old inflammation or pressure necrosis from an impacted stone; (3) gall bladders with thickened walls due to long-continued cholecystitis; (4) when external fistulæ or fistulæ between the gall bladder and the stomach or colon were present; (5) when the gall bladder wall was made up of scar tissue largely displacing the normal muscular coats; (6) when the gall bladder was found filled with mucus, clear or tarry, and there was no fresh bile; (7) in gangrene of the gall bladder; (8) in perforation of the gall bladder; (9) in empyema of the gall bladder, the mucous membrane being usually destroyed over large areas.

Cholecystostomy in the presence of the conditions given as a rule did not relieve, and extirpation had to be done later. In most cases the cholecystectomy could be done as a primary operation, without adding to the operative risk. The writer disclaimed taking too radical grounds, since he believed in the retention of every gall bladder that would not be a menace to future comfort.

THE DIFFERENTIAL DIAGNOSIS OF DUODENAL ULCER FROM GALLSTONES.

Dr. W. D. Haines, of Cincinnati, Ohio, said that prominent symptoms in common were pain, vomiting and gas, together with the deleterious influence which these symptomatic manifestations exerted on the general health of the patient. Both complaints were referred to the upper right quadrant of the abdomen, and while the pain in cholelithiasis, which was sharp, decisive and of sudden onset, was referred to a point opposite the right ninth costal cartilage, it might radiate over the entire right side of the abdomen, and not infrequently found expression in the right shoulder joint. Again, the pain might be most intense in the region of the tenth dorsal vertebra. Vomiting, if present, was characteristic in that the ejected matter was bile-stained, consisting largely of mucus, and afforded no relief to the patient. Hot fomentations might give temporary relief, but full doses of morphine were usually required to allay the terrible suffering. In duodenal ulcer the pain recurred at intervals, was less sudden of onset and severe in character. It was described as a burning or gnawing sensation, which might last a few days or continue for months after the primary attack. Unlike the lancinating pains of gallstones, pain in this disease was markedly influenced by the presence or absence of food in the stomach. A certain degree of relief invariably followed the ingestion of a full meal, lavage of the stomach or the drinking of a quantity of alkaline fluid. The spasm of the pylorus was a frequent accompaniment of ulcer but wholly unknown in early gallstone cases. Spasm of the diaphragm was evidence of severe pain, which, if referred to the region under consideration, indicated gallstones, as ulcer pain, in the absence of perforation, was not of sufficient severity to produce this symptom. Gaseous distention spoke for ulcer, and the accompanying pain quickly subsided after expulsion by eructations or vomiting.

Muscular rigidity and local tenderness were present in both ulcer and stone cases. Pain in duodenal ulcer was due to the passage of acri-acid stomach contents and to distention by gas. Vomiting was of less value as a symptom than either pain or distention, but it was well to remember that vomiting was full and free, followed by marked relief and ceased promptly in ulcer cases, leaving little depression and no nausea. In late or recurrent gallstone histories, vomiting was a prominent feature, and the same might be said of chronic ulcer. The slight transitory disturbance of the one and the invalid-dealing influence of the other would materially assist in putting one right in the diagnosis. Hemorrhage occurring during an attack of gallstones was accidental, but it was prominent as one of the late manifestations in ulcer. Jaundice, like hemorrhage, was a late symptom and might be present in either of the conditions under consideration. Jaundice following lancinating pain of sudden onset, localized in the upper right quadrant of the abdomen, radiating over the right chest wall or accompanied by pain in the right shoulder, would warrant a conclusion of the presence of gallstones. Constipation was one of the early effects of duodenal ulcer.

In a certain percentage of the chronic and some of the acute cases of stone and ulcer, differentiation would be reserved for that erstwhile, much used, sometimes abused, method of diagnosis — exploratory incision.

PEPTIC ULCER OF THE JEJUNUM.

Dr. F. Gregory Connell, of Oshkosh, Wis., reported one case of this character in which a secondary gastro-enterostomy was performed three years after anterior gastro-enterostomy for pyloric ulcer with stenosis.

After a consideration of the subject, and an analysis of 39 cases, he concluded as follows:

1. Peptic ulcer of the jejunum was a possible result of gastrojejunostomy.
2. It was probably of more frequent occurrence than the 39 reported cases indicated.

3. It followed the long loop operation more often than the no loop operation.

4. The symptoms might be latent until either acute hemorrhage or perforation occurred.

5. The symptoms might be chronic and simulate those of gastric or duodenal ulcer.

6. Peptic ulcer of the jejunum should be considered in all cases of return of symptoms after gastrojejunostomy.

7. A symptomless period after the operation was necessary to eliminate a continuation of the condition for which the gastrojejunostomy was performed.

8. A differential diagnosis could rarely be made before operation.

9. Prophylactic treatment, aiming to reduce the excess of acidity, should be instituted after all gastrojejunostomies for benign conditions, and should be continued for at least six months.

10. Treatment would be either medical or surgical, similar to that for gastric or duodenal ulcer.

11. The possible occurrence of ulcer of the jejunum was an additional reason for performing gastro jejunostomy only where it was positively indicated, namely, by pyloric obstruction.

ACQUIRED ATRESIA OF THE COMMON DUCT DUE TO A GALLSTONE.

DR. JOHN C. HANCOCK, of Dubuque, Ia., after referring to the literature, reported a case of a woman, aged sixty-six, who gave this history in connection with her illness, which had existed two years and nine months: Family history was negative. Previous history also negative except for severe headaches and occasional palpitation. Her present illness began October, 1901, with sudden and severe pain in the abdomen in the region of the ninth and tenth ribs, vomiting, purging, chill and fever. The attack lasted from one to two days, and subsequent prostration delayed the patient's return to her home for two weeks. Three weeks after her return home she began to experience excruciating soreness in the same region as before and extending around the ribs to the right shoulder-blade and shoulder. This condition, with variations in severity, lasted all winter. April, 1903, patient experienced a sensation of pushing and grinding, starting in the right side. This extended across the back and abdomen, and lasted two weeks. With this girdle pain the patient was confined to bed and jaundice set in. This had persisted. From a weight of 116 lb. patient gradually lost 36 lb., but the loss of strength was not as great in proportion as the loss in weight. With the jaundice there was loss of appetite, itching, dullness of the sensorium, many slight chills and once a severe attack with high fever. The stools, which had been dark, became clay-colored. Urine had been scanty and high-colored most of the time since jaundice set in, and the patient had to micturate as often as four times a night. April, 1904, her feet began to swell slightly and later the body. The bowels, irregular and costive before, began to be irregular and loose, moving three to four times in twenty-four hours, and accompanied by pain in the lower abdomen. At present, the patient suffered no longer with headaches, but faint at times, had enjoyed fair appetite until the last few days, was not troubled with belching or heartburn, had some shortness of breath but no cough, occasional palpitation, which, however, antedated the illness in question. Stools watery and cream-colored.

Examination revealed a short, jaundiced woman, with spare body above the waist, prominent abdomen, and slightly edematous lower extremities; pulse 90; temperature 99.2°; respiration 16; sclera bile-tinged; lungs negative; heart apex beat third interspace inside the nipple, and no murmurs. Liver dullness extended from the fifth rib in the mamillary line to four fingers' breadth below the costal margin. Ascites was present and prevented the examination of other abdominal viscera. No tumor was made out, nor tenderness, except near the costal margin on a line between the ninth rib and umbilicus. The circumference of the abdomen at the umbilicus was 96 cm.; urine, high-colored, acid, 1,032; bile present; albumin, slightest possible trace; no sugar; occasional hyaline casts; some small, round, epithelial cells, probably from the kidney; a few abnormal red blood corpuscles; abundance of various forms of large epithelial cells, probably from the bladder, and pus corpuscles. The next day six quarts of ascitic fluid were removed, having a specific gravity of 1,011, and a trace of albumin. The abdomen was now soft and permitted satisfactory palpation. The liver was felt to be hard and smooth for three fingers' breadth below the costal margin on the right, and to reach more than half way to the umbilicus, thence across the epigastrium transversely, where the edge could be easily grasped between fingers and thumb of the same hand. In the epigastrium, slightly to the right of the median line below the liver margin, numerous hard nodular masses, slightly tender and movable, were made out. The liver itself was not tender, but the region of the gall bladder was still markedly so. Spleen was enlarged. The abdomen otherwise was negative.

After carefully considering the hazards of operation, in the presence of jaundice, and more particularly ascites, the patient decided upon operation. Accordingly, through a vertical incision through the right rectus the abdomen was opened. The residual ascitic fluid was removed. Viscera were found congested and, in addition, in the upper right quadrant densely adherent. So far hemorrhage was not extraordinary, but upon separating the adhesions the fresh surfaces bled freely and continuously, in spite of ligatures and the fact that no demonstrable vessels were severed. A hard, cirrhotic liver and several enlarged lymphatic glands were readily found, and a small contracted gall bladder identified. From this stage on further exploration had to be done almost entirely by palpation on account of hemorrhage. A movable stone, the size of an olive, was felt in the common duct, but no evidence of malignant growth was made out. By this time the hemorrhage had become alarming, and had so obscured the field that the attempt to incise the common duct to allow for bile drainage had to be abandoned. The field was packed and the abdominal wound partly closed. Patient left the table showing signs of shock and hemorrhage, and died fourteen hours later from complete exsanguination in spite of calcium chloride, etc.

Shortly after death a partial autopsy was made. The abdominal cavity was found entirely free from clots, although the pelvis contained free blood. The findings at operation were confirmed. The gall bladder was contracted to the size of an olive. The common and hepatic ducts were greatly enlarged. At the junction of the cystic and common ducts was found a cicatricial contraction of cystic duct. In bladder and duct were several small flat concretions. Upon removal of the large stone from the lower end of the common duct the condition of atresia of this duct was discovered. The lower end of the duct was perfectly smooth without a sign of opening into the duodenum and might be likened to the blind finger end of a rubber glove. The bile tract, a portion of the liver, the duodenum and pancreas were removed *en masse*, and examined both macroscopically and microscopically.

Macroscopically, the liver presented the appearance of hypertrophic cirrhosis, but under the microscope the changes of atrophic cirrhosis were present. Macroscopic examination showed atresia of both the common duct and that of Wirsung.

The duct of Santorini could not be found, and there was entire absence of the papilla on the duodenal side. Microscopically, the ductus choledochus, that of Wirsung, the pancreas and duodenum showed chronic inflammatory changes, but no malignant elements. Bile was present in the common duct. The stone was found to be a mulberry calculus, composed almost entirely of cholesterin, with the poles made up, superficially at least, of bile pigment and calcareous salts.

DISCUSSION.

Dr. Charles H. Mayo, of Rochester, Minn., said that he and his brother had done twenty-two hundred operations on the gall bladder and ducts. Of this number there were over six hundred cholecystectomies, and about three hundred operations on the common duct. A few years ago they had a leaning towards the removal of the gall bladder if there was any disease of the mucosa perceptible, while now they were inclined to leave the gall bladder if the cystic duct was open. The operation, however, of the removal of the gall bladder as a secondary operation was not as serious as operations on the common duct which might be necessitated later, after the removal of the gall bladder. They believe that the removal of the gall bladder resulted later in a majority of cases in the distention of the common duct. They have had five cases of the reformation of stones in the common duct, and three of them after the removal of the gall bladder. In all of the series he only recalled two cases in which, after the primary operation of removing gallstones from the gall bladder, stones reformed in that viscus.

Dr. C. H. Wallace, of St. Joseph, Mo., reported the case of a woman upon whom he operated some two years ago for the removal of stones in the gall bladder. The gall badder itself was found in a fairly good condition; the mucosa was not diseased, not very much enlarged and the walls not much thickened. A number of stones were removed and drainage established. Some two or five weeks ago this woman began to have attacks again. In the third or second attack she passed three or four small gallstones. This was a case in which the question arose as to whether in doing a second operation the gall bladder should be removed or drainage again tried. He thought surgeons got the impression from those who did a large amount of gall-bladder surgery that if in a given case there was a healthy gall bladder, with stones in it where the mucous membrane was not diseased, if the stones were removed and the gall bladder drained, the patient could be assured that he or she, as the case might be, would get well. Occasionally, however, such patients returned, and the guarantee of such a prognosis cannot be given now with as much assurance as in former years.

Dr. J. E. Summers, of Omaha, Neb., said that seven or eight years ago he reported a case in which there was a tight stricture at the lower end of the common duct, and also of the cystic duct, the common duct acting as a reservoir. The liver was very much hypertrophied, as was also the spleen. The technic employed was to open the common duct and to make an anastomosis between this and the duodenum. The patient made a nice recovery after a long time. Mayo Robson had also reported one or two of these cases, which Dr. Hancock did not mention in the literature of the subject, and he thought Dr. Wm. J. Mayo had reported one or two others.

Dr. James E. Moore, of Minneapolis, said that within the past six months he had seen two cases of gallstones of great interest. One was the case of Dr. Mayo, and the other a case of his own. Both cases had practically the same symptoms. In his case there were first the ordinary gallstone symptoms. The patient was operated on, the stones removed and the gall bladder drained. Later the patient had a recurrence of symptoms, and at the operation gallstones were found in the gall bladder; the gall bladder was found diseased, and cholecystectomy was performed. The interesting feature about his case and that of Dr. Mayo is that these women are at the present time suffering again from gallstone colic. What should be done? The only hope was that there was a stone or stones in the common duct that might be reached. He had not yet operated upon a case of that kind. He thought, however, it was quite possible that these stones might be in the hepatic duct, because in the case on which he operated and removed the gall bladder, the stones were many, small and soft, looked like millet seeds and evidently came down from the gall bladder at the time. He had the feeling that this woman would surely have trouble sometime in the future. It was only two years since he did the cholecystectomy, and now she was having serious symptoms and very grave attacks, but without jaundice.

Dr. John C. Morfit, of St. Louis, Mo., reported two cases of bowel obstruction due to gallstones which had occurred within sixty days of each other in the last year. A woman of eighty had acute obstruction of the bowel, with finally total obstruction when he saw her. The bowel was obstructed at about 18 inches above the ileo-cecal valve by a stone an inch and a quarter in diameter and an inch and a half long, which evidently came from the gall bladder. She made a very satisfactory immediate operative recovery. Pneumonia, however, developed on the eleventh day and she died on the fifteenth day after operation. A post-mortem examination was not made, but the question arose as to the pathological anatomy in the region of the gall bladder. How did this stone get into the intestine? Did it come through the common duct, or did an inflammatory anastomosis occur between the gall bladder and some portion of the alimentary canal? He believed that there was, as a result of pre-existing inflammation, an ulceration or anastomosis between the gall bladder and duodenum, or possibly some portion of the small intestine.

Within a few weeks thereafter another woman, fifty-six years of age, presented herself wth exactly the same condition. He was able to strike a stone in practically the same situation at once, the stone being of the same size and same consistency. The intestine was opened by a linear incision, the stone liberated, the incision closed and the patient made an uneventful recovery.

THE USE OF HARRINGTON'S SOLUTION IN THE TREATMENT OF SUPPURATIVE INFLAMMATIONS OF THE KNEE JOINT.

Dr. J. E. Summers, of Omaha, Neb., said that it had been proven experimentally and clinically that Harrington's solution would kill all of the common germs met with in surgical practice in from twenty seconds up to one minute, and was not caustic. After thorough washing of the hands in hot soapsuds and then immersing them for two minutes in this solution, if cultures were taken, there should be an entire absence of germs. Even when there was no preliminary washing of the hands before their immersion in the solution for two minutes, the results were remarkable. The author reported an interesting case in which this solution was used, and said that while his experience with Harrington's solution was not great, it can be used very advantageously in infective wounds where it was applicable. After thorough surgical cleansing of a wound or abscess cavity, the solution was allowed to remain in contact with all its surfaces for from three to five minutes; it was then irrigated or sponged away, and the particular wound dressed as required. Any one who would try Harrington's solution would like it. It had, besides its established antiseptic property, the power, when applied to a raw surface, to produce a copious discharge of serum, thus aiding the washing away of noxious elements from the wound.

DISCUSSION.

Dr. Charles H. Mayo emphasized the value of Harrington's solution as an antiseptic and said that it was one of the best and least destructive we had in use for suppurating wounds.

THE REMOVAL OF GALLSTONES IN THE COMMON DUCT THROUGH THE LESSER OMENTUM.

Dr. M. L. Harris, of Chicago, said that the gall bladder and its contained stones might be enucleated without much difficulty, but should the common duct harbor stones, it might be impossible to reach them by the usual route. He did not now refer to those cases in which a stone was lodged in the ampulla of Vater and which could be reached by the transduodenal route, but to those in which the stone was in the upper part of the duct or movable within the duct, and which, owing to the pyloric end of the stomach having been drawn to the right by the adhesions, lay behind this portion of the stomach as well as the duodenum. In two cases of this kind which came under his care, after a somewhat prolonged fruitless effort to reach the common duct in the usual way, he succeeded in reaching and removing the stones by following a new route through the gastro-hepatic or lesser omentum above the pyloric end of the stomach. These two cases he reported in detail. The advantages of this route in these cases were the great saving of time over attempting to work one's way through an almost impossible mass of adhesions, and the lessened dangers of injuring the duodenum or other structure.

REMOVAL OF THE WHOLE OR A PART OF THE HUMERUS.

Dr. E. M. Sala, of Rock Island, Ill., said the removal of the whole or a part of the humerus was a comparatively safe operation and one which should be carefully thought of in all cases where amputations were formerly the first aid to the injured in serious disturbances of the humerus. He thought too many arms had been sacrificed in the past that might have been saved had the surgeon cared to try an extirpation of only the diseased portion of bone. Most any kind of an arm was better than no arm. Before the days of aseptic surgery there possibly was some excuse for amputating anything in the shape of an arm that looked bad, but to-day, with the aid of aseptic and antiseptic methods, we were expected to attempt greater feats in surgery. That it was possible for a whole or a part of the humerus to be extirpated and the patient given a useful hand and forearm, was beyond doubt. One third of the upper end of the humerus might be removed and the patient appear as though nothing had ever happened to the upper extremity except shortening on that side. The whole humerus might be removed without serious disturbance to the hand and wrist, especially if care was exercised in saving the musculo-spiral nerve in its separation from the bone.

Dr. Sala reported two cases operated on some thirteen years ago, bearing on this subject, in which the results of conservative surgery were remarkable.

Dr. Roland Hill, of St. Louis, to show what can be accomplished by conservatism in the treatment of lesions of the humerus, said that almost two weeks ago he presented a case before the St. Louis Medical Society in which the upper part of the humerus was involved, and which was removed. This man had been taken ill in 1892 with a septic condition involving the upper part of the humerus and also the glenoid part of the scapula. In the winter of 1905 he came to the city and Dr. Morfit opened the joint, removed some dead bone from the upper part of the humerus and also from the scapula. The patient returned home at the end of five weeks in a much better condition, but in the summer he began to be septic again. He came to the speaker in July, at which time there was a constant discharge of pus. He opened up the parts freely, removed the head of the bone, cleaned out the cavity thoroughly and packed it. The patient improved very much, went home, but the joint did not heal up. There was a constant discharge, and in March, 1906, the patient came back with the idea of having the arm removed. Dr. Hill made one more effort to save it, opened it up, curretted the diseased tissue and found there was some necrosis at the head of the bone extending down to the medullary cavity, which was removed. He thoroughly dried it and sterilized the parts with carbolic acid and alcohol and then filled the cavity with Moorhof's bone mass. The arm was not dressed again for a week. In about six weeks thereafter healing had taken place. The arm was kept in a sling for four months, at the end of which time patient was able to use it, and had been using it ever since.

Dr. W. D. Haines, of Cincinnati, mentioned a case in which he removed almost the entire humerus from a boy ten years of age, in 1898, who had a number of sinuses along the outer surface of the arm. No attempt was made to save the periosteum; the entire bone was removed down to within two inches of the condyles. The patient has to-day a useful arm. He indorsed this method with reference to primary amputation, and said that amputation, if really necessary, could be done later.

THE SURGICAL TREATMENT OF HALLUX VALGUS, WITH BUNION.

Dr. Charles H. Mayo, of Rochester, Minn., recommended for this condition a curved incision, base down, over the metatarso-phalangeal joint. The bursa of the bunion was preserved and left attached to the base of the first phalanx. The head of the metatarsal bone with the greater part of the bunion was removed. The bursa was turned into the joint in front of the cut end of the bone. Thus was utilized a ready formed bursa to prevent joint fixation, a result which was obtained in other joints with difficulty by turning fatty tissue into a joint to develop such bursa. The general function of the joint was nearly perfect and continued to be so after many years.

EARLY RESTORATION OF FUNCTION AFTER EXCISION OF THE ELBOW IN TUBERCULOUS CASES.

Dr. G. G. Cottam, of Rock Rapids, Ia., related the history of the case of a young farm laborer who suffered from tuberculosis of the capitulum humeri, with ankylosis of the elbow, in which it was very desirable to secure early use of the arm. Excision by Kocher's incision was used, and through this means and by radical modification of the after-treatment from that usually employed, together with the fact that the operation was done before the soft parts were extensively involved, brought about the desired result, the patient being able to do the heavy work of his occupation after the eighth week. The paper concluded with the following summary of the points involved in producing such an outcome: (1) Early operation, that is, as soon as it was certain that the disease was present and not yielding to conservative treatment; (2) choice of a method of operating which preserved the integrity of all the important nerves and muscles; (3) removal of sufficient bone to insure free mobility; (4) immobilization in the extended position, with maintenance of the angle of deflection; (5) active motion at the end of three weeks.

ANESTHESIA FATALITIES IN IOWA.

Dr. L. W. Littig, of Iowa City, Ia., sent a circular letter to 3,500 physicians practising in Iowa. Eight hundred replies were received, many of them containing information which led to reports of fatalities by men who did not reply to his first letter. He had rejected reported chloroform fatalities occurring from two to four days after anesthesia, because he did not think it was possible to secure anything like reliable data in this class of cases. He had rejected other fatalities occurring at the close of a long and difficult operation. He had excluded cases in which he thought that the operation itself was of sufficient magnitude to cause death on the operating table, or soon thereafter. He had excluded obstetric fatalities in which placenta previa or severe hemorrhage complicated delivery. He had excluded cases in which pneumonia or other lung complications followed gall bladder or other abdominal work. The report contained 63 chloroform fatalities. Of these 63 fatalities, 10 occurred in dental practice. One fatality was due to choking during anesthesia. There were 5 fatalities in confinement in which chloroform was used, and in which the reporters blamed the chloroform. There was one confinement fatality in which ether was used and in which the reporter blamed the ether. There was one H. M. C.-ether-chloroform sequence, and one chloroform-ether sequence. There was one late chloroform fatality with jaundice.

The author concluded that (1) chloroform was vastly more dangerous than ether, and especially so in minor work, and at the beginning of administration. The chloroform-ether sequence was especially bad. (2) In the class of work mentioned, chloroform was so much more dangerous than ether that its use should be most emphatically condemned, and that "the surgeon [quoting H. C. Wood, writing sixteen years ago or earlier] is not justified in using chloroform except under certain circumstances and for very definite reasons." (3) Chloroform was especially dangerous in dental work and should not be used; (4) Chloroform was not free from danger in obstetric practice.

(*To be continued.*)

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Book Reviews.

The Correction of Featural Imperfections. By Charles C. Miller, M.D. Published by the author, 70 State St., Chicago. 1907.

This is a clever and suggestive little book, which would be more serviceable if it were provided with a proper index. The author evidently has made a careful study of facial imperfections and has had a considerable experience in their treatment. He discusses the repair of deformed ears, noses and mouths. He tells you how to manufacture dimples, to remove powder marks, "mother's marks" and scars; and he protests vigorously against the use of paraffin injections.

Histological Observations on Sleeping Sickness and Other Trypanosome Infections. By F. W. Mott, M.D., F.R.S. New York: William Wood & Company. 1907.

This report deals largely with a study of the chronic meningo-encephalitis first described by Mott in 1898. He has found it in every case of sleeping sickness examined. It is now generally accepted that this infectious disease is caused by *Trypanosoma Gambiense* which is usually transmitted by the bite of a fly. There are eight colored plates which add greatly to the value of this work.

Electrotherapeutics and the Röntgen Rays. By M. K. Kassabian, M.D. Philadelphia: J. B. Lippincott Co. 1907.

The title of this work is confusing, since it implies an intimate relation between the far-reaching field of Electrotherapeutics and the science and art of true Röntgenology. The author does much to remove such a false impression by keeping each subject distinctly separate in his consideration of both. Electrotherapy is the subject of the first portion of the book. Herein the author resists the tendency to follow the line of least resistance into the realms of so-called allied subjects; actinotherapy, phototherapy, mechanotherapy and the rest. The newer procedures in electrotherapeutics are minutely described, and the subject as a whole receives up-to-date treatment. The chapter on high-frequency discharges, especially, is admirable. The second division deals with the Röntgen rays. The general consideration of them is separated into a section on the Röntgen rays as used for diagnostic purposes, and another on their employment as a therapeutic measure. The author deals thoroughly with the diagnostic side of the art. He relates its history, describes the various forms of apparatus, and minutely considers the principles of technic, clinical applications, and the interpretation of the results obtained. In the portion devoted to Röntgen therapeutics, Kassabian has been careful not to allow his conclusions to be narrowed by optimistic or pessimistic extremes, but has treated the subject fairly, with due regard to the opinions of all authors and authorities. He has tabulated the technical methods of the leading operators with regard to the application and dosage of the Röntgen rays. The table adds to the impression of a spirit of fairness and generous recognition created elsewhere in the book. The author has dealt with the diagnostic application of the Röntgen rays with infinite pains, and, although all operators might not agree fully with certain *minutiæ*, the book, for the points above mentioned, must command respect.

This volume should prove a most valuable book of reference, since it contains simple descriptions of basic principles, of service to the occasional worker, as well as quotations from authorities of great value to the expert.

Movable Kidney, and Other Displacements and Malformations. By DAVID NEWMAN, M.D., F.F.P.S.G., Surgeon to the Glasgow Royal Infirmary, Fellow of the Royal Medical Society of London, etc. London: Longmans, Green & Co. 1907.

This book is an admirable treatise of 224 pages. The author has had a considerable experience in dealing with movable kidney, and has collected the views of other writers.

This reviewer doubts if Newman presents many new or little-regarded facts, but one commends the book for its conciseness and satisfactory presentation of a somewhat difficult subject. The author makes a sharp distinction, as he should do, between "Movable Kidney" and "Floating Kidney"; he devotes two important chapters to the characteristics of these abnormal kidneys, and to the causation of renal motility. He regards movable kidney as in itself an entity, rather than as part commonly of a general abdominal ptosis, — a point of view from which many clinicians will dissent; he recognizes the value of abdominal supporters, but favors, perhaps unduly, operations for kidney fixation, and he dwells perhaps too little upon the frequency of failure of operations to relieve symptoms. The last chapter in the book is an attractive little essay by itself upon "a very interesting class of cases which have long been regarded as merely pathological or anatomical curiosities, but now that operations upon the kidney are of daily occurrence, it is shown that the surgeon must make himself acquainted with all renal abnormalities."

A Text-Book of Minor Surgery. By EDWARD MILTON FOOTE, A.M., M.D., Instructor in Surgery, College of Physicians and Surgeons; visiting surgeon, New York Hospital; formerly chief in surgery at the Vanderbilt Clinic. Illustrated by 407 engravings from original drawings and photographs. New York and London: D. Appleton & Co. 1908.

It is many years since a satisfactory treatise on Minor Surgery has been presented to the profession. Students have sighed for such a book. General practitioners have stood sadly in need of it. Here is a volume of 750 pages which purposes, and with good show of reason, to meet a genuine want. While we may not agree in every respect with the countless details which the author gives for the treatment of minor surgical ailments, we must constantly admire his candor, his resourcefulness and the general excellence of his methods.

It is difficult for the writer on minor surgery to avoid trenching upon the field of major surgery. This author has not escaped the error, if it be an error, for we read in his book on minor surgery, of fracture of the skull, otitis media, suppuration of the antrum of Highmore, actinomycosis, cancer of the tonsil, cleft palate, wryneck, tumors of the bladder, etc., through a long list. Perhaps it was necessary to dwell upon these major affections that the student might be instructed how they are not minor, but the candid reviewer must feel that considerations of major surgery in this book serve only to add needless bulk to the volume. The book is an excellent book, however. Its discussion of lesions is straightforward and practical; its illustrations are instructive, if not beautiful; its points on diagnosis are admirable, and its elaborate review of treatment is, as it should be, the crowning and important feature. Cordially we commend this volume in spite of its astounding dedication, — "This book is dedicated to The Man at the Point of the Knife."

Chemical Pathology. Being a discussion of general pathology from the standpoint of the chemical processes involved. By H. GIDEON WELLS, Ph.D., M.D. Philadelphia: W. B. Saunders Company. 1907.

"We are apt to think it the finest era of the world," says George Eliot in "Middlemarch" "when America was beginning to be discovered, when a bold sailor, even if he were wrecked, might alight on a new kingdom; and about 1829, the dark territories of Pathology were a fine America for a spirited young adventurer." No one can read this notable work of Dr. Wells, without realizing that there was never a more inspiring time for observers and investigators than the present. Within the past ten years the domain of medical science has been extended by the discovery of large and rich territories still unexplored in the region of physiological and chemical pathology. The author states in the preface that "pathologists have come to feel that the opportunities for the acquirement of knowledge by means of morphological studies have become reduced to a minimum, while the fields of pathological physiology and chemistry lie still almost unexplored." This admirable book will be a most useful guide to any "spirited young adventurer" who may seek new knowledge in this large domain.

The subjects presented are of fundamental importance to all students of clinical medicine as well as to pathologists and physiologists.

The first hundred pages are devoted to the chemistry and physics of the cell and to enzymes. The chemistry of immunity is treated at some length, and inflammation is considered from the chemical point of view. There are excellent chapters on the pathology of metabolism.

The section on gastro-intestinal putrefaction is rather unsatisfactory, possibly because in this dark region facts are few and fancies numerous. We are glad that the author confines himself to the facts.

The value of the work is greatly enhanced by the addition of many references.

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NEUROLOGICAL HOSPITALS AND WARDS.

In our issue of Dec. 19, we made note of the fact that at the suggestion of New York neurologists and through the energy of the Hon. Robert W. Hibbard, administrator of public charities of the city, a neurological hospital, said to be the first of its sort in the United States, has been established at Blackwell's Island. The institution is to be known as the Hospital for Nervous Disease of New York City, and has been provided with a capacity for two hundred and fifty beds, with the immediate prospect of one hundred more. This is so significant a step in hospital development in this country that we are unwilling to allow it to pass with the brief mention we have already made.

Neurology has both gained and lost much from its close affiliation with general internal medicine. Its relation to the body of practical medical knowledge is too intimate to permit the term "specialty" to be applied to it in the narrow sense. The practitioner of internal medicine cannot neglect the nervous system in the daily routine of his work, and in spite of the fact that many special students of neurology have developed in our larger centers of population, there has been no adequate recognition of their claims to representation on the staffs of our hospitals. The broadening effect of regarding diseases of the nervous system as an integral part of internal medicine, as they are, is offset by the conservatism which declines to permit the neurologist to control beds on the same basis as other practitioners of internal medicine. The result, we believe, has been unfortunate, both for internal medicine, surgery and neurology. Patients suffering from nervous diseases are tolerated, not encouraged, in general hospital wards in this country, except in those somewhat rare instances in which the attending physician happens also to be a special student of the subject. The enthusiasm essential to investigation is lacking, and very naturally no significant neurological results come from our general hospital wards. The neurologists are relegated to out-patient departments, in which admirable work may be and has been done, but in which many of the problems now confronting the neurologist can by no possibility be adequately met. The ophthalmologists and aurists, the gynecologists, orthopedists, the pediatricians and dermatologists — all have control of independent hospitals or wards in general hospitals, whereas the few patients with diseases of the nervous system who, from time to time, gain admission to the general wards, are attended by men who make no pretension of deep interest in the subject. The system of consultation by members of the neurological staff is manifestly inadequate to the demands of the situation. At present, in this city, of the thousand or more beds in general hospitals available for the sick, only two are allotted to diseases of the nervous system under the direction of neurologists, excepting those at the almshouse hospital at Long Island, where necessity alone determines admissions. The same general condition of affairs exists in other large cities.

One of the most pressing needs of the immediate future we believe to be a more definite recognition of the hospital needs of persons suffering from diseases of the nervous system, and of the possibility of useful scientific work, could a certain number of such patients be studied in hospital wards. That the need is coming definitely to be recognized is shown by the establishment of a neurological hospital in New York, by the continued success of a ward in the Albany hospital and by the recent establishment in the Toronto General Hospital of wards for patients suffering from nervous disease.

The first annual report of this latter undertaking is in our hands and affords most interesting and suggestive reading. The original design of these wards was for the treatment and instruction in all functional neuroses, with particular reference to those in which the possibility of mental alienation existed. The wards were not established for the treatment of the insane, but for that large group of persons who are now denied observation in general hospitals in spite of the fact that their treatment at such institutions offers great hope of results. Since the opening of these wards in May, 1906, 100 patients have been admitted, 24 for observation and 76 for treatment. The results of treatment — 26 having been discharged recovered, 35 improved and a considerable number transferred — are certainly most gratifying and encouraging for the future. We are glad to call attention to this venture at the Toronto hospital, which, young as it is, can no longer be called an experiment. It is not to be questioned that the general interest which the hitherto much neglected neuroses are now receiving is likely to find recognition in a more liberal attitude among hospital authorities toward the reception of these patients. We have no hesitation in saying that with our present knowledge of treatment a large number of sufferers from these disorders could be relieved and returned to lives of usefulness who now become a burden to themselves, their families and, ultimately, to the community.

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THE MULTIPLICATION OF STATE BOARDS OF REGISTRATION.

It is evident that the legislature is being overburdened with demands for special boards of registration, and that this tendency is, on the whole, increasing. The legal sanction given to bodies of men or women who have some special object to gain is naturally a strong temptation on their part for the pressing of such legislation. It is manifest, on the one hand, that we require certain boards of registration as a public protection and in order that the public may have definite knowledge of the standard demanded of those having to do with the public welfare. The danger, on the other hand, lies in the multiplication of such registering boards and in the sanction which they naturally give to relatively small interests. It is always unadvisable to complicate the machinery of legislation, and anything which leads unnecessarily in this direction should be regarded with suspicion.

At this session of the Massachusetts Legislature, at least three new boards of registration have been urged by their several advocates. We refer to the bill for the registration of nurses, for which many arguments may be urged, but which, on the whole, we believe is not necessary, particularly if it demands the establishment of an entirely separate board. The second bill, argued before the Legislative Committee on Public Health last week, relates to the registration of optometrists. This bill we have opposed as a type of demand which evidently opens the way to much abuse. If optometrists are to be registered, why not register the makers of trusses or other persons engaged in the mechanical applications of medical principles,—a manifest absurdity? The third bill to which we refer has appeared many times in varying form within the past few years. It asks that osteopathists be registered, implying that this form of practice may now pass as a special school of medicine. On this ground the osteopaths are asking that the law relative to registration in medicine shall be so amended that this board shall consist of nine persons instead of seven as at present constituted, whereby, although the wording of the bill is not clear on this point, it is fair to assume that we may later expect a demand for actual representation on the board. As we have repeatedly urged in these columns, osteopathy as a system of treatment can by no possibility be placed on the same plane as medicine, and, this being the case, to ask for representation on a board of registration in medicine again opens the door to a somewhat impossible situation. If, for example, the osteopaths are granted this recognition, there is nothing to prevent various other groups of persons, who claim special knowledge and use a special name, from demanding like privileges. This would mean either an increase in the number of boards of registration, which is unadvisable, or an unwieldy enlargement of the present board, as the osteopathists now petition. It is not our present purpose to discuss the merits or defects of the osteopathic system, but that its claims are beyond its accomplishment is not open to question. It stands on the same general plane as any other special variety of treatment, and as such demands neither more nor less recognition.

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THE STUDY OF INEBRIETY.

The public has for many years been watching with interest the efforts made by the Massachusetts Hospital for Inebriates at Foxboro toward a solution of the drink problem. The recent vicissitudes through which this institution has passed are well known. There is reason to hope that under the new *régime* now about to be inaugurated results of positive significance will be attained, and we shall look forward with interest to the efforts in this direction. It has recently been announced that Dr. Irwin H. Neff, formerly assistant physician at the Eastern Michigan Asylum, at Pontiac, Mich., has accepted the superintendency of the hospital. Dr. Neff is still young, the son of a physician, and a native of Maryland. While at the Johns Hopkins Medical School, of which he is a graduate, he devoted particular attention to neurology. His subsequent career, first in the State Asylum at Kalamazoo and later at Pontiac, should prove a most valuable training for the difficult work he is now about to undertake. It is not to be doubted that he will approach the problem in the modern spirit of research, and that the questions at issue will be faced intelligently and with the advantages of a thorough neurological training.

MEDICAL NOTES.

Smallpox in New Brunswick. — It is announced that smallpox has appeared in Albert County, New Brunswick. A possible danger to Boston lies in the fact that a large number of persons are daily coming from St. John through Bangor and Portland to Boston, many of whom are unvaccinated. It is probable that a medical inspector will be stationed on the border for the purpose of investigating all trains coming from New Brunswick.

Death of Dr. Johannes F. A. Von Esmarch. — The death is announced of Dr. Johannes F. A. Von Esmarch, professor of surgery at the University of Kiel, at Berlin, Feb. 23. Through the death of Dr. Esmarch a distinguished career is brought to an end. Born in 1823, he had held the professorship of surgery at the University of Kiel since 1859. During the Austrian war he held important positions in the hospitals in Berlin and served as surgeon-general during the Franco-German War. In 1872 he married Princess Henrietta of Schleswig-Holstein. His contributions to surgical knowledge were many and important, and through his death German surgery loses one of its oldest and most respected representatives.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 26, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 51, scarlatina 82, typhoid fever 7, measles 131, tuberculosis 55, smallpox 0.

The death-rate of the reported deaths for the week ending Feb. 26, 1908, was 18.48.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Feb. 22, 1908, was 218, against 225 the corresponding week of last year, showing a decrease of 7 deaths and making the death-rate for the week 18.65. Of this number 103 were males and 115 were females; 213 were white and 5 colored; 135 were born in the United States, 79 in foreign countries and 4 unknown; 52 were of American parentage, 143 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 47 cases and 4 deaths; scarlatina, 88 cases and 3 deaths; typhoid fever, 8 cases and 0 deaths; measles, 121 cases and 0 deaths; tuberculosis, 48 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 40, whooping cough 2, heart disease 20, bronchitis 8 and marasmus 3. There were 10 deaths from violent causes. The number of children who died under one year was 42; the number under five years 61. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 67.

There were 2 cases of cerebrospinal meningitis, reported during the week. No deaths.

Dinner of Somerville Medical Society. — At a largely attended dinner of the Somerville Medical Society, recently held in Boston, the following officers were chosen: President, Dr. Charles L. Maguire; Vice-President, Dr. W. L. Bond; Secretary-Treasurer, Dr. I. E. Stowe. Dr. Richard C. Cabot spoke on "Psychotherapeutics."

Instructive District Nursing Association. — At the twenty-second annual meeting of the Instructive District Nursing Association, held at the Hotel Vendome, Boston, Feb. 26, two of the nurses spoke on the character of the work which the association is doing. Addresses were made by President Charles W. Eliot, of Harvard, and Dr. Richard C. Cabot.

The Oyster. — The announcement has been made in the public press of the formation of an association known as The National Association of Oyster Growers and Dealers, having for its object, it is stated, "to prove the purity of the oyster as a food."

The oyster is highly prized as an article of food, and the oyster business is conducted in Connecticut on an extensive scale, employing large capital and many hands, so that its promotion and protection should be encouraged. It is not the general belief of physicians and scientists that oysters are a common cause of typhoid fever but that they have been the cause of several epidemics has been abundantly proven. Nearly all the oysters raised in this state are grown offshore, in the deep water of Long Island Sound, where they are probably free from danger of contamination. It is only when a few days before marketing they are brought in and placed on submerged rafts called floats, in the brackish water at the mouths of rivers or in harbors which are polluted by sewage, that they become a source of danger to public health when eaten raw. This process is called the floating or "fattening" of oysters, whereby they absorb large quantities of the fresher water, giving them a whiter and plumper appearance. but does not in any way increase their nutritive value. Not all oysters are floated, and many of the larger dealers have discontinued the practice altogether, but it is still done to some extent. It is not only a dangerous practice, but it hurts the good name of the oyster. The State Board of Health, a few years ago, placed itself on record as condemning the practice and urged its discontinuance with the oyster growers. This newly-formed association can in no better way prove the purity of the oyster than to show the public that the floating or "fattening" of oysters in sewage-polluted water has been stopped. — *Bulletin of the Connecticut State Board of Health.*

NEW YORK.

Hospital Benefactions. — By a special performance of "Aïda," at the Metropolitan Opera House, on Feb. 11, nearly $12,000 was raised for the French Hospital (*Société Française de Bienfaisance*) on West 34th Street. On the same day a triple entertainment, consisting of a luncheon at Sherry's, a matinée performance at the New Amsterdam theater, and tea afterwards at the new Plaza Hotel, was given in aid of the Nassau Hospital at Mineola, Long Island, and more than $5,000 was realized for the institution.

The American Museum of Natural History. — At the thirty-ninth annual meeting of the board of trustees of the American Museum of Natural History, held on Feb. 10, Henry Fairfield Osborn, Ph.D., one of the vice-presidents of the institution, was elected president, in place of the late Morris K. Jesup. Dr. Osborn, who is Da Costa professor of zoölogy in Columbia University, and the paleontologist of the United States geological survey, a few months ago declined the directorship of the Smithsonian Institution at Washington, which had been offered him. The annual report showed that, exclusive of the $1,000,000 bequest of Mr. Jesup, which will be added during the year, the endowment fund is now $1,047,750. With the opening of the new wing, now in process of erection, the American Museum will become the largest museum of science in the world.

Problems of Tuberculosis. — A decided innovation was introduced at the Third Presbyterian Church in Rochester on Sunday, Feb. 9, when, by invitation, Dr. William S. Ely, one of the leading physicians of the city, made, during the principal service of the day, an address on "Problems of Tuberculosis." In opening, Dr. Ely stated that the action of the church in inviting a layman to address the congregation on a partly secular subject was most significant. "It has never been done before in Rochester — never, to my knowledge, in America," said he. "This move is one of the initial steps in a moral revolution which will bring the church, as a whole, to recognize the fact that the quelling of this plague is a moral and ethical question, instead of a purely medical one." The church service calendars of the day contained an appeal in behalf of the tuberculosis work of the Charity Organization Society.

Appointment of Dr. V. A. Moore. — At a meeting held in Ithaca, on Feb. 22, the trustees of Cornell University appointed Dr. Verenus A. Moore, well known for his work in connection with bovine tuberculosis, director of the New York State College of Veterinarians, to succeed Dr. James Law, who has occupied that position for the past forty years. Dr. Moore, however, is not to assume his new duties until September next.

Verdicts for Personal Injuries. — Among other awards recently given in the New Jersey and New York courts for personal injuries are the following: Complete aphasia, with paralysis of the right side of the body, $50,000; loss of one leg, young society woman, $35,000; loss of one leg, mechanic with family to support, $10,000; thumb of young woman stenographer and typewriter, $8,500; life of two-year-old child, $150 for funeral expenses. It would appear that very little sentiment enters into the matter, the amount of damages being placed at the "market value" of the loss sustained. In the last instance given, Justice Black, in Paterson, N. J., cited a prior decision by Chief Justice Gummere in a similar case, to the effect that the plaintiff (the child's father) was entitled to damages only for the actual pecuniary loss involved. The argument, in plain language, was that in the case of a young child the article was not marketable. Nobody had any use for it except its parents, while to them it was a source of expense for food, lodging, clothing and education, instead of yielding a financial return. But, as the child's death brought upon the parents an immediate extraordinary expense for its burial, and the judge decided that $150 would be a suitable sum for the purpose, the persons held responsible for its death were ordered to pay that amount.

Vital Statistics for 1907. — In the bulletin of the State Department of Health for the month of January, which has just been issued, the vital statistics of the state for 1907 are given. During the year, 147,442 deaths were reported, giving, upon an estimated population of 8,386,675, a death-rate of 17.5, as against 17.1 in 1906, and an average of 17.2 for the past five years. The deaths from typhoid fever (1,668) were increased by 100 over those of last year, and by 117 over the five years' average. It is believed that to this disease most of the 136 attributed to malarial infection must be ascribed, as the latter is an unusual cause of death in this climate. The deaths from scarlet fever numbered 995, as against 690 in 1906 and 976 for the five years' average. The mortality from diphtheria was 100 in excess of last year, but 184 less than the five years' average. The deaths from measles numbered 995, as against 1,369 in 1906 and 1,035 for the five years' average. The most marked reduction in mortality was in that from cerebrospinal meningitis, the number of deaths from which was only 225, as against 1,178 in 1906. Pulmonary tuberculosis caused 14,406 deaths; 379 more than in 1906 and 802 more than the five years' average. The deaths from cancer also show an increase; 6,400 as against 6,168 in 1906 and 5,673 for the five years' average. Fourteen thousand four hundred and sixty-eight deaths were attributed to diseases of the nervous system, and 16,893 to diseases of the circulatory system, an increase over 1906 of 947 and 1,498, respectively. Deaths classified as due to pneumonia decreased from 15,333 in 1906 to 10,990 in 1907; on the other hand, other respiratory diseases added greatly to the mortality, causing 11,631 deaths, as against 4,663 in 1906. The deaths from Bright's disease increased to 9,211, from 8,984 in 1906, while deaths from violence or external causes increased to 9,625, from 8,874 in 1906. The average city death-rate is shown to be 16.7, or 80 points less than the general death-rate of the state. Cohoes has the highest resident city death-rate, and other cities having a higher rate than New York (19.3) are Poughkeepsie, Newburgh, Utica and Watertown. Jamestown has the lowest death-rate, 11.6, and other cities with a rate under 14 are Cortland, Fulton, Hornell, Tonawanda, Olean and Plattsburgh. The births registered during 1907 numbered 195,735, giving an annual birth-rate of 23.3, as against 22.2 in 1906. The average city birth-rate is 20.8. The highest is in Dunkirk, 35.9, the next highest in Schenectady, 31.6, and the third in New York, 29.3. The very low birth-rate in Albany (13) and Troy (13.1) is attributed to improper registration.

Current Literature.

New York Medical Journal.

Jan. 25, 1908.

1. Williams, L. R. *The Value of the Social Worker and the Visiting Nurse to the Dispensary Patient.*
2. Peck, C. H. *Cholelithiasis.*
3. *Stillman, C. *Post-delirious Alcoholic Stupor.*
4. Karpas, M. J. *General Paralysis in the Senile Period with a Report of Two Cases, Including Post-Mortem Examiation.*
5. Murray, D. H. *Secondary Hemorrhage Nine Days after Hemorrhoidal Operation. Sciatica Complications.*
6. Jennings, W. B. *Delayed Labor.*
7. Beardsley, J. G. *A Unique Case of Infectious Orchitis.*
8. Bierhoff, F. *Report of a Case of Hysterical Retention of Urine, Complicated by Foreign Body.*

3. Stillman describes the peculiar stupor that sometimes follows alcoholic delirium. Pathologically, edema of the meninges occurs with surprising regularity in these cases. However, inasmuch as considerable degrees of serous effusion of the meninges are found post-mortem in cases that during life have given no special symptoms, the writer believes that the causation of the edema had probably better be looked for among the general conditions underlying the stupor. He reports a series of 98 cases, or about 1% of the total number of cases admitted to the alcoholic wards of the Bellevue Hospital. Approximately 80% died. Exhaustion was the cause of death in many cases. The constant features in addition to the stupor are muscular rigidity, stiff neck and hyperesthesia. The temperature is very slightly elevated. There may be considerable difficulty in the differential diagnosis from tuberculous meningitis. Treatment consists of forced feeding combined with stimulation. Citrate of caffeine in 5 gr. doses is spoken of highly.

[R. I. L.]

The Journal of the American Medical Association.

Jan. 25, 1908.

1. Haggard, W. D. *Factors Which Influence the Permanence of Cure in Operations for Cancer of the Breast.*
2. Hacker, C. W. L. *The Appearance of Glycuronic Acid in Certain Conditions of Diminished Oxidation.*
3. Thrush, M. C. *Plea for a More Thorough Course in Practical Pharmacy and Prescription Dispensing in Our Medical Schools.*
4. *Smithies, F., and Walker, R. E. *Calmette's Ocular Reaction to Tuberculin.*
5. Bogue, E. A. *Some Results from Orthodontia on the Deciduous Teeth.*
6. Bryant, W. S. *The Mutual Development of Upper Air Tract, Jaws, Teeth and Face, and Their Economic Importance to the Human Race.*

4. Smithies and Walker present cumulative data of the value of Calmette's ophthalmic reaction to tuberculin. They used tablets of dried tuberculin of a given strength

dissolved in salt solution. Of 185 cases clinically tuberculous, 176 gave a positive reaction. Of 28 cases doubtfully tuberculous, 21 gave positive reactions and seven negative. Of 188 persons, clinically not tuberculous, only 2 were positive.

[R. I. L.]

The American Journal of the Medical Sciences.
January, 1908.

1. *Tyson, J. *The Diagnosis and Treatment of Cardio-Vascular-Renal Disease.*
2. *Thompson, W. G. *The Treatment of Pneumonia, Especially by Outdoor Air.*
3. *Lambert, S. W. *The Lenhartz Treatment of Gastric Ulcer.*
4. *Cheney, W. F. *The Diagnosis and Treatment of the Gastric Neuroses.*
5. *Deaver, J. B. *The Diagnosis and Treatment of Infections of the Biliary Passages, with Special Reference to Cholelithiasis and Cholecystitis.*
6. Neilson, T. R. *Rupture of the Kidney, with Remarks upon Conservative Treatment.*
7. *Schley, W. S. *Aspiration Drainage in the Treatment of Empyema.*
8. Hunter, J. W. *The Röntgen-ray Treatment of Hypertrophied Prostate.*
9. Putnam, J. J. *The Treatment of Psychasthenia from the Standpoint of the Social Consciousness.*
10. Clark, L. P. *The Curability of a Rare Form of Nocturnal Petit Mal by the Use of Large Doses of Bromide.*
11. MacNider, W. de B. *The Action of the Nitrites on the Heart.*
12. Ellett, E. C. *Otitis Media and Its Treatment.*

1. Tyson calls attention to the frequent association of arteriosclerosis and cardiac hypertrophy with renal disease, and cites evidence that the arteriosclerosis as well as the cardiac hypertrophy may often be secondary to primary renal sclerosis. He also speaks of the points of resemblance between primary renal disease with secondary cardiac disorder and primary heart disease with passive congestion of the kidney. Primary heart disease may be detected by the presence of murmurs, or in the absence of these by the prominence of dyspnea and other cardiac symptoms. Primary renal disease is to be suspected from the presence of accentuation of the aortic second sound and from an increased blood pressure. The prognosis in primary renal disease is much less favorable than in the primary cardiac condition. The treatment in the rénal disease comprises diet (largely milk, cereals and vegetables); treatment of syphilis, diabetes or gout if present; sodium iodide in small doses three times a day; cardiac sedatives rather than digitalis if the heart action is excessive [other authors dispute this]; general massage. In cardiac diseases, on the other hand, rest in bed is to be enforced, with restriction of liquids; diuretics of the theobromin class, which are useless in primary renal disease, are here of service. In renal cases with anasarca digitalis and strophanthus, apocynum cannabinum and purgation are indicated. The chloride retention theory is mentioned and the limitation of salt in the food when uremia threatens is suggested.

2. Thompson's article is an enthusiastic but somewhat disconnected description of the outdoor air treatment of pneumonia, as conducted at the Presbyterian Hospital, New York. It is shown that indoor air is often heated to 300° to 400° before it reaches a hospital ward, and that especially after visiting hours carbonic acid is present in excessive amounts. The author has been deeply impressed with the benefit resulting from the outdoor treatment, both in relieving symptoms and in favorably influencing the final outcome of the cases.

3. Lambert has used the Lenhartz treatment in 8 cases with such favorable results that he urges for it a more general recognition. The method was first published in 1904, but still the older plan of starvation and rectal feeding holds its pre-eminence. The Lenhartz treatment aims first to improve the patient's nutrition and general condition so as to favor the healing of the ulcer, second to prevent distention of the stomach by careful limitation of ingesta, and third to prevent action of the gastric juice upon the stomach by furnishing food albumin and by giving bismuth subnitrate. These aims are carried out as follows: feeding by mouth is continued, using concentrated foods rich in albumin, given in small amounts every hour. Thorough mastication and slow eating are emphasized: the patient *being fed* by teaspoonful amounts at each mouthful, never being allowed to feed himself in the two weeks' period. A three to four weeks' rest cure in bed is insisted upon. An ice-bag to the epigastrium, bismuth subnitrate internally, and iron for anemia may be given. The diet consists mainly of iced milk, raw eggs beaten and iced, and mixtures of the two. Later sugar is added to the eggs, and still later scraped beef, boiled rice, zwiebach, chopped chicken and butter are allowed, one by one. The duration of this diet is ordinarily two weeks. It is concluded that this method of treatment is less depleting to the patient than the older method, and that the cure is both more rapid and more certain. Bleeding and vomiting stop more quickly and relapse occurs less frequently. Pain ceases promptly although the patient receives a sufficient food supply throughout.

4. Cheney bases his article upon an analysis of 574 cases with symptoms referred to the stomach, seen in the Medical Clinic of the Cooper Medical College, San Francisco. Of these cases 375 were diagnosticated as gastric neuroses because of lack of evidence of organic disease after thorough examination, including in most cases that of stomach contents. The etiology, found mostly in the environment and the habits of the patient, is discussed. Treatment is outlined with special emphasis upon correction of whatever fault in the daily life of the patient has been most active in causing the disorder.

5. Deaver reports 217 cases of gall-bladder surgery, with analysis of findings with reference to etiology, pathology, symptoms and results. The symptomatology and diagnosis are discussed in light of the occurrence of symptoms and signs present in these cases. In treatment it is concluded that operation is indicated by the following conditions: repeated attacks of colic; hydrops of the gall bladder; stone in the common duct; and any of the complications, especially the acute infections. The total mortality was 13.8%; this is not to be considered high in view of the large proportion of complications found, and the unfavorable condition of many of the patients previous to operation. The contra-indications to surgical treatment are summarized as follows: organic lesions of heart, lungs or kidneys; extreme age; anemia or slow coagulability of the blood; and cholemia.

7. Schley describes his method of establishing aspiration drainage in empyema, used by him in 8 cases with favorable result. The technic of its application is clearly shown by illustrations.

[F. W. P.]

The Lancet.
Feb. 1, 1908.

1. Lucas, R. C. *Address on Inherited Syphilis.*
2. Low, G. C. *Unequal Distribution of Filariasis in the Tropics.*
3. Eddowes, A., and Hare, J. G. *Case of Severe Ecthyma from which the Diphtheria Bacillus has been Isolated.*
4. *Sawyer, J. E. H. *Value of Cytodiagnosis in Practical Medicine.*
5. *Cunningham, H. H. B. *Acid Intoxication Following Ethyl-Chloride Anesthesia.*
6. Moullin, C. W. M. *Note on the Development of Secondary Nodules in Suture Scars after Operations for the Removal of Cancer.*
7. Burgess, A. H. *Two Cases of Uretero-pyeloplasty.*
8. Adams, J. *Severe Spasmodic Contraction of a Finger Cured by Stretching the Median Nerve.*

4. Sawyer concludes from cytological examination of serous effusions and cerebrospinal fluids, that those of tuberculous origin contain a large percentage of small lymphocytes, in his series from 59% to 100%. Effusions of acute inflammatory origin contain a large percentage of polymorphonuclear cells, ranging from 64% to 97%. Mechanical effusions contain chiefly endothelial cells, the highest count being 98%. Effusions due to malignant disease can rarely be diagnosed by cytological methods alone, but when such a condition is suspected to be present the predominance of endothelial cells would greatly sup-

port that view. His paper presents nothing new, and has been previously covered by the work of Musgrave and others.

5. Cunningham gives the details of a case of acid-intoxication following ethyl-chloride anesthesia. The urine contained diacetic acid. On treatment with sodium bicarbonate the child recovered.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 52. Dec. 26, 1907.

1. *Fischer, W., and Meier, G., *The Clinical Value of the Serum Diagnosis in Syphilis.*
2. Curschmann, H. *Goldscheider's Threshold Percussion.*
3. Sehrwald. *The Diagnosis of Diaphragmatic Pleurisy.*
4. Mosse, M. *Polycythemia with Urabilin Jaundice and Enlargement of the Spleen.*
5. *Elsner, H. *Esophagoscopy for Cancer of Esophagus and Cardia.*
6. Voigt. *Late Post-operative Ileus.*
7. Bittner, F. *Klopp's Method of Treating Scoliosis.*
8. Laser, H. *Adenoids and Deafness in School Children.*
9. *Ziemann, H. *Rarity of Progressive Paralysis and Tabes Dorsalis among Uncivilized Colored Races.*
10. Samuel, M. *A New Breast Bandage.*

1. Fischer and Meier used the serum diagnosis for syphilis on 114 cases in their wards, and found it positive in 84%. No case not clinically proven syphilis gave the reaction. They regard negative findings as not conclusive, and were unable to detect any influence on the reaction from specific treatment. The reaction only shows the presence of syphilis, and gives no information as to the organs affected.

5. Elsner's experience convinces him that cancer of the esophagus, even in early stages, can be readily diagnosed by the history and sounding, but that it is very difficult to diagnose cancer of the cardia in an early stage. Esophagoscopy therefore is extremely valuable in this latter condition as an aid to diagnosis, but it has no therapeutic application.

9. Ziemann has lived for some years in West Africa, and has also been stationed in the West Indies and Venezuela. Syphilis is very prevalent, estimated as high as 50% of the total population among the aborigines of these regions. In his experience he has been impressed with the rarity with which tabes dorsalis and progressive paralysis are met with among the natives. Simple dementia precox is almost the only form of insanity to be found among the native Africans; arteriosclerosis seems rarer among the uncivilized. He concludes that perhaps the rarity of progressive paralysis and tabes may be due to the less strenuous life in the tropics.

[L. G. M.]

Münchener Medizinische Wochenschrift. No. 53. Dec. 31, 1907.

1. Wiens. *The "Antiferment Reaction" of the Blood and its Relation to its Opsonic Power in Acute Infections.*
2. Cramer, H. *Results of the Withdrawal of Salt in the Edema of Pregnancy.*
3. Fischer, P., and Hoppe, J. *The Action of Pancreon.*
4. Vörner, H. *The Alternate Development of Purpura Rheumatica and Erythema Exsudativa Multiforme.*
5. Brassert, H. *Lesion of the Ulnar Nerve Appearing a Considerable Period after Injury.*
6. Fischer, W. *The Prognosis as to Injury to the Gut, after Swallowing Foreign Bodies.*
7. Knauer, G. *A Case of Extra Genital Infection in Lues.*
8. Günzberger, *Pruritus in Tabes.*
9. Gloeckner, H. *New Metheds of Obstetrical Teaching.*
10. Lennhoff, G. *Packing the Nose and Nasopharynx.*
11. Rath. *Narcosis with Warmed Chloroform.*

Berliner Klinische Wochenschrift. No. 52. Dec. 30, 1907.

1. Rosenfeld, G. *The Oxidation of Sugar.*
2. *Biedert. *Influenza Due to the Micrococcus Catarrhalis, followed by Cardiac Arrythmia.*
3. *Schultz, W. *Experiences with the Anti-meningococcus Serum in Cerebrospinal Meningitis.*
4. Hirschfeld, H. *The Symptomatology of Brain Tumor.*
5. Hamm. *A Case of Otitis Externa Diffusa Fetida in a Telephone Operator.*
6. Grünwald, L. *Suboccipital Inflammations.* (Concluded.)

2. Biedert reports the results of careful observations on himself during the course of an acute influenzal infection. The etiological factor was the micrococcus catarrhalis of R. Pfeiffer, which was recovered from nose, throat and circulating blood. No influenza bacilli were at any time demonstrable. The cocci disappeared from nose and blood stream after the use of pyocyanase, administered as a nasal spray. During the course of the disease a marked arrythmia set in, considered as of infectious origin, which was finally influenced by quinine.

3. Schultz treated 23 out of 64 cases of epidemic cerebrospinal meningitis with anti-meningococcus serum (prepared after the manner of Wassermann). His results were not particularly encouraging, as the mortality of the cases treated with the serum was 56.5%, whereas the mortality in the untreated cases was 53.7%. No influence on the fever was noted.

[R. D.]

Zeitschrift für Klinische Medizin. Bd. 64. Heft 1 and 2.

1. *v. Leyden, E., and Bassenge, L. *Asymmetrical Contraction of the Two Ventricles of the Heart.*
2. *Kernig, W. *Flexion Contracture of the Knee Joints in Meningitis (Kernig's Sign).*
3. Pawinski, J. *The Origin and Clinical Meaning of Gallop Rhythm of the Heart.*
4. Joachim, G. *The Relations of the Left Auricle in Disturbances of the Cardiac Conduction System.*
5. *Aron, E. *The Mechanics of Pulmonary Emphysema and Bronchiectasis.*
6. Herzfeld, E. *The Influence of the Molecular Concentration of Effusions on Their Resorption.*
7. *Steinitz, E. *Experience in the Treatment of Acute Rheumatism with Passive Hyperemia.*
8. *Solms, E. *A New Method for the Quantitative Determination of Pepsin and its Clinical Application.*
9. Arneth, J. *The Neutrophilic Cells of the Blood in Infectious Diseases. A Reply to Bourmoff and Brugsch.*
10. *Bergell, P., and Lewin, C. *The Pathogenesis and Specific Degeneration of Cancers.*

1. v. Leyden in 1863 described in a case report tracings from the carotid pulse and precordial region, which he interpreted as evidence for the occurrence of asymmetrical contraction in the two ventricles. Later he had two similar cases, and now with Bassenge reports another, making a total of four. The tracings show two contractions over the cardiac region corresponding to which there is only one pulsation recorded in the carotid. This condition is explained by assuming that with one pulsation both ventricles contract and so a pulse wave is propagated out into the systemic arteries, while with the other pulsation only the right ventricle contracts and so no wave is sent out in the systemic arteries. If these conditions exist, then a tracing made from the apex region of the heart would record a higher wave for that pulsation produced by the left ventricle as compared with tracings made from the region near the lower left border of the sternum where the left ventricle does not reach the surface of the thorax. These conditions are very clearly shown in the tracings from the first case, less distinctly in the other cases. All of these cases had a marked degree of mitral insufficiency, and the condition is explained by the assumption that, with a contraction of the left ventricle, there is a large amount of blood thrown into the left auricle, and the wave is propagated back into the pulmonary vessels, so that, with the next contraction of the heart, the blood thrown out by the right ventricle is obstructed in its onward flow by this blood which has been propelled backward from the left ventricle. The result is a stasis in the pulmonary circulation, and for a short time, little or no blood flows into the left ventricle, so that, when the time comes for another contraction of the left ventricle, there is insufficient blood in it to act as a stimulus to contraction. The

right ventricle, however, contains a supply of blood and contracts. This contraction succeeds in driving blood into the left ventricle, and the next contraction starts with both ventricles normally filled, both contract completely and so the blood is again propelled out of the left ventricle as well as out of the right. The author's explanation mechanically seems satisfactory, and other observers have noted conditions under which there was an asymmetrical contraction of the two ventricles of the heart.

2. Almost twenty-five years ago Kernig described a sign associated with meningitis which now is usually spoken of as Kernig's sign. In the present paper he gives a review of his own observations and those of many other observers made since the time of his first publication. He calls attention to the fact that some observers, who have rather discredited the value of the sign as diagnostic of meningeal involvement, have not adhered closely to the directions originally given for testing the condition. For a proper determination of the existence of the sign it is absolutely essential that the thigh be flexed to a right angle on the trunk and that gradual extension of the lower leg on the thigh be made. The sign is present when the leg cannot be completely extended at the knee, provided there is not any condition in the joint which prevents complete extension. A possible source of error may come in patients who have been bedridden for a long time with their legs slightly flexed. In some of these cases it is difficult to distinguish the condition from that produced by a slight muscle contraction arising from disuse. The sign has been tried for now in many cases of acute meningitis and has been found present in 85% to 90% of the cases in adults. It is not commonly present in young children and so its absence is of less diagnostic importance in them. In Kernig's own cases of adults it was present in 93.9% of 77 cases of acute cerebrospinal meningitis, in 91.2% of 73 cases of tubercular meningitis and in 67.4% of 31 cases of secondary meningitis. The sign has been present also in a few cases of chronic leptomeningitis, in some cases in which edema of the brain and meninges was present, as in nephritis, in a few cases of brain abscess and a rare case of typhoid. Cases in which the sign is present and there is not direct evidence of meningitis are very infrequent, and in all of these the possibility of some meningeal irritation cannot be excluded. The sign usually disappears if paralysis develops in the legs. There is no relation between the occurrence of the sign and the presence or absence of knee-jerks. In conclusion of this review Kernig emphasizes again the great diagnostic value of the sign when present, particularly in acute febrile cases. It is to be remembered, however, that the absence of the sign does not exclude meningitis. Sometimes the sign appears unilaterally. Most of these cases can be explained by a partial paralysis of the leg in which the sign is not present. It is not certain whether all can be thus explained. No thoroughly satisfactory explanation of the phenomenon can be given. The most satisfactory is probably the one advanced by Roglets, who believes it to be due to a combination of increased intradural pressure, increased irritability of nerve roots caused by the surrounding exudate, and the shortening of the flexor muscles of the leg through a condition of hypertonia.

5. Aron discusses the mechanism of the production of pulmonary emphysema and bronchiectasis. The explanation more generally given is that in emphysema the pulmonary alveoli are dilated as the result of forcible expiration and coughing, when there is some obstruction to the outflow of air caused by mucous secretion in the bronchi. One support of this view was found in the belief that those who for a long time played on wind instruments were particularly subject to emphysema. Careful statistical studies, however, seem to show that this is not true. Aron has studied the intrapulmonary and intrapleural pressures during expiration, and finds that both are increased, and that there is only a slight difference between the two. Consequently, any tendency to dilate the alveoli from the intrapulmonary pressure would be resisted by the increased intrapleural pressure. However, during inspiration and especially the deep inspiration that follows coughing, the alveoli become distended, and he believes that this exaggerated distention finally leads to a loss of elasticity and the production of the condition of emphysema. During inspiration there is a considerably decreased pressure in the pleural cavity, and this permits of the inrushing air distending the pulmonary alveoli. Chronic bronchitis is an etiological factor because, with its accompanying cough, there is produced after the spasm of coughing a deep inspiration. Compensatory emphysema may be similarly explained on the basis that, when part of the lung is thrown out of function, deeper inspiration becomes necessary to properly aërate the pulmonary blood, and further associated with the pulmonary lesion there is usually cough. The dilatation of the bronchi in bronchiectasis may be similarly explained, though it probably does not place take unless there is some pathological process which has produced weakening of the wall of the bronchi. In considering bronchiectasis Aron takes into account only that form which occurs in adults and not the congenital bronchiectasis. However, conditions are not the same in bronchiectasis as in emphysema, because frequently bronchiectasis apparently develops without a history of primary cough. Moreover, in a very large per cent of cases of bronchiectasis the pleural cavity is obliterated by adhesions, and in these cases forced expiration becomes a factor to distend the bronchi, because with the obliterated pleural cavity no increased intrapleural pressure occurs during expiration. Further pathological observations are needed to determine whether bronchiectasis of the adult is always associated with pleural adhesions in that region of the lung which is affected. The frequent local occurrence of bronchiectasis in a single lobe would be explained by the occurrence of pleural adhesions if we accept that theory of the mechanism, while if we assume that it is produced by deep inspiration then it would be necessary to assume a local process weakening the bronchial walls of part of the lung but not the whole.

7. Since the introduction of the salicylic acid preparations in the treatment of rheumatism it has been recognized that, although they form a means of controlling the temperature and the pain in the majority of cases, they have little or no effect in preventing complications, especially cardiac complications, and do not decrease the tendency to relapse. Furthermore, frequently their immediate effects on the patient are unpleasant. For these reasons some other means of treating rheumatism has been found desirable. Steinitz has been using Bier's passive hyperemia in those cases in which joints suitable for its application are affected, and he here presents the results of this form of treatment as compared with the results obtained during the preceding year with salicylates. With the passive hyperemia he treated about one hundred cases. Some of these cases, on account of the very severe pain, received salicylates in addition. As a result of this comparison he concludes that a somewhat larger per cent of the cases are cured within twenty days by using passive hyperemia than by using salicylates, and that in most cases the pain is controlled as well by the one method as by the other. There were fewer cases with cardiac complications following passive hyperemia treatment, and also there were fewer relapses. Steinitz strongly recommends that this form of treatment be tried in acute rheumatism, even in cases with high fever, though he suggests in the latter that, if after five days of passive hyperemia there is no distinct tendency toward a fall in temperature, salicylates should be given, and the same thing holds true with regard to pain. He recognizes that a hundred cases in one year compared with seventy-five cases treated in the preceding year with salicylates is not a sufficient number for far-reaching conclusions, but in so far as may be judged from the results they speak in favor of the advantages of passive hyperemia.

8. Solms here describes a method for quantitatively determining the pepsin in stomach contents. The method depends upon the fact that a solution of ricin in a sodium choride solution slightly acidified with hydrochloric acid is cloudy, but the solution clears up under the action of pepsin. This fact can be used to quantitatively estimate the pepsin by determining in what dilution of stomach contents this reaction just takes place and expressing the value in units of the dilution. The method is much more simple than most of the previous methods, and Solms reports a number of cases in which it has been used. In general he finds that the amount of pepsin is decreased in stomach contents of low acidity, though the converse is not necessarily true. From this it would not seem that

the determination of the pepsin content is of very much diagnostic value in stomach disease.

10. v. Leyden and Bergell in a previous paper have shown that, in the fluid pressed out from the liver, there is present a ferment which when injected has the power of causing degeneration and necrosis of cancer. In this paper Bergell and Lewin compare the activity of the ferment obtained from the liver of normal mice with that obtained from the liver of mice inoculated with cancer, and find that the normal mice yield an enzyme of very much more marked activity than do cancer mice. This observation gives some support to the view that the rapid unresisted growth of malignant tumors may be the result of the absence within the body of some such ferment which under normal conditions is present and inhibits tumor growth.

[H. A. C.]

Deutsche Zeitschrift für Chirurgie. Bd. 91. Heft 1 and 2.

1. *Lennander, K. G. *The Methods of Incision and Drainage in Cases of Peritonitis.*
2. Ziegler, P. *The Polarization Properties of Carcinoma.*
3. *Krüger. *The Relation of the Position of the Appendix in Acute Attacks to the Method of Incision.*
4. Grasmann, M. *A Case of Rupture of the Intestine by Lifting, in a Man Having a Double Inguinal Hernia.*
5. *Schoch, V. *The Typical Dislocation-Fracture of the Intercarpal Joint.*
6. *Vogel, K. *The Influence of the Effusion of Blood on the Formation of Callus in the Healing of Fractures.*
7. Wertheim, A. *A Case of Traumatic Backward Dislocation of the Foot.*
8. Matsuoka, M. *A Case of Umbilical Hernia Caused by a Cyst of Meckel's Diverticulum.*

1. Lennander always drains the abdominal cavity in cases of peritonitis (1) when there is abundant exudate, and especially if it is slightly turbid; (2) when the exudate is very turbid, even if of but small amount; and (3) in cases operated on early which are severely sick, and in which the serosa is markedly reddened, though an exudate has not yet formed. The presence of bacteria, shown by microscopic examination of the exudate during operation, is a still further indication for drainage. A distinction must be made between tamponing and drainage. In tamponing a portion of the abdominal cavity is separated from the rest. It is necessary in hemorrhages, as for instance that following a rupture of the liver which cannot be sutured, or in the diffuse bleeding following the separation of adhesions. Tamponing must also be instituted in free suppurative peritonitis when any spot on the serosa has become so damaged that a profuse purulent secretion will ensue, even though the cause of the disease has been removed. Furthermore, tamponing must be employed whenever necrosis with sloughing of tissue is to be expected. Lennander does not use gauze for this purpose, but woolen yarn twisted into large sized strands, like the wicks for alcohol lamps. In the center of a bundle of such yarn-strands are placed one or more rubber drainage tubes of small caliber, and the whole surrounded by a piece of rubber tissue. At the end of one or two days the tube is removed, followed by the withdrawal of those portions of the wicking which lie most centrally. Yarn is used instead of gauze because it drains better, and especially, because it is much more painlessly removed. Each day a few strands are withdrawn, so that when the last ones have been removed, the cavity has fallen together. In the beginning, when a few strands have been removed, a soft rubber catheter is introduced to the bottom of the cavity, which is then filled with a 3% solution of peroxide-glycerin. In this way the removal of the remaining strands is made easier. The catheter is allowed to remain until the cavity has closed in from the bottom. The necessity for tamponing is less the earlier the case comes to operation. In cases in which simple drainage will suffice, this should be accomplished by rubber dam, without either gauze or yarn. Rubber dam is thus used by Lennander in a large variety of instances, on account of its smooth surface and good draining qualities. It is held in position by a few stitches of the finest absorbable catgut, uniting it to the peritoneum, and when used to prevent the formation of adhesions is allowed to remain in place for from six to eight days. Also in cases where it is necessary to remove several coils of intestine from the abdominal cavity, these are handled with much less shock to the patient and trauma to their surface, by the use of sheets of rubber, instead of the usual wet towels. At every operation, therefore, pieces of rubber dam of various sizes should be at hand, an accurate count of them being kept in the same manner as is done with the gauze sponges. The incision used by Lennander is a combination of the muscle splitting method of McBurney with the cut through the rectus sheath. It is practically the same as that described by Dr. F. B. Harrington and others. Its advantages are that it is anatomically correct, and that it can be enlarged to suit the conditions found. Nerves should be carefully avoided: or if they must be cut, they should be sutured at the end of the operation. All incisions through the skin should be made in the direction of its fibers. As soon as the patient has recovered from the ether, he is placed in a sitting posture in bed, well supported by pillows. The foot of the bed is raised from six to twelve inches, in order to favor the venous return from the lower extremities. Deep breathing should be encouraged. In order to avoid numbness, or possible venous thrombosis in the legs, the pillow under the knees is removed four or five times a day, and active or passive movement of the legs encouraged.

3. Krüger finds certain symptoms common to all cases of appendicitis, without reference to the position of the appendix. Others, however, depend on its location for their existence. The significance of the various symptoms is given as follows: (1) Nausea and vomiting. When the appendix lies more or less free, so that inflammation from it can reach the abdominal peritoneum, a stimulus to vomiting is set up. If vomiting is absent we may assume that the appendix lies outside the free cavity, either buried in adhesions, or lying behind the cecum and ascending colon. (2) Pain. The diffuse form which later becomes localized occurs under the same conditions as does vomiting. Pain localized from the start points directly to an adherent appendix, or to one which is deeply buried. Tenderness on pressure is of value in determining the site of the appendix, but becomes less so as the infiltration increases. (3) Distention. This is caused by inflammatory paralysis or adhesions between intestinal coils. It occurs earlier when the appendix lies toward the middle of the cavity or toward the pelvis, than when it lies retrocecally. (4) Bladder tenesmus and urethral pain. These show that the appendix lies in the small pelvis, and has involved the bladder wall in the inflammation. It is occasionally palpable by rectum, when thus situated. (5) Pain on moving the right leg, or its being held in a flexed position, points to an inflammatory adhesion between the appendix and the fascia of the iliopsoas muscle. (6) Pain on deep inspiration, under the right costal arch and toward the lumbar region, is present when the appendix is adherent to the under surface of the liver or to the costal portion of the diaphragm. It is possible in the majority of cases to determine the position of the appendix before operation, so that the incision may be planned accordingly.

5. The combination of volar dislocation of the semilunar bone with fracture of the scaphoid, and dislocation of its proximal fragment to the volar side, Schoch considers to be a typical injury of the wrist. Aside from the simple dislocation of the semilunar and the fracture of the scaphoid, it is also the most frequent wrist joint injury. It is always caused by marked violence, such as falling from a height on to the extended arm. The main symptoms are (1) swelling of the wrist; (2) inability to make active motions of the hand, and great pain on passive motion of it; (3) thickening, widening and shortening of the carpus; (4) palpable bony resistance in front of the volar surface of the radius; (5) impeded motion of the fingers, and (6) signs of pressure on the median nerve. The prognosis should be very guarded in all cases. Only when reduction can be accomplished is restoration of function in a degree approaching the normal to be expected. Though with operative treatment the motion of the wrist may still be limited, the motion of the fingers and the use of the hand may be restored in from one to three years. Without operation motion and strength may be even more impaired, or complete ankylosis may occur. In cases well treated the use of the hand is impossible for two or three months at the least. Treatment should consist, first, of an attempt

to reduce by manipulation, then by operation. If this be unsuccessful, extirpation of the proximal fragment of the scaphoid and reduction of the semilunar, or even extirpation of both, becomes necessary. Systematic movements, long continued, form the most important part of the after care.

6. Vogel feels that there is a personal, perhaps inherited, disposition to insufficient callus formation. This is not due to a general physical weakness, but to a lack of reproductive power in the connective tissue elements of the body. Besides the usual measures employed to hasten callus formation in such cases, such as reduction of dislocation, active and passive hyperemia, etc., the injection of blood between the periosteum and the bone, according to the method of Bier, is of value.

[W. C. Q.]

Correspondence.

LETTER FROM PARIS.

[*From our Special Correspondent.*]

Sanatoria for Tuberculosis and the Frimley Innovations.

Paris, Feb. 10, 1908.

Mr. Editor: A document of unusual importance has just been published in England: the report issued by the medical department of the local government board on "Sanatoria for Consumptives,"[1] the fruit of a careful, five years' examination of the question. There are two points in this paper that seem specially worthy of notice: the estimate it contains of the value of sanatoria in consumption, and the general view it gives of the steady decrease in England and Wales in deaths from consumption per ten thousand inhabitants during the last half century.

To take the second point first, I must confess that the figures mentioned are to me nothing less than *astounding*. I knew, of course, that throughout civilized countries there had of late years been a marked and steady improvement in the tuberculosis question, the great white plague; but I was under the impression that even in Germany — where the sanatorium originated, and where this (as I thought) practically hopeless problem had been taken up with the Teuton's characteristic thoroughness, the great insurance companies having associated themselves with the movement, and the country being studded with sanatoria even for the poor, — the decrease had been very slow, even disappointing so far; and that the ultimate reduction of the disease to within even reasonable limits promised in all likelihood to be a matter of centuries.

But look at these statistics for England, the conservative land of non-interference by government, where everything goes on the happy-go-lucky principle of private initiative! In parentheses it should be said that these figures must be credible, appearing as they do in a document of such weight. The deaths from consumption per 10,000 living were, in England and Wales in 1855, 30; 1865, 25; 1875, 22; 1885, 18; 1895, 14; 1905, 11.5.

In other words, this death-rate has decreased during the past fifty years by well on to *three quarters!* Furthermore, if this rate of decrease, nearly four units per decade, which has shown itself to be so astonishingly regular for the five ten-year periods in question, continues at more or less the same rate, the disease will in another thirty years have become practically as extinct in the British Islands as the plague! I repeat that never have I seen any figures that led me even to suspect that such progress as this had been effected in any country, or even particular portion of a country. It is phenomenal. I had come to look on the tuberculosis question as one, like that of the colored population of the United States, absolutely insoluble, one that we would simply have to get along with the best way we could.

As regards the first point of interest in this report, the sanatorium question, this again occasions some surprise, though infinitely less than the one just mentioned. The sanatorium movement can be said to have begun in England in 1899. But if we look at the above figures, we find that, in spite of all that has been said, published and done in this direction, the decrease during the last decade has not only not been more rapid than for the others, but has even been the slowest of the five. True, this may depend on a variety of causes; the farther on you get in a struggle, the closer home, the slower the advance in a great many problems. But still the point is not without its importance.

In fact, the general tone of the report seems to be one of disappointment with the results given by the sanatorium, which, as a rule, and except with cases of people of independent situation of life, and taken at the very outset, amount to little more than postponing the inevitable issue more or less. How can it well be otherwise? It is not possible, except at a rate so deliberate as to be almost invisible, to transform the whole condition of life among the lower strata of humanity in large agglomerated communities. It is all very well to send the clerk or laborer for six or twelve months to a sanatorium in the woods or at an elevation; but sooner or later he will have to come back to confined work in close, dark and crowded offices or shops, and to life in unhealthful dwelling houses or rooms, and in the immense majority of cases the trouble will lose no time in beginning afresh.

Criticism of the sanatoria is not new, by any means. For years, now, Albert Robin, of Paris, has been waging war against them, from his special point of view. These institutions, run on the principle of the German barracks, where everybody from the head down is hypnotized by the weight scales, where the patients are stuffed like Strasbourg geese and where the chef sits at the head of the table, like a drill sergeant, and forces the patients to consume so much of this, that or the other fattening food, irrespectively of appetite or digestive capacity, are as a matter of fact far from being above criticism. The patients return to their homes bronzed by the sun, and flourish their weight charts with enthusiasm; but, as Robin so forcibly puts it, "*Ils ont l'estomac en compote!*"

In connection with the sanatorium-altitude treatment of consumption, I have in my personal experience noticed a detail that I have not seen mentioned elsewhere, though I fancy it must have struck other observers.

We, over here, have frequent dealings with cases of this sort in the high Alpine resorts, where there are many sanatoria, or, what is often even better, ordinary mountain hotels at different altitudes, without the rigid, never-varying *régime* of the sanatorium. In former times it was our habit to send patients to these sanatoria and then keep them there indefinitely. This practice had various drawbacks, even with the fortunate few to whom the financial side of the matter was of no moment: not only did the patient kept indefinitely in one place, become unspeakably bored by his associates and surroundings, but after a certain time he ceased to make any farther appreciable progress. There was, furthermore, the question whether by keeping patients permanently in one altitude they are not thereby unfitted for ulterior residence at other levels.

We all know that ordinary tonics act only for a short time; if at the end of ten days or two weeks the desired result has not been obtained from one preparation, there is little use continuing with it, but a different one altogether must be prescribed. This idea of variation holds equally true, I think, with health resort treatment in tuberculosis, particularly in incipient cases; besides, it is possible to persuade many people to cut loose from their homes and occupations for four or five weeks to go to the mountains for a brace-up, who either could not or would not do so for a longer or an indefinite period.

So what I have done with satisfying results has been to send people to Davos, or similar places, for short spells of one month; it gives them a tremendous flip-up, and they come back feeling like new persons, and get along very well for one year or more, when they may require galvanizing afresh. In this way they derive the maximum stimulation from the change and do not have time to reach the stationary phase that follows it or to get bored with their environment.

On the other hand, with more serious cases, it is well, I think, while keeping them indefinitely in the Alps, to move them around like chessmen. There is a greater variety of climates in that one little cluster, the Alps, than the average man would ever suspect, and by hustling your patient around from the bleak, north side of the mountains to the luxurious vegetation of some of the high Italian valleys, with occasional glimpses of better things on the Italian lakes, of Italian Riviera, and by moving him according to season from the Engadine to the Oberland, and from there to the Valois, — from Lenzerheide to Mürren, and from there to Adelboden or Arolla, you get not one change, but a succession of them, and the efficacy of the plan is very great.

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[1] This valuable report, in large measure the work of Dr. Bulstrode, has attracted wide attention. Our London correspondent, in his letter published last week, also makes some interesting references to it. Ed.]

While on the sanatorium question I may as well warn my brethren, the general practitioners at home, that there is more trouble brewing for them, and in England again! The conservative old dame is doing herself proud.

I can remember the day when consumptives were kept in stuffy rooms whose air was never changed, and were fed on whiskey. I well recall in my tender youth a relative who at various intervals during the day used to toss off half a tumbler of spirits to cure her lungs, with the same *insouciance* that such a patient would show nowadays in bolting a raw egg. And we are not a drinking family! Then came the development of the great sanatorium movement, which revolutionized the face of the medical earth to such an extent that, whether one accepts the necessity of altitude as a feature therein or not, the fundamental tenets, rest, fresh air and food, have become a dogmatic trilogy for the profession in general. Now, however, the pendulum seems to be inclined to take a different swing, and some young firebrands in London connected with Brompton and its country sanatorium Frimley, are advocating methods of treating consumption which overthrow the classical sanatorium ideas practically altogether, — all that remains being a certain degree of sanatorium supervision! Really, when one looks back over the great and sudden changes that have occurred in medicine since 1800, one is sometimes seized with a doubt whether it is not all more or less of a comedy, and whether medicine is not at the bottom a mere matter of fashion, varying to the same degree, and with about as much reason as the crinolines of the fifties differed from the ultra-tight gowns of to-day, where the skin seems all but visible through the dress-tissue, and you live in spasms lest a seam should give way.

Well, here in a few words, is what they are now doing at Frimley.

Frimley, about thirty miles from London, is a non-paying sanatorium for the poor, connected with Brompton, and comprising a little over one hundred beds. Now taking the three main points of sanatorium treatment, (*a*) fresh air; (*b*) feeding at high pressure; (*c*) rest, — the modifications that Frimley has introduced are these:

(*a*) Fresh air. No change. They see that the patients get plenty of it, but do not make their lives a burden to that end.

(*b*) Feeding. Ordinary, wholesome, home diet; no stuffing at high pressure, and no fancy or expensive articles. The patients live very much on the same kind of food that they are accustomed to in their homes, and are in this way kept in a position not to be exposed to too great a change on their return to their family.

(*c*) Rest. If, in the matter of food, Frimley has already broken considerably with the routine of milk, eggs, butter, starches, etc., in the matter of rest it has become entirely revolutionary.

Patients are kept at rest only during acute periods: hemorrhage, pyrexia, etc.; the remainder of the time they are required to be out-of-doors and about, or occupied with work, in accordance with the *system of graduated labor* that has been put into force. My informant tells me that the Frimley "Liegehalle," an expensive construction, no longer exists, but has been transformed into an excellent carpenter shop!

The graduated labor system, which is the real basis of the Frimley departure, is composed of a scale of different degrees of physical effort, up which the patient is gradually passed until he appears to be in a normal state once more. Thus he is first made to walk; and this form of exercise can be varied as to duration, rhythm and grade. He next walks carrying certain weights. And in this manner he passes through the series, manual labor, small spade, larger and heavier tools, wheelbarrow, and even such severe work as masonry.

It was at first not found easy to estimate the exact moment at which a patient could be prudently promoted from one grade of work to the next above; it had to be done entirely by clinical touch and experience. But since the introduction of the opsonic test it has been found possible to get the patients along with greater speed and certainty; when, for instance, a patient just advanced to a new grade is found not to vary as to index, and the latter is satisfactory, he is not kept at the new grade long, but moved on higher.

The latest idea connected with the graduated labor method is that it amounts practically to a treatment by bacterial vaccines *manufactured by the patient himself*. Instead of receiving tuberculin by hypodermic injection, he turns a little loose into his circulation from the seat of his lesions by the effort of his labor; and the clinical touch necessary is to see that the dose of labor is just sufficient to free enough vaccines and not too much.

The great experience of the Frimley staff enables them in most cases to judge clinically whether the patient is getting the suitable dose or not, without resorting to the rather laborious opsonic test; in fact, with some intelligent patients who have been under treatment for a while, it has been found possible to be guided merely by *subjective* sensation; these invalids very soon know whether they are doing well or not, simply by how they feel.

The exponents of this method claim that it enables the laborer and the clerk to stand their normal conditions of life when they return home and to work — which is undoubtedly one of the weak points of the ordinary sanatorium principle; the only trouble is that the Frimley plan, having been applied only for a short time, two or three years, has hardly yet the right to speak in very authoritative tones.

Under this system all that remains of the elaborate structure raised by Brehmer and Dettweiler and their successors is the amount of supervision necessary to ensure against mistakes in passing the patients through the different labor stages. The costly monuments that have been erected as sanatoria are useless; likewise all the care and nicety about site: dry soil, prevailing winds, altitude, proximity of forests, hygrometric index, etc. *Any* healthful site will do; in fact, one of these innovators is reported to have said that if *he* were building a sanatorium, his only preoccupation as regards site would be the quality of his water supply and the facility for obtaining electricity!

"Spectator."

A POSSIBLE METHOD OF ADMINISTERING MERCURY.

Boston, Feb. 24, 1908.

Mr. Editor: Dr. Théodore Tronchin, who was born in 1709 and died in 1781, was one of the many renowned physicians who have made Geneva famous in the history of medicine. His biography, recently published by Henry Tronchin, is replete with charm and interest, both from the medical and historical view points. To this interesting volume I do not wish to refer, however, but am desirous of calling attention to a most rational and, I may say, scientific manner of giving mercury to debilitated syphilitics, inaugurated by Tronchin.

In volume IV, page 455, of Casanova's delightful "Mémoires," is to be found the following remarks concerning a treatment successfully carried out by Tronchin in the case of a phthisical subject who had the misfortune to become inoculated with the spirocheta pallida, a literal translation of which I here give. Casanova says: "*I have been assured, although I have difficulty in believing it, that he (Tronchin) cured a phthisical subject of a secret disease by means of the milk of an ass that he had submitted to thirty massive mercurial frictions administered by four strong porters.*"

I believe that the above method should commend itself for much consideration when one is dealing with a delicate syphilitic subject, and although it was resorted to more than one hundred and fifty years ago, it, nevertheless, might be essayed at the present time with perfect therapeutic propriety.

Very truly yours,
Charles Greene Cumston, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 15, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	3	—
Chicago	699	244	Waltham	4	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	11	1
Baltimore	217	13	Brookline	8	2
Cleveland	—	—	North Adams	3	—
Buffalo	—	—	Chicopee	9	4
Pittsburg	—	—	Northampton	6	1
Cincinnati	—	—	Medford	4	3
Milwaukee	—	—	Beverly	4	1
Washington	—	—	Leominster	1	—
Providence	84	24	Hyde Park	4	—
Boston	243	68	Melrose	2	1
Worcester	58	15	Newburyport	—	—
Fall River	—	—	Woburn	2	1
Cambridge	35	6	Westfield	7	1
Lowell	45	11	Marlboro	6	2
Lynn	22	6	Revere	1	—
New Bedford	27	14	Attleboro	4	1
Springfield	20	6	Peabody	—	—
Lawrence	28	13	Adams	6	2
Somerville	21	4	Clinton	4	1
Brockton	10	2	Gardner	4	2
Holyoke	22	5	Milford	11	3
Malden	15	1	Watertown	3	1
Chelsea	18	4	Plymouth	—	—
Newton	15	3	Weymouth	1	1
Salem	22	8	Framingham	6	—
Haverhill	15	1	Southbridge	2	—
Fitchburg	13	3	Wakefield	—	—
Everett	13	6	Webster	—	—
Taunton	12	3	Arlington	3	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED FEB. 12, 1908.

BAILHACHE, P. H., surgeon. Directed to report at the Bureau for special temporary duty; upon completion of which to rejoin his station at Stapleton, N. Y., Feb. 8, 1908.

GUITERAS, G. M., surgeon. Directed to proceed to Port Arthur, Tex., for special temporary duty; upon completion of which to rejoin his station at Mobile, Ala. Feb. 10, 1908.

LAVINDER, C. H., passed assistant surgeon. Granted extension leave of absence for 10 days from Feb. 14, 1908. Feb. 7, 1908.

FOSTER, M. H., passed assistant surgeon. Directed to proceed to Ponce, P. R., for special temporary duty; upon completion of which to rejoin his station at San Juan, P. R. Feb. 6, 1908.

PARKER, H. B., passed assistant surgeon. Granted leave of absence for 5 days from Jan. 27, 1908, on account of sickness. Feb. 7, 1908.

RAMUS, CARL, passed assistant surgeon. Granted leave of absence for 3 months and 23 days from March 1, 1908, with permission to go beyond the sea. Feb. 8, 1908.

EARLE, B. H., passed assistant surgeon. Granted extension leave of absence for 8 days from Feb. 11, 1908. Feb. 11, 1908.

FRANCIS, EDWARD, passed assistant surgeon. Granted extension leave of absence for 7 days from Feb. 8, 1908. Feb. 6, 1908.

BAHRENBURG, L. P. H., passed assistant surgeon. Granted leave of absence for 7 days from Jan. 28, 1908, on account of sickness. Feb. 7, 1908.

WARREN, B. S., passed assistant surgeon. Relieved from duty at Chicago, Ill., and directed to proceed to St. Louis, Mo., and assume command of the Service at that port. Feb. 5, 1908.

WARD, W. K., passed assistant surgeon. Granted leave of absence for 1 day from Jan. 3, 1908, under paragraph 191, Service Regulations.

ROBERTS, N., assistant surgeon. Granted leave of absence for 6 days from Feb. 3, 1908, under paragraph 191, Service Regulations.

COLLINS, G. L., assistant surgeon. Granted leave of absence for 7 days from Jan. 28, 1908, under paragraph 189, Service Regulations.

MULLAN, E. H., assistant surgeon. Granted leave of absence for 1 day, Jan. 4, 1908, under paragraph 191, Service Regulations.

MULLAN, E. H., assistant surgeon. Granted leave of absence for 7 days from Jan. 29, 1908, on account of sickness. Feb. 7, 1908.

WOLLENBURG, R. A. C., assistant surgeon. Granted leave of absence for 7 days from Jan. 2, 1908, under paragraph 191, Service Regulations.

BULLARD, J. T., acting assistant surgeon. Granted leave of absence for 30 days from Feb. 14, 1908. Feb. 11, 1908.

DUKE, B. F., acting assistant surgeon. Granted leave of absence for 20 days from Jan. 6, 1908, on account of sickness. Feb. 7, 1908.

EAKINS, O. M., acting assistant surgeon. Granted leave of absence for 30 days from April 10, 1908, and excused from duty for a further period of 2 months, without pay, from the expiration of said leave. Feb. 7, 1908.

KEATLEY, H. W., acting assistant surgeon. Granted leave of absence for 1 day, Feb. 4, 1908, under paragraph 210, Service Regulations.

THOMPSON, W. R. P., acting assistant surgeon. Granted leave of absence for 12 days from Jan. 10, 1908. Feb. 7, 1908.

MILLER, CHARLES, pharmacist. Temporarily relieved from duty at the Marine Hospital in San Francisco, and directed to report to Passed Assistant Surgeon Blue, San Francisco, Cal., for special temporary duty. Feb. 12, 1908.

MCKAY, M., pharmacist. Granted leave of absence for 30 days from March 1, 1908. Feb. 8, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at Port Townsend, Wash., Feb. 14, 1908, for the purpose of making a physical examination of an officer of the Revenue-Cutter Service, to determine his fitness for promotion. Detail for the Board: Surgeon W. G. Stimpson, chairman, and Passed Assistant Surgeon J. H. Oakley, recorder. Feb. 8, 1908.

ARMY MEDICAL CORPS EXAMINATIONS.

PRELIMINARY examinations for appointment of Assistant Surgeons in the Army will be held on May 4 and Aug. 3, 1908, at points to be hereafter designated. Full information concerning the examination can be procured upon application to the Surgeon-General, U. S. Army, Washington, D. C., before April 1. The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice. There are at present twenty-three vacancies in the Medical Corps of the Army.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.— Surgical Section Meeting, Wednesday, March 4, at 8.15 P.M., John Ware Hall. "Some Reactions of the Body to Noxious Influences," Dr. J. F. Binnie, Kansas City. Discussion by Drs. Nichols and Graves. Light refreshments.

Dr. J. C. MUNRO, *Chairman.*
Dr. J. C. HUBBARD, *Secretary.*

RECENT DEATHS.

DR. WILLIAM MORRIS URQUHART died from pneumonia, after a brief illness, on Feb. 20, at his home in Orange, N. J. He was a native of Bradford, Penn., thirty-four years of age, and a graduate of the Medical Department of the University of Pennsylvania. Throughout the Spanish-American war he served as Assistant Surgeon in the Sixteenth Pennsylvania Regiment. Of late he had been engaged in commercial business in New York.

MARTIN JAMES DALTON, M.D., M.M.S.S., of Melrose, died recently in Tyron, N. C., aged forty-nine years.

RUFUS ASAPH CRITTENDEN, M.D., M.M.S.S., died in Haverhill, Jan. 27, 1908.

DR. VESTA DELPHENE MILLER, of Needham, died Feb. 23, 1908.

BOOKS AND PAMPHLETS RECEIVED.

Etiology of Erysipelas. Its Relation to the Nasal Cavities and Its Destructive Effects upon the Eye. By C. R. Holmes, M.D. Reprint.

A Fatal Case of Cryptogenic Staphylococcus Bacteremia. By Christian R. Holmes, M.D. Reprint.

Original Articles.

THE SURGICAL TREATMENT OF VARIOUS CONDITIONS AS INFLUENCED BY PREGNANCY.*

BY MALCOLM STORER, M.D.,
Gynecologist to Carney Hospital and Boston Dispensary.

The purpose of this paper is to consider what justification there exists for the view, held universally until comparatively recently, and still I fear having much weight in the minds of most general practitioners, that pregnancy is a condition of *noli me tangere*, in which operations of all kinds are to be avoided, chiefly from fear of interrupting pregnancy. That the organism then has quite enough to do without being subjected to the additional strain of a surgical operation, of whatsoever nature, that can just as well be deferred is self-evident. I shall consider operations that must not be deferred and conditions the presence of which influences pregnancy.

From a critical survey of much of the wealth of material bearing on this subject, — some 700 papers, — a most excellent bibliography of those appearing until 1903 (519 articles) being given by Fellner,[1] it is evident that nearly all operations have practically no influence upon the course of pregnancy, except to favor its continuance, provided that they are not followed by a septic process which, by reason of continued high temperature, may cause the death of the fetus and abortion. A glance at the following list of reported operations, amplified from the compilation of Fellner, by which pregnancy was not interrupted, will make this evident:

External genitals:	
Incision hematoma,	1
Extirpation hypertrophied clitoris and labia,	1
,, Bartholin's glands,	many
,, labial abscess,	1
Sarcoma labia and vagina,	2
Perineorrhaphy, Jaklin and Hargrave,[2]	2
Prolapse operation,	1
Peri-urethral sarcoma,	1
Fistula in ano,	many
Hemorrhoids,	many
Vagina and cervix:	
Excision cicatricial stenosis vagina,	1
Curettage cancer of cervix,	2
Scarification of cervix,	1
Cauterization of cervix.	1
Uterus:	
For incarcerated retroflexed uterus.	5
Adhesions, R. A. Kingman, Segond,[6]	2
Curettage uterus septus (at three months), Hargrave.	1
Miscellaneous:	
Curettage bladder.	1
Exploratory laparotomies.	countless
Fibrosarcoma abdominal parieties, Schauta,[7]	1
Nephrotomy for pus,	1
Nephrotomy for stone,	1
Nephrectomy,	17
Nephrorrhaphy,	3
Other kidney operations,	5
Extirpation spleen, Sabor, Bland-Sutton, Schauta,[8] Porsonyi,[9]	4
Cholecystotomy,-	7
Resection pylorus,	1
Resection sigmoid, Cornell,[10]	1
Thyroidectomy,	10
Amputation of breast, Robson and Routier,[11]	2
Hernia, inguinal,	11
Hernia, umbilical,	21
General peritonitis, Bardeleben[12] and Vance,[13] Neu,	4
Tubercular peritonitis, Vance,[14]	1
Dermoid of mesentery, Herman,[15]	1
Hydrosalpinx,	1

In the next group of reported cases abortion has followed more or less closely upon operation in a certain number:

Labial polyp,	2	cases, abortion in	1
Carcinoma of vulva in which bladder was injured, with abortion,			1
Cervical polyp,	23	cases, abortion in	1
Amputation cervix,	2	,, ,,	1
Vesico-vaginal fistula,	9	,, ,,	4
Removal stones from bladder,	2	,, ,,	1
Tumors of pelvis,	1	,, ,,	1
Cancer of rectum,	5	,, ,,	1
Echinococcus cyst,	27	,, ,,	8
Ileus,	10	,, ,,	10
Crural hernia,	25	,, ,,	6
Pyosalpinx,	5	,, ,,	1
Cysts of vagina removed, Francoz,[4] Martin,[5]	3	,, ,,	1

Appendicitis, Ovariotomies, Myomectomies, see later.

In many of these cases in which abortion followed it was at so appreciable an interval that it may be questioned with propriety whether it was caused by the operation; in fact, some writers, *e.g.*, Fellner, hold that in no case is the operation the direct cause of miscarriage, but merely determines a miscarriage that is bound to come anyway. He shows that shock, *e. g.*, with fracture of the base, does not necessarily mean miscarriage, nor hemorrhage, *e. g.*, rupture of ectopic gestation with continuance of intra-uterine pregnancy. He holds that in the rare cases when miscarriage does follow operation we must presuppose a faulty nervous equilibrium with exaggerated irritability of the labor center. He instances the extreme liability of abortion following scarification of the labia in nephritis. In such cases the scarification or what not merely determines the already inevitable abortion.

The danger of reasoning by statistics that abortions following operation are caused by the operations is shown by a study of the figures of Volk,[16] who reports 38 operations upon the external genitals (28 venereal papillomata), with 6 miscarriages (15.8%), mostly in from ten to fifteen days after operation. Now most of these cases were syphilitics and the percentage of miscarriages in similar cases at the same hospital not operated upon was 14.5%, so that evidently the influence of operation was very small.

An examination, then, of the foregoing list will show that operations of the most varied nature can be performed with very little danger of interrupting pregnancy, with two exceptions: in 9 operations for vesico-vaginal fistula abortion followed in four and in 25 operations for crural hernia it took place six times; just why, in the latter case, it is difficult to see. In this paper I do not propose to consider operations for conditions unconnected with pregnancy. The general surgeon may deal with them as seems best in the given case, always remembering that it is well not to have any suppurative process present at the time of confinement. Emergency operations will be done without reference to pregnancy, and operations of election, if they cannot be deferred, will be done as early in pregnancy as possible. Pregnancy has no bearing upon the general rule, except to strengthen it, that pus is to be evacuated and malignant disease removed as early as possible.

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*Read Dec. 17, 1907, before the Obstetrical Society of Boston.

We are more especially concerned with what may be called the genital sphere, *i.e.*, the uterus and its appendages and the parts in its neighborhood.

Before considering any operation we must ask ourselves what effect the condition if left alone will have upon the health of the woman or upon pregnancy and labor, and defer interference in cases where it can be done. In operations of election it is undoubtedly best to operate at the time of least uterine excitability, *i.e.*, to avoid the times when the woman would be menstruating if not pregnant, and also, if there is a history of intermenstrual dysmenorrhea, the few days midway between the time of the periods should be avoided. It does not seem proven that there is greater reflex excitability at any one month than at others. We must consider whether in the given case the life of the child is too important to run even the slightest risk of abortion, *e.g.*, whether the woman has other children or is likely to be pregnant again. On the other hand, a wise radicalism may be the truest conservatism. A myomectomy on a woman who has aborted a number of times may enable her to go to term.

It may be well to have reflex excitability depressed as much as possible by the free use of morphia or bromides for a day or two before and after any operation. In one or two cases abortion, apparently imminent after operation, has quieted down under morphia.

If wound infection occurs keep the temperature down by the free use of cold baths and antipyretics, lest the fetus suffer. An abortion is very apt to follow a few days of high temperature, as in typhoid.

We must also, in considering whether to do a given operation, consider whether the woman is one who miscarries easily.

Fistula in ano, Bartholinitis, and similar conditions liable to cause infection during the puerperium should be cured as early as possible, and by excision, rather than incision.

Hemorrhoids that would call for operation under other conditions demand it all the more during pregnancy, a time when even the smallest hemorrhoid is often the cause of untold suffering. Abortion following only once in 5 cases of excision of cancer of the rectum shows that the less radical operation for hemorrhoids has little danger.

It is highly desirable that vaginal fistulæ be closed as early as possible, although the 44% of abortions following such operations is rather formidable. On the other hand the danger of infection during the puerperium from such a fistula demands running the risk.

Cysts of the vagina liable to bar labor should be removed. Francoz reports a case increasing with each pregnancy and subsequently decreasing, which Doleris finally removed without harm.

Inoperable cancer of the cervix should by all means be cleaned up a few weeks before labor, unless it is proposed to deliver by Cæsarian section. Mangiagalli and Everke have curetted and cauterized under such conditions without interrupting the pregnancy.

Incarceration of the gravid uterus that cannot be replaced, fixation by adhesions, from inflammatory processes or following ventrosuspension, are obstetrical complications, and, of course, in proper cases demand operation. Correcting an incarceration by laparotomy is generally a very simple proceeding and naturally does not cause abortion. It is noteworthy what little disturbance is caused by freeing dense adhesions of the uterus as in the case of Segond,[17] in which the dislocated uterus was thought to be an ectopic gestation, or in one in which some years ago I saw Dr. R. A. Kingman free a six-months' pregnancy that was tightly bound down by a previous suspension, the kangaroo tendon that was used being entirely unabsorbed after a year.

Cancer of the cervix: Our treatment of this condition should depend entirely upon the conditions present in the given case. If incipient, the growth may be removed with a very good chance of not interrupting pregnancy, as in Schauta's case [18] at five months and Bland-Sutton's at seven months. If more advanced, yet still operable, hysterectomy should be done at once without reference to the life of the child. Cancer predisposes to abortion (Bland-Sutton) and its growth during pregnancy is apt to be very rapid. While with delay the child may possibly be saved the life of the mother will almost surely be sacrificed and the end results of hysterectomy for early carcinoma demand that the mother be given her chance. The Leipzig practice is excellent (Schege[19]). The uterus, containing the fetus, is amputated by the abdominal route, the pelvic peritoneum is closed over the stump, which is then removed by the vagina. If the patient is first seen near the period of viability in proper cases one might wait a few weeks in comparative safety.

If the child be viable and the case still operable there is a wide divergence of view as to the best treatment, radical in any case. In spite of the claim that cancer of the cervix is rarely a dangerous complication of labor (*cf.* Dranitzin[20]), almost all gynecologists prefer delivery by Cæsarian section, if the child be still alive, either by the abdomen, followed by abdominal total extirpation, Devé,[21] Dranitzin, Forchier,[22] Recasens,[23] or by the vaginal Cæsarian section of

Dührssen, by splitting the uterus from below anteriorly and posteriorly, after pushing up the bladder, which is well described by Harrison in a recent paper,[24] followed by vaginal total extirpation, of which Wertheim, who had reluctantly acknowledged that the abdominal route was better than the vaginal in carcinoma with pregnancy,[25] now says, in the last edition of Winckel's Handbuch, he is convinced is the better treatment. It was warmly commended by Veit in 1905 and has been modified and popularized by Bumm. All experienced operators agree that total extirpation is vastly easier in pregnancy than at other times, owing to the free mobility of the tissues. If the patient is first seen when actually in labor and the growth be an obstacle, delivery may sometimes be accomplished by deep incisions into the mass with extraction by forceps (Recasens, Dranitzin) or version (Orthmann); but generally at term, with an inoperable growth and normal birth apparently impossible, abdominal Cæsarian section is indicated, with a rapid Porro if the woman be greatly reduced (Devé), and in fact under most circumstances, as otherwise the danger of infection is very great.

Myoma: Many an operator has been unpleasantly surprised on cutting open a mass of fibroids to find a fetus contained therein (*cf.* cases of Bland-Sutton, Doleris,[26] and one of my own). A rapidly growing myoma should always suggest pregnancy (Marx [27]). It is interesting to see how medical thought in the last few years has swung from the position generally held that many fibroids can be removed in safety during pregnancy and that most will be, if left alone, an obstacle or great danger at labor, to the view always maintained by the Boston men that very few cause any trouble and that practically all cases had better be left alone until interference becomes imperative. This view has recently been expressed by the following, among others — Aman,[28] Coe,[29] Eden,[30] Fairchild,[31] Fellner, Franqué,[32] Harrison, Lepage,[33] Niebergall,[34] Rubesca,[35] Stratz,[36] Webster,[37] Hofmeier,[38] and Pinard, who agree that certainly 75% of all cases give no trouble. Sutupin, in 1891, said that scarcely ⅕ of the cases of pregnancy complicated with fibroids terminate without surgical intervention, and that ⅓ of the mothers and ½ the children perish as the result of the condition (quoted by Basham [39]). These formidable statistics have not been borne out by later observers, and opinion as to the comparative harmlessness of fibroids was finally crystalized by Hofmeier, who says most positively that the complications which myomata cause during birth and the puerperium are only rarely of serious nature. The most radical recent writers are Marx, — yet even he advises watching "safe" fibroids, *i.e.*, those in upper part of the uterus, — Routh,[40] Thring,[41] and Frank.[42] It is a matter of common experience to see a myoma apparently filling the pelvis be drawn up out of the way during labor and several cases are reported where such tumors took care of themselves while the patient was actually being prepared for operation. During labor many, apparently firmly wedged, may be aided upwards manually, though care must be taken as they may be adherent or intraligamentous. It has always been held that fibroids are apt to increase in size during pregnancy and subsequently atrophy with involution, but it has been pointed out that this apparent increase may be due merely to general muscular hyperplasia (Cameron [43]), or to edema (Fernwald [44]), the very condition that by softening the tumor renders spontaneous ascent possible in some cases.

Myomata complicating pregnancy are somewhat rare, being present in only .7% of the confinements at the Sloane (Craigin [45]) yet they are not nearly as productive of sterility as once taught. Hofmeier thinks they decrease fertility about 25%.[46]

While the majority of myomata cause no especial trouble the aggregate number of cases in which they were a complication of the gravest nature in pregnancy proves the necessity of armed watchfulness.

Among the possible complications may be mentioned the following:

In pregnancy:
  Abortion. Pinto [47] believes that it probably occurs in cases in which the ovum is planted upon an interstitial node, over which the mucosa is apt to be atrophied and the decidua therefore poorly nourished.
  Retroflection with incarceration.
  Sloughing, from impaired blood supply.
  Pressure of bladder, rectum or nerve trunks.
  Hemorrhage.
  Pain from stretching capsule by rapid growth.
  Torsion.
  Placenta previa. (Pfannenstiel, Kouwer.)
During labor:
  Obstacle to delivery.
  Faulty presentation. Breech in 24% and transverse in 18% (Routh) or 10% (Olhausen), the normal being 5%.
  Hemorrhage.
  Weak pains. (Thorn,[48] Stopilinski.[49])
  Torsion.
During puerperium:
  Adherent placenta.
  Post-partum hemorrhage.
  Sloughing and sepsis or gangrene.
  Torsion..
  Delayed involution. (Stopilinski.)

Pellandra,[50] analyzing 171 deaths from myomata, found that 49.5% were due to infection, almost all of which was in connection with pregnancy.

The imminence of these dangers is, of course, relatively slight and furthermore dependent upon the seat of the growth. Subperitoneal tumors of the fundus are comparatively harmless unless they have a very long pedicle, which may allow the tumor to slip down below the presenting part or to undergo torsion. Submucous tumors are distinctly a danger. According to an analysis made by Tate (quoted by Benjamin [51]) of 31 cases, in only 10 was there a normal labor, the complication in the others being gangrene in 6, retained placenta in 4, dystocia in 6, and premature labor in the rest.

Intraligamentous tumors are most apt to block labor, but are least liable to the other accidents mentioned.

Interstitial growths are especially apt to cause dystocia and post-partum hemorrhage and adherent placenta, in which latter complication manual separation involves the strong probability of damaging the capsule of the tumor with resulting infection and sloughing. Marx advises packing the uterus in such cases and allowing the placenta to be expelled of itself, which generally takes place in a day or so. The use of the curette is attended with the utmost danger in such cases. Interstitial fibroids of the upper zone are dangerous chiefly during the puerperium.

Torsion of fibroids during pregnancy is a matter of especial interest to the writer, he having made some years ago a study of torsion of tumors of the ovary and of the Fallopian tubes. Lepage[52] has collected 5 cases, with one death without operation and one death on the seventh day after operation from embolus following abortion. No abortion took place in 3 of the 4 cases operated upon. He shows that it is most apt to occur in the first six months, and in 4 of the 5 cases the growth was not larger than the fist. In 4 cases it was on the right side, in these respects being like the cases of ovarian and hydrosalpinx torsion, occurring during pregnancy. While ovarian torsions are most apt to occur in multiparæ with lax walls all the torsions of myomata were in primiparæ. The prognosis is not as grave as in the case of torsion of ovarian tumors, as the process is not apt to be as rapid or complete. The great danger is that of exciting uterine contractions or of slow degenerative changes in the tumor. Lepage inclines to watch the case if certain of the diagnosis, but when there is doubt as to whether it may not be a twisted ovarian tumor, an operation should be done at once, especially if there are persistent signs of peritoneal irritation.

Taking these various possible complications into consideration we cannot but feel that the life of a woman in whom fibroids complicate pregnancy is exposed to dangers that, although latent, may at any time become acute and that any suspicious symptoms occurring during the puerperium should be regarded with an even more critical eye than during pregnancy. Katz[53] had to remove a myomatous uterus six weeks after labor, on account of hemorrhage where there had been no previous symptoms.

Indications for operation have been given by various writers as follows:

Rapid growth.
Lasting intense pain (Condamin).
Increasing tenderness:
  Due to impaction, especially with rising pulse. (Stratz).
  Due to torsion.
    ,, degenerative changes.
    ,, overstretching of capsule.
Pressure on neighboring organs.
Interference with function.
Probability of an early miscarriage (Frank).
History of repeated miscarriages (Condamin).
When it is going to be obvious obstacle to delivery (Thring).
When it is an obstacle to delivery.
Weak pains (Thorn) although generally forceps or version will meet this difficulty.

Many of these indications are, of course, relative and their importance will depend upon the mental attitude of the observer, as, for instance, that the tumor is liable to become a bar to delivery. If anything is certain it is the impossibility of prognosticating in a given case how pregnancy will affect a fibroid or a fibroid will affect pregnancy.

Should interference become necessary its character will depend on the time of interference and the character and seat of the tumor.

Frank advises removal of all myomata of the vaginal portion as they are apt to become gangrenous during the puerperium. Vaginal myomectomies for myomata of the posterior wall have been successfully done, for instance by Franqué, Mackenrodt, van Hasselt, Condamin, but the danger of hemorrhage is great. Franqué had hurriedly to open the abdomen to control hemorrhage in a case of kolpotomy. He does not seem impressed with the operation unless there be a thin and very long pedicle.

Tumors not accessible by the vagina may be removed by myomectomy from above. Of late years myomectomy seems rather to have lost ground in favor of hysterectomy, but this seems to me easily explained by the fact that to-day in pregnancy fibroids are generally left alone, unless the conditions are such as to demand a hysterectomy. The present statistics of myomectomies during pregnancy are much better than those of Thumin collected some years ago of six deaths and ten abortions in 62 cases. Myomectomies are certainly very easy during pregnancy, although the hemorrhage may necessitate a Porro, as in the first one ever done, that of H. R. Storer in 1868, or that of Schmorl,[54] which was further noteworthy in that the amputated uterus delivered itself of twins at three months, two hours after removal.

If the indication be degenerative changes in the tumor a myomectomy should not be considered. If possible, wait for viability, then deliver by Cæsarian section and amputate the uterus.

In myomectomies of all kinds not more than 20% abort (Winter, Braun, Franqué). In many cases it has not taken place even when the cavity of the uterus was opened. Thirty-three cases are known in which rupture of the membranes did not lead to miscarriage and in 14 cases both amnion and chorion were ruptured without ill effects (Fellner), but in general terms myomectomy for deep seated tumors had better not be considered. There is too great danger of hemorrhage or of rupture at the seat of suture should abortion take place (Webster, and my own case). In considering the chances of a following abortion Prior's observation should be borne in mind, viz., that the anterior and lateral walls of the uterus are far more irritable than the posterior wall.[55]

As regards myomectomy in general, it may be said that most of the cases in which it is apt to be indicated are cervical myomata that are a bar to delivery and, as Schauta points out, these are the very ones that are least desirable to touch on account of the danger of obstinate hemorrhage. Morcellation, by the way, was successfully employed without abortion by Seeligman at eight months.

In spite of Tuffier's dogmatic assertion that myomata above the contraction ring do not need to be touched during pregnancy, an operation does seem to be indicated in certain cases of myoma of the fundus, for instance, with rapid growth and interference with breathing, or where there is a history of repeated abortions and a child is greatly desired; and in such cases a myomectomy may be most successful.

In labor. — When it becomes evident that a myoma is not going to take care of itself and it cannot be pushed out of the way, an operation becomes imperative; and that Cæsarian section immediately followed by hysterectomy is by far the best treatment is well shown by the tabulation of Fernwald, 26 cases in which the uterus was left with a mortality of 57% and 14 cases in which it was removed with a mortality of only 7.14%. If it is purposed to do only a Cæsarian section with an operation for the myoma later, the psychological moment should be chosen when pains have begun, but are not too far advanced (Olhausen). If there is the slightest suspicion that the vitality of the tumor is impaired or is likely to be, it should always be removed.

Puerperium. — A prompt hysterectomy is indicated at the first suspicous symptom. Incipient necrosis should not be mistaken for retained secundines (Marx). I have spoken of the dangers connected with removing an adherent placenta. In this connection the interesting case of Baur [56] may be mentioned, in which, in removing a placenta manually, he was able to peel out six fibroids without ill effects; the risk of such a procedure must, however, be very great.

As regards myomata it may be said in passing that induced abortion is thoroughly discredited as both obsolete and dangerous and should be remotely considered only where the mother refuses to consent to an operation.

In general terms, therefore, operation should be delayed for myomata complicating pregnancy as long as possible and then treatment should be radical. Each case should be treated by itself with due regard to the fact that private cases can be carefully watched, while hospital cases will probably be seen but once.

From all of which it follows that the true treatment of fibroids complicating pregnancy is, if I may be pardoned the bull, to remove them before the woman is exposed to conception.

Ovary. — Since ovariotomy during pregnancy was forced upon the profession in 1877 by Spencer Wells, the advantages of it have steadily been better appreciated. Bland-Sutton [57] said in 1901, "Where an ovarian tumor complicates pregnancy the life of the woman is imperilled throughout the whole of the term, the peril increasing with each successive month, and culminating with labor," —or more properly speaking, with the puerperium. In 183 cases collected by McKennon there were only 35 normal labors, and 12 deaths, 9 being from rupture of the cyst.

The dangers are:

In pregnancy:
  Torsion — occurs three times as frequently as in non-pregnant (McKennon), most liable up to fourth month. Azais,[58] Schauta.[59]
  Pressure symptoms later. Rapid growth.
  Abortion.
  Malignant degeneration (Tarnowski).
During labor:
  Impediment to labor.
  Delayed labor owing to weak pains.
  Rupture.
During puerperium:
  Torsion.
  Sepsis.
  Post-partum hemorrhage, contraction being prevented by adhesions (Webster).

Nor is the child in less danger than the mother. According to McKennon 30% of cases abort if not operated upon (17% according to Fellner), while the percentage of abortions after operation is about 18%, for both single and double ovariotomies. (Fellner 18%, McKennon 18.6%, Heil 19.47%.)

The maternal mortality after operation is very low, — 2.1% according to Heil,[60] 1.9% McKennon (quoted by Doran [61]), 4.7 % Flatau,[62] — as cases of malignant disease of the ovary are relatively seldom fertile.

In most cases operation is indicated as soon as the diagnosis is made (Schauta, Martin, Olhausen, Franqué, Frey,[63] Græfe,[64] although Veit, Fehling, Pfannenstiel and Jarzew advise waiting for viability, and this may very well be done in certain cases. The danger of hernia following late operation is not very great, especially if at labor a snug abdominal belt be worn and the abdomen supported manually during the pains (Azais).

As to route the abdominal is preferable in most cases, there being thereby far less disturbance to tissues in proximity to the uterus. While many cases of vaginal ovariotomy without disturbing pregnancy have been reported statistics strongly favor the abdominal route. According to Flatau in 239 abdominal ovariotomies there was 6% abortions, while in 17 vaginal ovariotomies there was 41%. On the other hand, Wertheim has done five vaginal ovariotomies, with only one abortion. The posterior route seems much better than the anterior. It should seldom be done after the third month, as there is some danger of abortion. Kaiser [66] suggests deep anesthesia before even beginning to wash up, as he thinks abortion is favored by irritation of the skin in neighborhood of genitals.

If an ovarian cyst is first discovered during labor, and apparently blocking, careful attempts should be made to replace it — successful in case reported by Thiess.[67] It may often be replaced under ether when apparently impossible under other conditions. These efforts proving ineffectual, the abdomen should be opened and the cyst removed, and to do this it very probably will be necessary first to empty the uterus by Cæsarian section, although generally the fetal head may be pushed aside enough to bring the tumor up into reach. The technic used by Jardine [68] may be of value in some cases. The uterus was brought forward and the tumor removed after breaking up a large number of adhesions. The wound was then held together with clamps, while the uterus was emptied by high forceps, and the abdomen then closed in layers. In certain cases a vaginal ovariotomy during labor will be successful, *e.g.*, Petersen,[69] but on the whole the abdominal route seems preferable.

The old practice of tapping the cyst from below, if it blocks labor, still advocated by certain British gynecologists and Falk,[70] is mentioned only to be condemned absolutely. The danger of sepsis is great and there are other possibilities, as in the case quoted by Doran, in which the physician in charge made multiple punctures into what proved at autopsy to be a prolapsed kidney. If the cyst does not cause trouble during labor the first danger signal during the puerperium should receive prompt attention.

In considering myomata and ovarian tumors complicating pregnancy one cannot do better than follow Hofmeier's rule — operate on practically all ovarian tumors and defer operation in practically all myomata as long as possible.

Coming to other complications of pregnancy arising in the genital tract ectopic gestation must be mentioned, either rupturing when combined with uterine pregnancy, or the products of an old ectopic gestation (gingerbread fetus) being in the way of a normal labor (Bland-Sutton). Purulent affections of the tubes should also be considered. A pyosalpinx or pelvic abscess is almost sure to rupture during labor and should be removed as early as possible to ensure a clean field at term. Frank [71] operated upon a case of adherent pyosalpinx at two and one-half months without abortion. General peritonitis from a ruptured tube was operated upon by Bardeleben [72] at five months without abortion and Vance [73] reports operations for general peritonitis from a ruptured appendix at three months and for tubercular peritonitis at six months without abortion. On the other hand I have noticed that in a large number of cases of subacute salpingitis, many of which had been under treatment for years, if by any chance they have become pregnant the inflammatory process of the tube seems to have completely disappeared. I remember especially well being called to sew up the perineum of a patient who before her pregnancy had been urged by three prominent consultants to allow her appendages to be removed, and at that time, under ether, there was not a trace of trouble to be felt.

Retroperitoneal tumors have an interest for us. Four cases are collected by Fellner, in which operation did not interrupt pregnancy. Skutch evacuated by a perineal incision a retroperitoneal dermoid at five months, the patient going to term. In two cases a hysterectomy was necessary to save the child.

Hydatid tumors of the pelvis are mentioned by Thring [74] as being quite common in Australia. They are not always, however, a bar to labor, as seen by the case of Reboul,[75] who operated upon a large one three months after delivery.

Since the danger of appendicitis complicating pregnancy was first pointed out by Mundé, and graphically described by F. D. Donoghue in a paper read before this society some years ago, a mass of evidence has been brought forward to confirm their views. While pregnancy probably does not in any way predispose to appendicitis its effect upon existing disease is most baneful, chiefly from the associated constipation and mechanically from traction by the enlarging uterus, while with actual abscess the dangers of labor are frightful. Mayer [76] says there were perforation and abscess in 40% of 52 cases, and that 57% of the cases of abscess aborted, no matter what the treatment was, while the maternal mortality in all acute cases whether operated upon or not was 55%, *i.e.*, 23% more than in acute cases without the complication of pregnancy. Futh [77] gives the mortality as 52.3%. Although Coe [78] thinks that most cases are light and can wait until after labor before being operated upon, one can never be certain in advance what will happen in a given case as pregnancy advances. The interval operation is practically without danger to the mother and in not one of the cases reported has abortion followed. In cases of suspicious trouble in the right iliac fossa the most rational treatment is to investigate — no great harm is done if nothing is found, and many a life saved thereby. The operation should be done as early as possible to lessen the danger of hernia — which is not very great, anyway.

If abscess is present operation is, of course, imperative. In advanced cases it may be necessary to empty the uterus first (Marx, Coe, Tissier,[79] Picqué), and in fact without so doing it may be quite impossible to reach the infected focus. Fellner says the prognosis is bad if operation is to be followed by labor at once and advises delay if possible under such conditions. Webster speaks of the danger of confusing an acute appendicitis developing after labor with puerperal sepsis, yet that is a time when it is very apt first to appear. As with myomata and ovarian tumors the best treatment is never to allow a woman with a suspicious appendix to become pregnant until after it has been removed. (Donoghue, Webster, Kelly.)

Ileus. — Five cases were collected by Fellner, in which it was due to a backwards position of the uterus. Abortion followed operation in all, probably inevitable in any case.

Breast. — Routier [80] removed a 15-lb. adenofibroma of the breast which had grown very fast during the four months of pregnancy. In spite of the close connection between the uterus and the breast abortion did not follow.

Thyroid gland. — Strumectomy as an operation of necessity during pregnancy is spoken of by von Fellenberg.[81] In three cases he had to perform the operation on account of severe dyspnoea and imminent asphyxiation from the pressure of the rapidly increasing gland, once when the woman was apparently dead when operated upon. In no case did abortion follow.

One other surgical condition is apt to be affected by pregnancy, and that is cholelithiasis. Fellner observed acute attacks following labor in 5 cases, possibly being due to stones being squeezed out by the pressure of labor. He thinks the impediments to metabolism associated with pregnancy predispose to the formation of calculi. He advises early operation. Seven cases have been operated upon during pregnancy with abortion in none.

The question of the effect of pregnancy upon tuberculosis of the larynx is an interesting one. Löhnberg[82] quotes Kleinwachter's 15 cases, in which 8 showed stoppage of the process after an abortion.

I will end this review of the subject with a word upon one other morbid condition associated with pregnancy, and that is dental caries. The general practitioner is far too apt to tell his patients that pregnant women always have toothache, and it is a relic of past superstition to allow decay to progress for nine months in cases that should be treated.

The only cases in my own experience of sufficient interest to report in this connection are the following:

I. Torsion of dermoid at four and one-half months.

E. W., referred by Dr. Lombard, June 28, 1898.

One child three years previously. Two miscarriages since then. A year before I had advised removal of a small ovarian tumor, which was not done. This gave little trouble until a few months before operation. For five months she had been having more or less pain from time to time, locally and running down the right leg, sometimes enough to take morphia. At each attack the tumor seemed to grow larger. Four days previous to operation a sharp attack. Examination showed a pregnancy of nearly five months with above and to the right a kidney-shaped, somewhat rounded, rather elastic and freely movable tumor about the size of a fist. The tumor proved to be a dermoid, lying in apposition with the gall bladder, twisted one and three quarters times inwards, opposite to Küstner's law. The thin pedicle was about eight inches long. Strangulation was only partial, there being but little hemorrhage into the sac. Labor occurred four and a half months later.

II. Tubo-ovarian abscess with pregnancy of two and a half months.

S. W., Carney Hospital, Aug. 3, 1903.

One child nine years previously. One abortion at two months two years ago, not induced, but was quite ill afterwards. No history of gonorrhea obtained. Last menstruation about two months ago, slight in amount, with much pain. Ten days ago considerable pain and slight flow which has persisted ever since. Temperature 100°. Examination showed a slightly enlarged uterus crowded to right by a mass the size of the fist, tender and fluctuating. From the history I regarded the case as one of ectopic gestation, but on opening the abdomen found a two and one-half months' normal pregnancy and a tubo-ovarian abscess, with an encysted peritonitis back of the uterus. The mass was very adherent and its only partially possible removal involved much damage to the broad ligament. Convalescence was perfect and up to the time of her normal labor, seven and one-half months later, she had no pain of any kind.

III. Multiple myomata-pregnancy of two and one-half months — Porro.

Mrs. X, referred by Dr. A. N. Sargent, in 1904. Never pregnant. Seven months previously attack of pain in right side after amenorrhea for two months. Thought to be appendicitis. A slight flow persisted until she was curetted some weeks later. This was probably not a miscarriage, though the scrapings were not examined. No tumor was then felt though the uterus was four and one-half inches in depth. Menstruation regular since then until two and one-half months ago. Since then, as frequently before, there has been some slight nausea and ten days ago there was some slight flow. The breasts were negative. The uterus was about the size of a three months' pregnancy, with a fibroid in the anterior wall about the size of a goose egg. On the left was what was thought to be a large ovary or tube. The diagnosis I made was myomata with possible extra-uterine pregnancy. Normal pregnancy was considered, but regarded as highly improbable, the more so as the consultants regarded the uterus as being about the size it had been for many months. Upon opening the rather fat abdomen there appeared a large uterus, with two large and at least twenty small fibroids, which I amputated supravaginally. Some adhesions around the right ovary explained the pain of seven months previously. On splitting the uterus a fetus of two and one-half months appeared — to my great surprise as I had expected to find a soft interstitial fibroid. While in this case I should at the time have advised a hysterectomy, even had I known of the pregnancy, in view of the large number of fibroids, I feel now that I should leave a similar case to go to term with the possibility of a Cæsarian section.

IV. Myomectomy at three and one-half months; abortion; death.

Twenty-five, single, 1904. Referred by Dr. E. S. Boland. Menstruation always profuse. Now none for three and a half months. No symptoms of pregnancy, which is stoutly denied. The family physician, who knew all about the girl, said pregnancy was practically impossible. Examination showed a large uterus, with a not especially soft cervix, with a myoma the size of a fist on its right side, rather low down. Although I felt that she was very likely pregnant, I thought that she might possibly have a large intra-uterine fibroid, and any way I wanted to remove the tumor I felt as I thought it was liable to interfere with labor should she prove pregnant. I found an evidently pregnant uterus with an intraligamentous fibroid immediately below the left tube. I did a myomectomy, the tumor being rather deeply situated, and had considerable trouble in stopping the bleeding, at one time fearing a hysterectomy would be necessary to control it. The uterine wound was closed with chromic catgut No. 2 and a strip of gauze left lying against it, lest there should be a concealed hemorrhage. This gauze was removed the next day, but to it the final catastrophe was doubtless due as slight infection of the abdominal wound occurred, which in turn must have contaminated the uterine incision. In spite of this she did apparently perfectly well until the eighth day when, after being all right at midnight, her pulse began to rise at 3 A.M. This was not reported, and I was not notified for some hours. When I saw her at 9.30 A.M. I found her with a pulse of 170, anxious look, sweating freely, abdomen tender everywhere, especially on the left, bleeding from the vagina and evidently very ill. Upon consultation with Dr. J. B. Swift, I at once etherized her and started to empty the uterus. I found the placenta lying free in the uterine cavity, but could not extract the fetus, there being no proper instruments at hand. The finger introduced into the uterus found a rupture at the seat of the myomectomy with the lower half of the fetus in the abdominal cavity and tightly gripped by a tonic spasm of the uterine wall. The patient was now practically pulseless, but as a last resort the abdominal incision was rapidly ripped open, the fetus extracted, the abdomen washed out and then the patient died. The edges of the rent were gray and sloughing.

This case was most instructive in many respects, showing the difficulty of diagnosis, the danger of infection by a gauze drain, the mistake in closing the uterine wound with catgut, the danger, if miscarriage occurs, of the line of least resistance being towards the abdominal cavity rather than towards the vagina, the necessity of prompt intervention in case of danger signals, and above all, the fact that the tumor had much better have been left alone.

V. Curettage of cervix and exploratory laparotomy at three months. This case was rather a comedy of errors but each mistake surely very natural. E. S., Carney Hospital, August, 1906. Single. Often goes two or three months without menstruating. Last menstruation three months ago, with a vague history of a fall with legal complications shortly before that. Perfectly well until three days ago when attack of sudden diffuse pain in abdomen and vomiting, highly suggestive of appendix or tube. Abdomen rigid with spasm, but almost too tender to touch. Vagina somewhat injected. Cervix hard, and by vaginal examination, bimanual being impossible on account of tenderness, the uterus was apparently retroverted with a mass on the left. Breasts negative. Diagnosis — probable left salpingitis. Being convinced that she was not pregnant I neglected to examine under ether. In dilating the rigid cervix preparatory to curetting the cervix suddenly gave way. The cervical canal was thoroughly curetted but there was considerable bleeding, and on trying to wipe it away my forceps, wrapped with gauze, went in four inches — apparently into space. Thinking that I should find that I had perforated the posterior wall of uterus in forcing in the dilators, I at once opened the abdomen and found a three-months' normal pregnancy with no perforation and nothing the matter except that the fundus was in considerable left lateroversion, it being that which I had mistaken for a tubal mass. Strange to say, she did not miscarry and the vomiting promptly ceased for good. What gave her her symptoms I have not the faintest idea.

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A CASE OF ACUTE DILATATION OF THE STOMACH AND DUODENUM (IN A MORIBUND PHTHISICAL PATIENT) SIMULATING A TERMINAL GENERAL PERITONITIS.

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The following report represents, with a few exceptions to be noted, a typical case of acute dilatation of the stomach, both as regards the clinical symptoms and the post-mortem findings.

For very clear and complete expositions of the subject the reader is referred to the articles of Connor[1] and Bloodgood.[2] This article is to record a type case in considerable detail, as the reports of many of the cases collected are very incomplete.

A. W., nineteen years old. Single. Entered the Boston City Hospital May 6, 1907, on the service of Dr. G. G. Sears.[3] The patient was born in Boston and for some time had been clerk in a market.

Family history. — Father has had a cough for two years; mother, two brothers and sister alive and well.

Past history. — Patient has always been perfectly well until ten weeks ago, when he began to feel weak. Denies venereal disease; uses no liquor or tobacco.

Present illness. — Seven weeks ago, on account of in-

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[1] Connor, L. A : Am. Jour. Med. Sc., March, 1907, pp. 345–373.

[2] Bloodgood, J. C.: Ann. of Surg., Nov., 1907, pp. 736–762.

[3] Clinical Records, vol. A. 626, p. 192.

I am indebted to Dr. G. G. Sears for permission to report the case, to Dr. Mabee for his generous assistance and to Mrs. Ordway for the explanatory drawings (Figs. 2 and 3).

creasing weakness, he was compelled to give up work. For past four weeks has had a cough, which has become more severe, with considerable expectoration of thick, yellowish sputum; no blood; no pain; no night sweats. Appetite is good; bowels regular (once a day); sleeps well. Best weight 142 lbs.; weighs now 121 lbs.

Physical examination. — Fairly well developed, except for moderate deformity of chest; very poorly nourished (emaciated). There is marked prostration, pallor of skin, tremor of hands, eyes are sunken, cheeks hollowed; bony framework prominent. On entrance temperature 103°, pulse 150, respiration 40. Pupils equal, react to light and accommodation. Tongue is moist and is protruded straight with marked tremor. Pulse very rapid, 150 to 155, irregular and of very small volume and low tension.

Heart. — Apex is visible and palpable, in the fifth space, nipple line; left border is one finger's breadth to left of nipple line; right border, at right sternal margin; upper border at third rib.

There is moderate deformity of chest, with prominence of costo-chondral articulations on the right. The thorax appears longer than usual, the costal margins extending downward, somewhat reducing the size of the abdomen.

Lungs. — Backs not examined, owing to the greatly prostrated condition of the patient. The left lung, from the apex to the fifth rib, shows marked dullness in front and in the axilla. In this region there is bronchial breathing, the expiration being very harsh, prolonged, and high-pitched. There are numerous fine crackling and coarse, moist, consonating râles. Over the right lung, the resonance is generally much impaired and there are numerous fine to medium, moist râles. Over the lower part of the chest, below the nipple, there are many fine, superficial, crackling râles.

Abdomen. — Abdomen is moderately retracted and there is considerable tenderness and spasm in the right upper quadrant.

Liver is palpable two fingers' breadth below the costal margin. Upper border of the liver dullness is at the seventh rib.

Spleen is not felt; there is no shifting dullness; no masses.

Extremities. — Knee jerks present and equal; no edema; no Kernig or Babinski; no general, superficial, glandular enlargement.

On stimulation, heat, small doses of morphia and forced nourishment the general condition became somewhat improved.

May 10. Temperature still markedly and irregularly elevated; pulse 90 to 100 and of better quality; respiration 35 to 40. Patient coughs considerably and raises a large amount of tenacious, muco-purulent sputum, which contains large numbers of tubercle bacilli. Is annoyed by profuse sweating; still markedly prostrated.

May 14. No appreciable change in patient's condition.

May 21. Patient seems unusually bright mentally, says he feels well and wishes to get up, though he is really still greatly prostrated; the temperature, pulse and respiration being markedly and irregularly elevated.

May 28. Patient has lost ground rapidly; coughs much of the time. Temperature and prostration remain as at last note; pulse very rapid and feeble.

June 3. Three days ago the patient began to vomit and hiccough. This soon became almost continual and was persistent in spite of treatment. The abdomen, which was much retracted, gradually became rigid, with marked spasm and tenderness, particularly in the right hypochondrium, though the tenderness is more or less general.

There is no distention; the vomitus is very large in amount, frequently two quarts within ten or fifteen minutes; there is insatiable thirst. The stools are somewhat scanty, though regular (once or twice a day). Twenty-four-hour amount of urine is from 30 to 40 oz.

The vomitus, which at first was of dark green color, became light green, "spinach-like," in color and later salmon pink. Though the odor was foul, it was at no time distinctly fecal.

Shifting dullness developed in the flanks and fluid wave was detected. The prostration had been profound for some time, yet with the collapse, there was a marked change in the facial expression, pronounced peritoneal facies, with markedly sunken, bright and glistening eyes and ashy gray color; the mind is apparently clear, though there is great retardation and some indefiniteness of response.

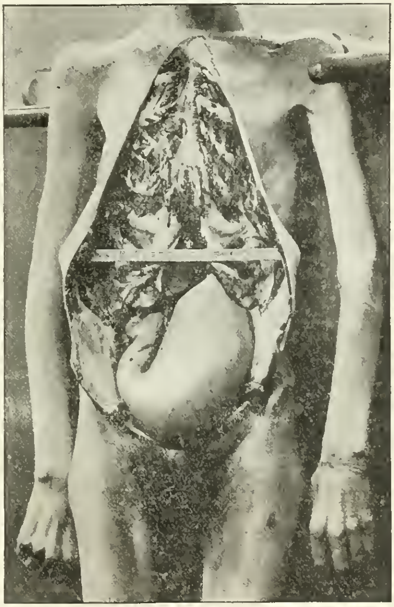


Fig. 1. Photograph showing greatly dilated stomach entirely filling peritoneal cavity, emaciation of the subject is also shown.

The abdomen is markedly retracted, costal margins and pubic bones being very prominent. No mass can be felt; no visible peristalsis.

As the patient had been practically moribund since entrance, and owing to signs of extensive tubercular process, surgical interference seemed inadvisable. He was kept fairly comfortable, the hiccoughing and vomiting becoming somewhat less after small doses of morphia. He gradually became weaker and died June 3, 1907.

Autopsy. — B. C. H. (A. '07, 155). Twenty-nine and a half hours post-mortem. June 4, 1907. Body, Dr. Mabee. Head, Dr. Emmons.

Body of a poorly developed and very poorly nourished (emaciated) white man, 173 cm. in length. Moderate rigor and lividity of dependent parts. Pupils equal, 6 mm., edema and jaundice absent. No abdominal distention.

Peritoneal cavity. — On opening the abdominal cavity an enormously dilated stomach is seen (see Fig. 1). The long axis of the fundus runs obliquely downward from the vault of the diaphragm, on the left side to the right inguinal region, and measures 30 cm.

The lower border of the fundus lies 2 cm. below a transverse line drawn between the anterior superior spines. Its greatest transverse diameter measures 16 cm. It extends to the right of the mid-line 7 cm. and completely fills both sides of the abdominal cavity below the umbilicus. The position of the lesser curvature is 2 cm. to the right of the mid-line, and extends downward 1 cm. below the umbilicus.

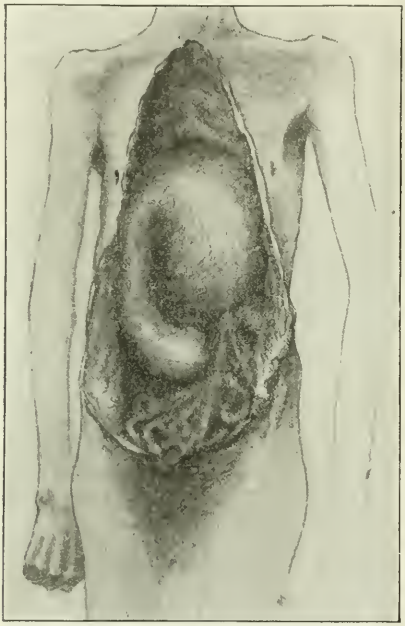


Fig. 2. Drawing showing immensely dilated stomach turned upward and backward (the transverse colon, omentum, meso-colon and liver have been removed), exposing the duodenum greatly distended and constricted by the root of the mesentery.

On throwing the fundus upward the transverse colon in a collapsed state is seen posterior to its inferior border. The small intestine is collapsed and lies in the pelvic cavity (see Figs. 2 and 3).

The mesenteric attachment which crosses the last part of the duodenum is tense. It presses the duodenum against the spinal column and this produces complete obstruction. Above this obstruction the duodenum is markedly dilated and continuous with the stomach (Fig. 2). Below this point both small and large intestines are collapsed and apparently empty (Fig. 3).

Mesenteric lymph nodes enlarged; firm in consistency. Appendix, with lower part of cecum, lies in pelvic cavity. It is 8 cm. in length. Surfaces of peritoneal cavity are smooth and glistening throughout. Diaphragm on right at fifth rib; on left at fifth rib.

Pleural cavities. — Left cavity completely obliterated by firm, fibrous adhesions. Surfaces of right cavity, smooth and glistening throughout. Bronchial and mediastinal glands are enlarged and on section show caseous areas.

Pericardial cavity. Surfaces smooth and glistening throughout. Cavity contains 200 to 300 cc. of clear, colorless fluid.

Heart. — Weight 250 gm. Myocardium, on section, is reddish gray in color and firm in consistency. Endocardium and heart valves normal. Coronaries normal.

MEASUREMENTS.

Tricuspid valve, 11 cm. Mitral valve, 9 cm. Left ventricle, 1.2 cm. Pulmonary valve, 6.5 cm. Aortic valve, 6.5 cm. Right ventricle, 3 mm.

Lungs. — Right lung salmon red in color. On palpation crepitation present in lower lobe and diminished in middle and upper lobes. Many solid and nodular areas are felt.

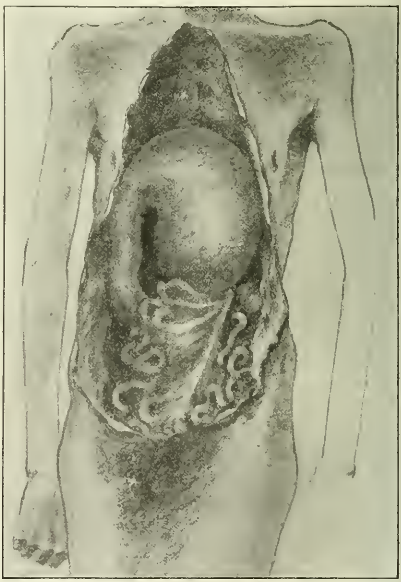


Fig. 3. Drawing representing structures shown in Fig. 2, except that part of the small intestine and its mesentery have been drawn to the right over the distended duodenum to show the collapsed jejunum appearing from behind the root of the mesentery. Numerous empty coils of small intestine are seen on the left, the greater part are collapsed and lie in the pelvis.

On section the alveoli of the lower lobe are collapsed, the cut surface having a fleshy appearance. Many grayish, white, solid areas are irregularly scattered throughout the left lung.

Crepitation is absent throughout the left lung. On section this is yellowish white in color, the entire lung being consolidated. In the upper lobe there are several cavities, varying in size from 5 mm. to 1.5 cm., the largest being near the apex.

Spleen. — Weight 170 gm. Fairly firm in consistency. On section it is deep red in color. Malpighian bodies are visible and trabeculæ are prominent. A small calcareous nodule, 2 to 3 mm. in diameter, is situated near the upper pole.

Gastro-intestinal tract. — Stomach empty and duodenum, above constriction of mesentery, contains 2,000 cc. of greenish brown, thin fluid. No fecal matter can be detected. Below this point the intestine is practically empty and collapsed. No evidence of necrosis of intestinal wall at point of constriction. Wall of stomach somewhat thinner than normal.

Pancreas. — Normal.

Liver. — Weight 1,400 gm. Firm in consistency. On section it is uniformly reddish brown in color. Lobules are distinct. Gall-bladder and ducts normal.

Kidneys. — Weight 260 gm. Capsule strips easily leaving smooth surface. On section cortex measures 5 mm. Kidney is grayish white in color and glomeruli are visible.

Adrenals. — Normal.

Bladder. — Contracted and empty.

Genital organs. — Normal.

Aorta. — Normal.

Head. — Weight of brain 1,330 gm. Scalp covered with thick, black hair. Calvarium normal. Longitudinal sinus contains fluid and cruor clot. Dura negative. Considerable sub-pial edema and dilatation of vessels. Ventricles contain about 10 cc. of clear fluid. Brain tissues are edematous. Cerebrum, basal ganglia, pons, medulla and cord are normal.

Middle ears. — Normal.

Anatomical diagnoses. — Chronic pulmonary tuberculosis; tuberculous pneumonia; gastrectasis (marked); gastroptosis; obstruction of duodenum by root of mesentery; hydropericardium; atelectasis; chronic pleuritis; congestion and edema of brain.

Microscopic. — Stomach, muscle layer thinner than normal; duodenum, blood vessels congested, no sign of inflammation; gastro-intestinal tract, otherwise normal.

Heart, slight granular degeneration about the nuclei. Lungs, extensive irregular areas of caseation, solitary and confluent tubercles; bronchioles and many of the alveoli filled with purulent exudate.

Liver, moderate chronic, passive congestion, slight atrophy and pigmentation of hepatic cylinders about central veins. Spleen, in the sinuses are numerous, large, phagocytic cells containing yellowish brown pigment; this is also extracellular in the form of granules and small globules. Kidney normal. Pancreas normal.

Mesenteric lymph glands, irregular areas of caseation. Sinuses contain numerous epithelioid and a few giant cells; among these there is purulent exudation. Cortex, cerebellum and medulla normal.

Stained for fat by Scharlach R., heart, aorta, kidney and pancreas negative. Liver shows a fine, globular, peri-central deposit. Suprarenals show a moderate deposit of fine globules in the cortex.

The above case differs from the majority of cases reported in the fact that the patient had no distention, rather, retraction and muscular rigidity.

Collapse with typical peritoneal facies, rigid and tender abdomen, shifting dullness and fluid wave pointed strongly to a general peritonitis. The signs of fluid free in the peritoneal cavity were in reality due to the large amount of fluid in the enormously dilated stomach.

In other respects the clinical symptoms and signs and the pathological findings are those of a typical case of acute dilatation of the stomach.

THE BOSTON MEDICAL LIBRARY. ITS PAST, PRESENT AND FUTURE.

BY JAMES F. BALLARD,
Second Assistant Librarian, Boston Medical Library.

The Boston Medical Library is thirty-two years old, having been first organized as the Boston Medical Library Association on Aug. 20, 1875, with the following officers: President, Oliver Wendell Holmes, M.D.; Vice-President, Charles E. Buckingham, M.D.; Secretary, Oliver F. Wadsworth, M.D.; Librarian, James R. Chadwick, M.D.; Treasurer, A. Lawrence Mason, M.D.

Two rooms were secured at No. 5 Hamilton Place, and the library was opened in the autumn of 1875, with the present assistant librarian, Dr. Edwin H. Brigham, in charge. The growth was rapid from the beginning, and was accomplished chiefly by means of donations and exchange. At the end of the first year the library contained 4,488 volumes. Of this number, 2,639 were periodicals, and 120 different periodicals were received regularly and kept on file. The association was incorporated under the General Laws of Massachusetts on Oct. 9, 1877.

In 1878, the building at 19 Boylston Place was purchased and altered to suit the needs of the association. It was dedicated on Dec. 3, 1878, at which time the number of volumes had increased to about 8,000. The growth in the new home was so rapid that the librarian, in his his report for 1886, urged the necessity of a new building in a less crowded locality. At this time the library contained 17,000 volumes, more than half of which were periodicals. On May 4, 1896, the act of incorporation was amended by dropping the word "Association" from the title of the Library, thereby forming the present legal title of "Boston Medical Library."

After a number of conferences at which plans for a new building were discussed, a special meeting to raise funds was held on Nov. 29, 1898, and a committee of twenty-five appointed for this purpose. The number of volumes on the shelves had increased to over 30,000, with about three-fifths periodicals. The direct result of the special meeting was the erection of the present home of the Library at No. 8, The Fenway, and its dedication on Jan. 12, 1901, at which time the library consisted of over 33,000 volumes.

The growth of the library during the seven years in its new building has been remarkable. There has been an increase of over 75% in the number of volumes, as the annual report for 1906-7 shows a total number of 57,093 volumes, of which 27,881 are periodicals, and 27,821 pamphlets. Six hundred and thirty different periodicals are received regularly and kept on file. At the close of the present library year we shall probably report accessions which will show an increase of 100% for the eight years, 1900-1 to 1907-8, inclusive.

The following table shows the rate of growth at various periods from the first to the thirty-second years of the library's existence:

	Years.	Total volumes.	Books.	Periodicals.	Special libraries.	Pamphlets.	Periodicals on file.
1	1875–76	4,488	1.849	2,639	....	.....	120
2.	1876–77	6.466	2,645	3,821	....	.....	120
6.	1880–81	9.454	4,923	4,531	....	5,678	286
9.	1883–84	14.099	6,383	7,716	....	12,289	328
11.	1885–86	16.374	7,001	9,373	....	14,832	345
28.	1902–03	39,856	15,190	24,666	....	20,554	476
30.	1904–05	50,689	19,612	25,582	5,495	22,629	597
32.	1906–07	57,093	21,323	27,881	7,889	28.821	630

Its value as a working library is far greater than its size would indicate, owing to the large percentage and fine selection of periodicals.

The policy of the Library Committee in regard to the admission of readers who are not members is very liberal. Physicians, medical students, professional men and any others who have a real need of the books contained in the library are welcome at any time during library hours. The only requirement is the signing of a visitors' register which is placed inside the entrance to the main reading room. The library hours are as follows: 9.30 A.M. to 10 P.M. daily, except Saturdays, Sundays and holidays; Saturdays until 6 P.M.; with the exception of the summer months, when the Library closes at 5 P.M. daily, except Saturdays, when it closes at 12 M.

The officers for 1907-8 are: President, George B. Shattuck, M.D.; Secretary, Oliver F. Wadsworth, M.D.; Librarian, John W. Farlow, M.D.; Treasurer, William H. Prescott, M.D.

The membership of the Library is composed of three classes: Fellows, Associates and Life Members. Fellows have the full privileges of the corporation, including the borrowing of books, and are entitled to vote at all meetings. The dues for Fellows for the current year, 1907-8, are ten dollars. Associates have the same privileges as Fellows, except that they cannot take books from the library and have no vote. They pay five dollars a year. Life Members consist of all persons who pay to the corporation two hundred dollars at any one time and who are approved by the Committee on Membership and Elections. Life Members are exempt from the payment of the annual assessment, and are entitled to all the privileges of Fellows, except that they cannot vote on the question of the annual assessment. The Chairman of the Committee on Membership is Arthur K. Stone, M.D.

At the present time the Library owns the building on the Fenway with the adjoining vacant lot of land, its library of over 57,000 volumes, a fine collection of paintings, one of the largest and best collections of medical medals in the world, a most complete collection of Holmesiana, the Martin collection on vaccination and inoculation, the Spring collection on medical biography and history, etc. Among the large number of paintings the following notable portraits may be mentioned:

Samuel Danforth, by Stuart. Oliver Wendell Holmes, by Billings. Henry J. Bigelow, J. B. S. Jackson, D. Humphreys Storer, Thomas B. Curtis, all by Vinton. Henry J. Bigelow, by Lazarus.

The Library also owns the large painting, 10 x 8 feet, of the first operation under ether at the Massachusetts General Hospital, 1846, painted by Robert Hinckley, of Washington, and a complete set of the caricatures of physicians, published with "Vanity Fair," London. The Storer collection of medical medals, tokens, etc., is one of the largest of its kind in the world, and additions are being constantly made by the donor, Dr. Horatio R. Storer, of Newport, and others. Donations to this collection will be given full acknowledgment, and badges, medals, tokens, relating to medical and allied subjects, are solicited. The collection consists of over three thousand pieces. Among the rarities may be mentioned a set of the "touch" pieces, which is complete except for one piece.

The Chadwick collection of Holmesiana, consisting of the bronze bust of Dr. Holmes, by W. E. Brooks, a replica of the one in the Boston Public Library; a large collection of photographs, engravings, etc., of Dr. Holmes, at various periods of his life, a collection of all his printed works, including first editions, and a number of his medical manuscripts, and many other unique items of Holmesiana, supplemented by the Billings portrait, are all placed in Holmes Hall.

The library has had a rapid growth from its inception chiefly because of two factors. First, it has been gradually absorbing the other medical libraries of Boston and vicinity; and, second, owing to the indefatigable energy of the late Dr. James R. Chadwick and his inseparable companion, the "Want Book." The following societies and libraries have deposited their medical collections with our library:

1875, Boston Society for Medical Observation. 1876, Boston Dispensary. 1876, Boston Society for Medical Improvement. 1878, Gynecological Society of Boston. 1880, Roxbury Athenæum. 1883, Harvard Medical School. 1898, 1905, Boston Athenæum. 1902, Harvard University. 1903, Cambridge Public Library. 1906, Tufts College Medical School. 1906, Waltham Public Library. 1906, 1908, Boston Public Library.

The deposit from the Boston Public Library is still in process of transfer. From the foregoing statements it will be seen that the Boston Medical Library is acknowledged as the natural center for medical literature in Greater Boston and its vicinity, and as such should be selected as the final repository for all the special collections on medical and allied subjects existing in New England. In the future this library will be the great medical reference library east of New York.

The expansion of the library has been uneven, as would naturally be expected in a collection whose growth has been achieved largely by means of donation and exchange. It has been only within the last few years that any considerable number of modern books has been acquired by purchase, as, prior to this time, there had been no available funds for this purpose.

Some of our sections are very full and complete, which is largely due to the fine special collections that have been given to the Library from time to time; while others are very meager and incomplete.

In closing, it will be the endeavor of the writer to give a summary of the needs of the library in the way of books, periodicals, etc. In the first place it is as well to warn against the practice of carelessly destroying material that may be of value to some library. Do not destroy anything on medical, scientific and allied subjects, no matter how worthless it may seem, until you have consulted a competent expert. If you find a lot of medical or scientific books, periodicals, pamphlets, etc., stored in the garret, closets or elsewhere, do not throw them away, or give them to the junk man, but send them to the Boston Medical Library, 8 The Fenway, Boston, Mass. If the shelves in your office and library are filled with books, periodicals, pamphlets, etc., that are never used, why not send them to the Library where they will be accessible to the medical profession at large? Again, if you have more than one edition of a work, why not keep the latest edition and let the Library have any others? If in Boston, a postal card, or telephone call, Back Bay 1617, will bring a boy or team. If outside of Boston, and a large lot, send by freight, if small by express, at the expense of the Library. The Library will be glad to receive any donation, no matter how small or how large it may be.

The Library is particularly in need of the following mentioned classes of material:

1. Publications in living languages other than English, French or German.

2. Modern books, monographs, etc., published during the period 1880-1890.

3. Pamphlets, reprints, theses and inaugural dissertations.

4. Material relating to the medical history and sanitary evolution of Boston and vicinity, Massachusetts and New England. Any printed matter, as well as manuscripts, diaries, note and account books, scrap-books, clippings, letters, pictures, relics, mementos, etc., will be gladly received and proper acknowledgment made.

5. Non-medical publications of physicians. This class of material should include all of the writings of the physician who, in addition to practising his profession, leads an active life in other circles; as well as of the physician who early abandons the profession of medicine and becomes famous in some other field of endeavor. Of this last named class we should like any biographies, sketches, etc., as well as all of their works. The following is a partial list of the names of such physicians:

John Arbuthnot, John Brown of Edinburgh, Thomas H. Chivers, Erasmus Darwin, Oliver Goldsmith, Oliver Wendell Holmes, Charles Lever, Linacre, John Locke, Thomas Lodge, Marat, S. Weir Mitchell, Molière, Count Rumford, Schiller, Albert Smith, Tobias Smollett, John Wolcott, Thomas Young, etc.

6. Novels, tales, plays and poetry relating to medicine or to medical subjects. The following list of titles will give an idea of this class of material. Couvreur, "Le mal nécessaire"; Everts, "The Cliffords"; Fenn, "Nurse Elisia"; MacDonald, "Paul Faber, Surgeon"; Ouida, "Toxin"; Zola, "Dr. Pascal" and "Lourdes"; Hichens, "Felix," etc. Also works of fiction that contain character sketches of physicians or descriptions of medical scenes, viz.: Thackeray, "Pendennis" and "Adventures of Philip"; Dickens, "Bleak House"; Charlotte Bronté, "Villette"; Mrs. Gaskell, "Wives and Daughters"; Miss Martineau, "Deerbrook"; George Eliot, "Middlemarch"; Ian Maclaren, "Beside the Bonnie Briar Bush," etc.

7. Medical, dental and other allied professional school catalogues, announcements and other publications; hospital reports; reports of boards of health and vital statistics; registration, sewerage and water boards; and state and national documents relating to medical and allied subjects in any language.

8. Books, periodicals, etc., on dentistry, veterinary medicine and surgery, comparative anatomy, pathology and physiology.

9. Very old medical publications.

10. Material relating to vaccination, vivisection and other controversial subjects.

11. Sets or volumes of the "Index Medicus" or "Index Catalogue of the Office of the Surgeon-General of the U. S. Army."

12. Transactions of general scientific societies, such as the "Royal Society," London; the "Société de science de Paris"; the "Royal Dublin Society," etc.

13. General scientific periodicals, such as "Nature," London; "Revue scientifique," Paris; "Science," Lancaster, Pa., etc.

Many articles of value to the student, research worker, physician and biologist appear in these general scientific publications, and every large medical library should have complete files of the more important sets.

14. General biographical works, viz.: "National Dictionary of Biography," London; "Appleton's Cyclopedia of American Biography," New York; "Nouvelle biographie générale," Paris, 1852-1883; "Biographie universelle," Paris, 1811-1862, etc.

The Library is particularly desirous of obtaining special collections on any subject in medicine or cognate sciences, and more especially as regards the following named divisions, in which any number of volumes will be gladly received.

General and medical bibliography and biography and the history of medicine; general biology and its subdivisions of morphology, anthropology and psychology; chemistry (general, medical and pharmaceutical); homeopathy and eclecticism; Christian science and osteopathy; radiotherapy, Röntgen rays and electricity; pharmacy and foreign pharmacopeias; tropical diseases; statistics; pediatrics; ophthalmology and otology; public hygiene and sanitary science; military and naval medicine; medical jurisprudence, handwriting and toxicology; nervous and mental diseases.

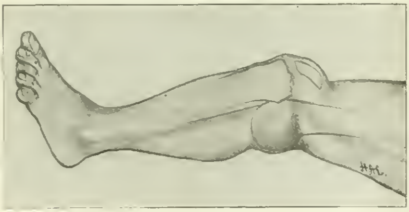
Clinical Department.

FORWARD DISLOCATION OF THE KNEE.

BY HOWARD A. LOTHROP, A.M., M.D., BOSTON,
Instructor in Surgery, Harvard Medical School; Assistant Visiting Surgeon, Boston City Hospital.

The injury sustained by this patient is recorded because of its rarity. He caught his left leg below the knee between a belt and pulley and was thrown to the floor. He was removed to the hospital where he was seen shortly after the accident.

Examination showed him to be a man of average development and muscular. The only injury sustained was to the left knee. The skin was intact but was stretched very tightly around the joint so that in the popliteal region over the condyles of the femur it was anemic. There was a very marked, abnormal prominence anteriorly. Lateral motion at the knee was particularly free and there was some motion in all directions such as would appear in a flail joint. When at rest there was no muscular spasm, and the pain was moderate. There was no marked inversion or eversion of the foot. The circulation in the leg was not much affected. Photographs and radiographs were taken from which the appended drawing was made. It was very easy to determine that we had to do with a forward dislocation of both bones of the leg on to the lower end of the femur, completely rupturing the capsule posteriorly and on both sides. Over the condyles of the femur the skin was so tense that it would have sloughed in a short time. It was obvious that all of the numerous ligaments of the knee joint were ruptured except the anterior portion of the capsule.



Drawing made from a photograph and x-ray picture.

Reduction. — The dislocation was reduced about two hours after the injury was sustained. Complete general anesthesia was obtained. Reduction was accomplished easily by these steps in order: Direct traction until the upper end of the tibia was drawn down to the lower end of the condyles, followed by hyperextension to widen the tear in the capsule posteriorly. While the lower leg was held in this hyperextended position under traction, the foot was lowered slowly as an assistant pushed the upper end of the tibia down over the condyles of the femur, so as to avoid inverting and rolling any part of the capsule between the articular surfaces. Thus the bones readily resumed their normal position. Then complete flexion was done and when the leg was left hanging over the edge of the table it moved forward and backward without resistance.

Fixation in a nearly straight position was maintained by a plaster-of-Paris bandage. Convalescence was uninterrupted. The subsequent discoloration was very moderate and the swelling not noticeable. There was no synovitis, probably because of the extensive laceration of the capsule. Patient was discharged from the hospital in ten days. He wore the bandage for about five weeks. Eight weeks after the accident patient returned to Italy and has not been heard from since.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY F. S. WATSON, M.D.,
AND
PAUL THORNDIKE, M.D.

BACTERIURIA.

Bond [1] speaks of a class of patients who present the clinical picture usually associated with pyelitis, but with none of the causes which commonly produce that disease. He says that these cases are usually ascribed to a blood infection, excreted through the kidneys. He differs from this view, however, and, after a careful consideration of the matter, says that putting together all the facts, clinical, bacteriological and experimental, it is probably true that the infection enters the body from the urethra and so spreads upwards.

ACUTE HEMATOGENOUS INFECTION OF ONE KIDNEY.

Cobb [2] reports a case and discusses this very interesting subject from both a pathological and a clinical standpoint. He gives a careful bibliography and concludes from the facts at his disposal that in normal conditions of health and in normal kidneys, bacteria circulating in the blood will pass through the kidney without causing harm. In those cases apparently in good health where infection occurs, there is some cause in the kidney itself for the localization of bacteria, such as injury, prolapse or other displacement; renal calculi or other cause (such as pregnancy in women) which serves as a temporary obstruction to the ureter. It may be, he says, that such infections will take place in persons who suffer simply from a lowered general vitality and resistance without other abnormality. He speaks of the difficulty of diagnosis in any case where the pain is not distinctive enough to localize the infection, and says that the treatment should always be operative.

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[1] Bond: Brit. Med. Jour., Dec. 7, 1907.
[2] Cobb: Boston Med. and Surg. Jour., Jan. 24, 1907.

X-RAY THERAPEUTICS IN CASES OF TUBERCULAR KIDNEY.

Bircher [3] tells of two cases of tuberculosis of the kidney in which, after prolonged x-ray treatment, he himself saw the conditions improve and the patients recover. Both cases had refused operation. Whether or not recovery was as complete as he believed, the question of the utility of the x-ray in the treatment of such conditions must always be a most interesting one until more is known about its limitations than is the case at present.

TRANSPLANTATION OF KIDNEY TISSUE.

Haberer,[4] working in Eiselsberg's clinic, has demonstrated that bits of kidney tissue transplanted into other organs, such as the spleen or omentum, become necrotic and are absorbed, while on the other hand Carrel [5] asserts that in dogs where both kidneys are removed and the kidneys of another animal are grafted in their place, there may be normal urine secretion from the new organs and the animal may live for some time.

THE CYTOLOGY OF GONORRHEAL DISCHARGES.

In an illustrated article Taylor [6] describes, with some detail, the cytology of the elements of the discharge of urethritis, but concludes that this work which has recently been done has helped us neither in our understanding of the nature of the process nor in our ability to make a prognosis. He believes that the work is of very doubtful value.

ELECTRIC CONDUCTIVITY OF BLOOD AND URINE.

Turner [7] describes a method for estimating renal capacity in surgical affections of the kidney by the aid of the electrical conductivity of blood and urine and claims that this method is easier and less liable to error than cryoscopy. He says that the electrical resistance of blood depends upon the salt concentration and the relative volume of the corpuscles to the serum. The resistance of urine depends upon the salts, acids and bases, of which sodium chloride is the most important. It is unaffected by the presence of albumin or sugar or blood. A high resistance of blood and a low resistance of urine is indicative of health. In disease the changes are in the direction of a diminished resistance of the blood, and by estimating the resistance of these two fluids an index is determined.

RAPID TEST FOR DETERMINING THE PRESENCE OF TUBERCLE BACILLI IN URINE.[8]

This method demonstrates the absence or presence of bacilli in nine days. The sediment is washed and injected subcutaneously into the thigh of a guinea pig and the inguinal glands of the same side are at the same time crushed with the fingers. If tubercle bacilli are present in the sediment, they may be found in large numbers in the excised glands after nine days.

GONORRHEAL ANTISERUM.

Rogers and Torrey [9] prepare this serum by inoculating animals with increasing doses of gonococci, at first devitalized but later living. They prefer a serum made from several different strains of gonococci. They have used it in a series of cases of gonococcal arthritis, and found it efficacious in a large percentage of the acute cases, but in the chronic cases the results were not so good and in acute and chronic urethritis and conjunctivitis the serum was useless. In epididymitis, salpingitis and iritis they think the outlook is promising.

OPERATION FOR EXSTROPHY OF THE BLADDER.

Berg [10] describes an ingenious operation for the cure of exstrophy of the bladder and details five cases which were successful beyond his hopes. Three separate operations are necessary. In the first an isolated loop of small intestine is implanted into the sigmoid flexure. In the second operation, several weeks later, he resects the bladder wall, leaving an elliptical piece containing the openings into the ureters. This elliptical piece is then sutured into the side of the isolated loop of small intestine which has been previously implanted in the sigmoid flexure. At the third operation, a pedunculated skin flap is transplanted to cover the granulating wound.

New Instruments.

(*a*) THE CRYPTOSCOPE.[11]

This is an instrument which allows a careful search, by means of the x-ray, of a kidney which is exposed during an operation, and so enables an accurate localization and a correspondingly small incision for the removal of a stone.

(*b*) A TELEPHONIC STONE-SEARCHER.

Jacobson [12] describes a means of attaching a stone-searcher to the front of a telephone transmitter, so that sounds produced by a stone are readily transmitted to the ear.

(*c*) A NEW WATER DISTENTION URETHROSCOPE.

Walker [13] describes in detail, with an illustration, a straight, electrical urethroscope which allows of a water distention of the urethra, and by means of which a careful examination of the whole urethral canal can be made during such distention. Walker has used his instrument considerably and says of it: "In view of the clear delineation of the blood vessels of the urethral wall and of the glands and follicles, I believe that after one is accustomed to it and is able to interpret the pictures, it will be found far superior to the urethroscope now in use."

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[3] Bircher: Münch. med. Wochenschr., Dec. 17, 1907.
[4] Haberer: Arch. für klin. Chir., Berlin, Oct. 19, p. 1406.
[5] Journal of Experimental Medicine, Jan., 1908.
[6] Taylor: Jour. Med. Asso., Nov. 30, 1907
[7] Turner: Edin. Med. Jour., April, 1907.
[8] Bloch: Berl. klin. Wochenschr., April 29, 1907.
[9] Rogers and Torrey: Jour. of the Am. Med. Asso., Sept. 14, 1907
[10] Berg: Nordiskt Med. Arkiv, Stockholm, Aug. 17, 1907.
[11] Brit. Med. Jour., Sept. 7, 1907.
[12] Jacobson: Annals of Surg., Sept., 1907.
[13] Walker: Jour. Am. Med. Asso., May, 1907.

(*d*) APPARATUS FOR THE DRESSING OF SUPRAPUBIC WOUNDS INTO THE BLADDER.[14]

This device keeps the patient dry from the time of operation until the wound is healed, is simple of application and consists of a celluloid cap which is retained in place over the suprapubic wound by elastic pressure.

RARE AND UNUSUAL CASE: ECTOPIA TESTIS TRANSVERSA.

Halstead[15] reports a case where during an operation for the relief of an irreducible inguinal hernia in a man of forty-two, both testes were found occupying the left scrotal pouch and both having a common tunica vaginalis. The epididymes were merged from the middle third downward.

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Reports of Societies.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

SEVENTEENTH ANNUAL MEETING, HELD AT ST. LOUIS, MO., DEC. 30 AND 31, 1907.

(Concluded from No. 9, p. 297.)

THE ABDOMINAL INCISION.

Dr. Clifford U. Collins, of Peoria, Ill., read a paper on this subject, in which he drew the following conclusions:

1. Abdominal incisions should be placed so they will pass through both aponeurosis and muscle.
2. The incision in the aponeurosis and the split in the muscle should run in different directions. This could be done in a large majority of abdominal operations.
3. A longitudinal incision should not be made through the linea alba or the sheaths of the rectus at a right angle to the combined pull of the three side muscles when it was possible to avoid it.
4. For very large tumors and in cases where the character and location of the pathology was in doubt, the longitudinal incision was probably necessary.
5. If the longitudinal incision was necessary, the split in the rectus should not be continuous with the aponeurotic incision, but should be placed to one side, and preferably through its inner half to avoid the intercostal nerves which entered the outer half.
6. It would take longer time and more experience to demonstrate the correctness of these conclusions.

ARTHRODESIS AND TENDON TRANSFERENCE IN PARALYTIC CLUB-FEET.

Dr. John Prentiss Lord, of Omaha, Neb., advised arthrodesis and tendon transference in cases of paralytic club-feet for the following reasons: (1) To prevent the return of the deformity, which so often occurred where braces alone were used. (2) To avoid loss of time during which the child became confirmed in the habit of deformity. (3) Because younger children learned to walk anew much easier than did those of more advanced years. (4) Where the patient was financially unable to meet the expense of prolonged treatment with braces. (5) By preventing return of deformity, the parents did not fall into the habit of thinking nothing could be done. (6) It utilized to best advantage the remaining muscular power and gave the best possible results to be obtained in these cases.

The degree of work done depended upon the amount of deformity. Ordinarily, removal of the articular surfaces from the tibio-astragaloid, astragalo-scaphoid, and calcaneo-cuboid was done to effect arthrodesis. In addition, transference of the tibialis anticus to the common extensor for toe-drop was done, while in extreme equino-varus astragalectomy with removal of the joint surfaces from the calcaneo-cuboid articulation, and even suturing the tibialis anticus to the periosteum on the outer side of the cuboid, might be demanded. In some cases, even the flexor longus hallucis was brought through the interosseous membrane and sutured to the common extensors. In the rare cases requiring muscle-splitting, he said we should avoid severing the transverse nerve fibers in the body of the muscle. Dr. Lord had used catgut sutures, except where the tension was heavy, when he used fine silk, boiled in bichloride, dried and reboiled in paraffin, before operation. In more than 40 consecutive cases the results had been very satisfactory. In joint cases cigarette drainage was used to take away oozing. This was gradually removed, no suppuration taking place. Heavy casts were applied as long as six months, the use of the foot being gradually increased after three or four months. The results had been very gratifying, the majority of patients having been able to discard braces or crutches within a reasonable time.

PRESIDENT'S ADDRESS.

President Oviatt did not deal with any concrete surgical problem, but his address consisted of a few thoughts bearing on the practice of surgery that naturally came to one who had spent the most active years of his life in the work. No attempt was made to take up the history further than to show that previous to the year 1800 but few discoveries were made that marked any distinct advance. The evolution of surgery in the past century had kept pace with the development of science along other lines, wonderful as this had been. With the perfected technic of antisepsis and asepsis, it seemed that the acme of surgical science had been reached; but in the light of discoveries it would be rash to attempt to place a limit to the future of surgery.

The ambitious medical student did not usually get far into his college work before he decided to become a surgeon. This decision was brought about largely through what he saw in surgical clinics and from his observation of the position held by the surgical leaders of the profession. Young men who elected to become surgeons should make sure that they possessed the special aptitude and then be willing to devote a long period to preparation for the work.

Attention was called to the fact that there was much that passed under the name of surgery being done by incompetent and ill-trained men. Some of it was honest and well-intended, but much was for purely commercial ends. A spirit of graft had pervaded the profession that was undermining morals and ethics.

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[14] Irving: Lancet, Dec. 21, 1907.
[15] A. E. Halstead: Surg., Gyn. and Obstet., Feb., 1907.

A partial explanation for the existence of this condition was found in the fact that this was an age of commercialism. We were known to the world as a nation of dollar-chasers. This, and the overcrowding of the profession with men from inferior schools, were in large part responsible for fee-splitting and the commission evil. The existence of this class of medical colleges was less excusable when it was considered that the better schools ranked with the best in the world, and that they were ample to afford instruction for all who should enter the profession. Enough well prepared men of character were entering the field to insure the upholding of the lofty ideals that had characterized the profession in the past. We might, therefore, take a hopeful view of the future. Another aid in the elimination of the graft evil was coming from the people themselves. The public mind was especially active at this time in combating graft in all forms.

The moral standards set for professional men and men in public life were going to be higher in the future, and with the limelight of public opinion turned upon the medical and surgical grafter, the evil would cease to exist. Hand in hand with this reform it was hoped that an established standard of qualification would be established for those who assumed to do surgery.

THE SIGNIFICANCE OF ABDOMINAL TENDERNESS IN LOCATING LESIONS OF VISCERA.

Dr. T. C. Witherspoon, of Butte, Mont., referred to the physiology of the sensory nerves of the abdominal viscera, and discussed at length the effect of lesions of the viscera in the production of pain. The somatic areas of pain referred from the viscera and their significance in diagnosis were pointed out and expatiated upon; likewise the character of visceral pain. He spoke of disturbance of the sensory function of the somatic nerves, with coincident disturbance of visceral function. Lastly, he called attention to those pains of central origin which were referred to the abdomen. Pott's disease, tabes and tumors in the spinal canal illustrated this class. Usually the subjective pain was not accompanied by tenderness, at least not of any acuteness.

ETIOLOGY OF EPITHELIOMA.

Dr. Arthur E. Hertzler, of Kansas City, Mo., began with the hypothesis that the limitation of epithelial cell development was set by the chemical difference in the basement membrane and epithelial cells. Experiments proved that those chemicals which unite (stain) connective tissue *in vivo* caused an atypical epithelial cell proliferation resembling closely a beginning epithelioma. The development of atypical cells was limited because the action of the chemical upon the connective tissue was limited. This resulted in constancy for stains having these characteristics. It was negative for connective tissue stains which did not stain *in vivo*, or for nuclear stains. In areas in which atypical cell proliferation had been brought about by such means the fibers, after fixation, did not stain with the ordinary fibrous tissue stains, while the fibrous tissue in regions not so treated stained in the characteristic manner.

Applying facts so deduced clinically, the general statement was ventured that epitheliomas occurred in those regions where alkaline secretions were permitted to come in contact with the fibrous tissue by irritation, thus producing the resistance of the connective tissue to the invasion of epithelial cells or to some change primarily in the connective tissue, *e.g.*, prolonged exposure to leucocytes, as in chronic inflammation, or to some over-stimulation of the epithelial cells. Either of these conditions would lead to a disturbance of chemical balance and permit the invasion of the epithelium.

PREPARATORY AND POST-OPERATIVE TREATMENT.

Dr. James E. Moore, of Minneapolis, said that as a rule preparatory and post-operative treatment, aside from the sterilization of the operative field and the dressing of the wound, had more to do with the comfort of the patient than with his recovery, for emergency cases very commonly did well and surgeons frequently performed successful operations away from home and left the after-treatment to a physician little skilled in the care of surgical cases. In all but exceptional cases where some organ, the bladder, for example, had to be prepared for operative procedures, prolonged preparatory treatment was unnecessary and inadvisable. It was not in keeping with modern surgery that surgeons should operate their patients off the street, but it was sufficient to have the average patient enter the hospital on the day preceding the operation. In weak patients and where a very severe operation was to be performed, a hypodermic of 1-30 grain of strychnia just before operation was helpful. The operative field should be shaved, thoroughly disinfected, and a sterile dressing applied the evening before the operation. Every operating room should have an experienced anesthetist, because it added to the patient's comfort and safety, and allowed the surgeon to give his undivided attention to the operation. He pointed out the many things pertaining to the operation itself which had a decided bearing on the after-treatment. The patient always thought the stitches and bandages were too tight, and it was very important that the surgeon should know that they were not so. Most stitch abscesses were caused by tight sutures, and tight bandages were the cause of untold suffering. Thirst was the greatest source of suffering after operation, and in the management of this symptom many mistakes were made. His patients all got water after operation, and they convalesced much more comfortably than those who were deprived of it. All surgeons agreed that the patient was better without food for a time after operation for he did not suffer from hunger and an effort to force feeding would surely disturb his stomach. Aside from opiates and mild cathartics, medicine had very little place in post-operative treatment. His patients got it only to meet definite indications. Attention should be given to the relief of pain after operation. The proper care of the bowels after an operation had much to do with the patient's comfort.

In every case the question naturally arose, When shall the patient get out of bed? All were agreed that old people should get up at the very earliest period possible, for reasons well understood, but there was still a great diversity of opinion as to when a younger patient should get up. Every abdominal operation was of sufficient importance to justify the patient in remaining in bed for from one to three weeks, owing to circumstances, and he was usually content to do so. There was no crying need for getting the patient out of bed the day after an abdominal operation. He was safer and more comfortable in bed for a few days at least. He recently operated upon a colleague for chronic appendicitis, who made the statement that he intended to get out of bed the day after operation; that staying in bed for a week after such a simple operation was all nonsense, to all of which the speaker readily acceded with a mental reservation. On the first day the patient quietly curled up on his side, and Dr. Moore smiled without comment. On the second day he was still in bed, and when he asked him why he was not up, he mildly suggested that he go to a warmer climate, and very emphatically stated that his viewpoint had changed.

THE APPENDIX AS A FEMORAL HERNIA CONTENT.

Dr. Charles S. James, of Centerville, Ia., reviewed the literature, after which he reported the case of a female, aged seventy-seven, years, who for four days had noticed a painful lump in the right groin. The patient was in usual health previously, but had noticed a small lump at this point for several years. Symptoms were negative, except that pulse was 96, and temperature 102°. The abdomen was not distended. There was nothing noted indicating intra-abdominal lesion. There was a prominent brawny swelling, three and one-half to four inches in diameter, indurated and semi-fluctuant, presenting the characteristic appearance of a suppurative gland over Poupart's ligament. There was no impulse. A diagnosis was made of a local suppurative process, with probable femoral hernia. Operation was performed at the Centerville Hospital one hour later under spinal anesthesia, using 10 cg. of 10% stovain solution. The abscess cavity was dissected up with difficulty and found to extend through the femoral hernial opening as appendix. A separate abdominal incision disclosed an incarcerated loop of ileum, gangrenous, and two perforations. He resected five inches of the intestine, and resorted to end-to-end anastomosis with suture. The appendix was ligated, severed and removed with the closure of the stump in the usual manner. Both incisions were closed with continuous catgut suture. The time of the operation was one hour and a quarter. The patient was conscious, but suffered no pain throughout the operation. Convalescence was pleasant and recovery excellent. He presented photographs and specimen.

THE ASSOCIATION OR CONFUSION OF APPENDICITIS WITH OTHER DISEASES IN THE FEMALE PELVIS.

Dr. A. E. Benjamin, of Minneapolis, said that any inflammatory disease within the abdomen primarily involving one organ might from continuity or contiguity result in other tissues or organs being involved. The blood supply of the abdomen and pelvis was such that infectious micro-organisms might be carried from one diseased organ to another, thereby starting a similar disease in a part through which this infected blood flowed. The lymphatics might also convey disease to organs in the line of their distribution. The nerve supply of the organs of the lower abdomen and pelvis and their sympathetic relationship was such that pain might be referred to localities not affected. It was possible for more than one form of disease to exist within an abdomen simultaneously, and the symptoms to become quite complex thereby. Besides actual disease, there might exist a misplaced position of one or more organs, thereby changing the symptoms considerably in the presence of disease, or resulting in contiguous organs being affected because of this displacement. Also the misplaced position alone might cause distress which resembled some actual form of disease. The character of the disease, the variety of each form of disease, the number of organs involved, the associated displacement of organs, the temperament, environment and avocation of the individual suffered, were all factors to be considered in summing up the case. A careful personal history, a thorough physical examination of the individual, with the aid of chemical, bacteriological investigation, and a searching examination with all the apparatus at command, *i.e.*, cystoscope, proctoscope, microscope and x-ray, would clear up the majority of cases. In certain cases if no positive diagnosis could be made, there might be clear indications for operative interference to cure the disease. In complicated cases a thorough search through a proper-sized opening should be made to terminate the symptoms complained of, and a record of all findings for future reference made.

TORSION OF THE OMENTUM.

Dr. W. W. Grant, of Denver, Colo., reported an interesting case of torsion of the omentum, and said that in view of the most common association of this diseased condition with hernia, it became a matter of unusual interest in this particular case as to its possible connection with hernia in earliest childhood. He was positive, from the nature and character of the adhesion, the condition of the intestine and absence of any indication of disease, past or present, of every other organ or part, that it was of long standing. It seems possible that it could have dated from the existence of hernia in childhood without causing intestinal obstruction or torsion at an earlier date. The vomiting might have been due to a momentary obstruction from volvulus due to the adhesion and intestinal peristalsis.

In reviewing the literature, Dr. Grant found that 61 cases had been reported. He agreed with Richardson, of Los Angeles, that strangulation of the omentum from pressure or adhesions did not constitute torsion and should not be classed as such. Only seven cases were entirely intra-abdominal. His own made eight. The torsion might be single or double, but usually the former. In the intra-abdominal cases the symptoms closely resembled those of acute appendicitis, and up to the present time with a probable diagnosis of the latter, even in hernia the abdominal symptoms were pronounced in most cases. The tenderness and dullness at an early period covered a wider area than in appendicitis; yet, if on the right side, both subjective and objective symptoms simulated those of acute appendicitis. If hernia existed, one should especially be on guard as to the differential diagnosis. The history of torsion of the greater omentum justified this precautionary statement, and he hoped that these suggestions might be accepted as timely. He believed this case was unique and exceptional in being completely amputated by torsion from the body of the omentum and in being fixed by adhesion to one point of intestine and to nothing else.

LYMPHATIC AND PORTAL INFECTIONS FOLLOWING APPENDICITIS.

Dr. Roland Hill, of St. Louis, Mo., reported an interesting and unique case illustrating these infections, and said that in the present stage of surgical knowledge we were almost absolutely helpless in the presence of some of the severe forms of infection when the infecting organism had once passed into the general circulation. It went without saying that early removal of the appendix should be the keynote in all cases together with an attack, wherever possible, upon any focus that might form. Considering what had been accomplished along the lines of serum therapy, the remarkable effects of antitetanic serum as a prophylactic of tetanus, and the miraculous results of diphtheria antitoxin, it did not seem too much to hope and expect that experimental medicine would soon offer specific agents which would nullify the effects of the various pathogenic organisms when once they had been introduced into the blood.

EXTRA AND INTRA-UTERINE PREGNANCY OF FIVE MONTHS, WITH OPERATION AND DEATH.

Dr. D. C. Brockman, of Ottumwa, Ia., reported the case of a woman, five months pregnant, with extra- and intra-uterine pregnancy. An attempt was made to remove the ectopic sac by abdominal section, but the parts were so vascular that he was obliged to desist. Furthermore, the patient was so debilitated from vomiting that he did nothing further. But in ten days he opened the sac from below, removed the fetus, and packed the cavity with gauze, intending to remove the placenta later. Uterine hemorrhage and pains occurred on the third day, and the woman died two days later from extra- and intra-uterine hemorrhage. He asked, Could a better method be suggested?

Dr. D. W. Basham, of Wichita, Kan., reported a case of hernia of the appendix, which was complicated with appendicitis, and reviewed the literature on the subject.

SEXUAL PERVERSION AS AN ACCOMPANIMENT OF PROSTATIC HYPERTROPHY.

Dr. J. F. Percy, of Galesburg, Ill., believed that the old prostatique, who showed aberrant sexual activity, was in a large proportion of cases suffering from a psychosis rather than senile dementia, to which the symptoms were usually attributed. Under the influence of the irritation from his enlarged prostate, he might commit all forms of sexual crime, and after removal of his prostate his functional sexual aberration disappeared, and he remained cured. This phase of the diseased prostate opened up the possibility of a more rational study of the pelvic environment of the prostate gland in the sexual perverts among men, old and young. Many old prostatics were in insane asylums, many of them were in the government and state soldiers' homes, as well as in the various county almshouses. The strain of sexual excesses from early life until old age, the intimate connection maintained between the prostate gland and the sympathetic and the cerebro-spinal nerves, the unknown secretory functions of the prostate gland along physiological lines — these all made prominent the fact that with the hypertrophied prostate could be had a class of symptoms referable to the sexual system where the mental life of the sufferer carried him close to the border where insanity had its dominion and which could be corrected by the aid of surgery.

INTESTINAL OBSTRUCTION.

Dr. B. Merrill Ricketts, of Cincinnati, Ohio, contributed a paper on this subject, in which he defined obstruction as the stoppage or blocking of a canal or opening in the body, due to any of the numerous causes. The symptoms, such as vomiting, pain, distention (symmetrical or asymmetrical), sweating, collapse, rigid parietes and toxemia, one or all might be present in any form of obstruction in the large as in the small bowel. These being facts, why should exploration be delayed, when simple incision through the abdominal wall was done without mortality? Should exploration and direct digital and ocular examination of the abdominal viscera be delayed in intestinal obstruction, because experiments, reports, symposia and discussions had failed to satisfactorily explain its etiology, symptoms and treatment? Intestinal obstruction probably had a higher immediate mortality with or without surgical intervention than any of the surgico-pathological diseases. The non-mechanical type without operation had a supposed mortality of 90% when not complicated with general peritonitis, and from 60% to 84% with operation. This mortality in post-operative obstruction exceeded that of pre-operative obstruction of the same degree, whether of the mechanical, non-mechanical, or septic type. This increased mortality was due to the added surgical trauma, and especially the anesthetic. In the mechanical type the mortality was given as 100% without operation, and from 50% to 80% with operation. This difference in per cent was probably due to the advantages of palpation and the Rœntgen ray in detecting neoplasms and foreign bodies which were its most common cause, hence earlier surgical measures might be resorted to. In the septo-peritonitic type without operation the mortality was generally given as 100%, while with operation it was somewhat less. There were certain forms of obstruction with or without infection that had been considered invariably fatal. If this was so, there was nothing to be lost in opening the abdomen. If, after opening the abdomen, an imperfect mechanism within can be made perfect without destruction of the nerve or blood supply, in the absence of infection, surely many more cases would recover; even with many forms of infection this was probably so. But if the patient became exhausted from vomiting, pain, infection, or want of nourishment, with or without infection of any kind, the mortality would be proportionately high. Pain, distention and vomiting were always alarming, and the majority of patients went on to death regardless of any effort to relieve them. Intoxication had not yet been proven to be the cause of death in any given case of obstruction. If cases of obstruction indicated by one or more symptoms were opened at the onset, under ordinary precautions, the mortality would be less than if they were operated upon late in the attack. The element of delay in surgery is more serious than the element of aggressiveness. In no other surgical condition was this statement more fully verified. The most skilled operators had many times opened the abdomen for a condition made certain by one or more symptoms, and found one entirely different. If this was sanctioned in other lesions of less importance within the abdominal cavity, why could not exploration for obstruction based upon one or more symptoms be undertaken? This would determine the character and degree, if obstruction was present. If not present, no special harm would ensue. If the character or degree or both were believed to be fatal, the remedy should be applied regardless of its character, because that verdict was only an opinion, not an established fact.

Dr. A. A. Kerr, of Salt Lake City, contributed a paper in which he discussed obstructions of the common bile duct, and reported a case in which he performed cholecystostomy, partial gastrectomy with posterior gastro-intestinal anastomosis, cholecystenterostomy, and entero-anastomosis.

The following papers were also read: "Hydrocephalus, its Surgical Management," by Dr. Wm. Jepson, of Sioux City, Ia.; "Sarcoma of the Liver," by Dr. Van Buren Knatt, of Sioux City, Ia.; "The Diagnosis and Treatment of Extra-uterine Pregnancy, with Report of a Case," by Dr. Geo. C. Barton, of Minneapolis, Minn.

The following officers were elected for the ensuing year: President, Dr. W. W. Grant, of Denver, Colo.; First Vice-President, Dr. Willard Bartlett, of St. Louis, Mo.; Second Vice-President, Dr. Harry A. Sifton, of Milwaukee, Wis.; Secretary-Treasurer, Dr. Arthur T. Mann, of Minneapolis, Minn. Executive Council, Dr. C. H. Mayo, of Rochester, Minn., and Dr. J. F. Percy, of Galesburg, Ill.

Minneapolis, Minn., was selected as the place for holding the next annual meeting; time, Dec. 29 and 30, 1908.

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Under ceremonies of considerable pomp Lord Lister was, on Jan. 21, made an honorary burgess of the city of Glasgow. It was while professor of surgery in the University of Glasgow that Lord Lister made the researches that have given him his place in medicine.— *Medical Record.*

Book Reviews.

Truth and Poetry Concerning Uric Acid. An epitome of the present state of knowledge of the subject as represented in the literature. By Lewellys F. Barker, M.D., Professor-elect of Medicine in the Johns Hopkins University, etc. Reprinted from the editorial columns of the *Journal of the American Medical Association,* 1905. Chicago.

The articles contained in this small volume of 93 pages appeared originally as editorials in the *Journal of the American Medical Association.* They are well worth reprinting in book form as giving a valuable historical epitome of the much misunderstood subject of uric acid.

A Study of the Human Blood Vessels in Health and Disease. By Arthur V. Meigs, M.D. Philadelphia: J. B. Lippincott Company. 1907.

This book presents the results of a prolonged and patient study of the microscopical appearances of human blood vessels in health and disease. When one realizes the amount of time and labor spent in collecting and studying the material here presented the task of reviewing the work fairly and at the same time sympathetically becomes increasingly difficult. Before the volume was finished we realized the truth of the author's concluding statement, "that a great deal that has been included in this book is of an unsatisfactory nature and does not lead to any definite result." "This has been unavoidable," he goes on to say, "for the reason that many of the illustrations — and it is upon the illustrations to a large extent that the book is founded — are of conditions that I am quite unable to explain." It is safe to say that many of the difficulties would have vanished if modern technical methods had been employed. The combination of poor preservation of tissues, thick sections, and low magnification makes for obscurity except to the eye of a von Recklinghausen.

The advances of the past twenty or more years in his own special field seem to be unknown to the author. The reader gains the idea that knowledge of arteriosclerosis has made no progress since the original studies of Gull and Sutton appeared in 1872. The author has not a word to say of the splendid work of Thoma. Ziegler is quoted but it is the edition of 1883. Many of the questions raised in this volume have been already answered. Weigert's fibrin stain and Mallory's connective tissue stain have made many obscure points clear. Much has been added to our knowledge by the studies of Heller, Chiari and Benda on syphilitic aortitis. The investigations of v. Recklinghausen, Councilman, Marchand, Jores and many others have made the character of the sclerotic changes in the vessels much less obscure than the observations of the present writer would indicate.

Notes on Blood-Serum Therapy, Preventive Inoculation and Toxin and Serum Diagnosis. For Veterinary Practitioners and Students. By Walter Jowett, F.R.C.V.S. Chicago: W. T. Keener & Co. 1907.

This small book of less than two hundred pages gives a brief account of the current theories of immunity and of the vaccines and sera used in veterinary medicine. For the student who wishes to gain a general idea of the subject it will prove of value. The important diagnostic and therapeutic procedures are described with sufficient detail to make the work of practical value. This is true, especially of the sections that deal with tuberculin, mallein and antirabic vaccination. The author has evidently quite a thorough knowledge of the recent literature, but the important work of Theobald Smith on Texas fever and bovine tuberculosis, and that of Councilman on variola are not mentioned. The book is well printed and the illustrations are excellent.

Gout: Its Pathology, Forms, Diagnosis and Treatment. By Arthur P. Luff, M.D., B.Sc., F.R.C.P. Third edition. New York: William Wood & Company. 1907.

This excellent monograph is an amplification of the Goulstonian Lectures delivered by the author some years ago. In this new edition the subject matter has been brought up to date, the scope of the book extended, and a large portion rewritten.

All aspects of the disease are adequately considered. The author has studied the disease in the laboratory as well as in the clinic. He has made extensive observations on the influence exerted by various articles of diet on the solubility of sodium biurate, and experimental investigations of the value of the various drugs which have been used with the idea that they were solvents of gouty deposits. The administration of the ordinary alkalies, of lithium salts, of piperazine, and of lysidine with the object of removing gouty deposits appears to be useless. Electric light baths are highly recommended by the author in the treatment both of acute and chronic gout. They "promote the oxidative processes within the body, as is shown by the increased elimination of carbon-dioxide from the lungs, and also by the increased metabolism of the body in general. They also stimulate the circulation of both the blood and the lymph in the affected joints and so lead to improved nutrition of the parts. This curative action undoubtedly continues after the treatment has been left off."

Nearly all natural mineral waters are radioactive, and Luff believes that the efficacy depends on ionic dissociation of the mineral constituents and on the radio-activity of these waters.

The book contains many references to the literature. Folin's method for the estimation of uric acid is described, but the author has not availed himself of the wealth of material to be found in McCrudden's work on uric acid.

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THE MASSACHUSETTS HOSPITAL SCHOOL.

The new state institution at Canton is one which especially merits the attention of the medical profession of the Commonwealth, but the establishment of this institution having been developed gradually and unostentatiously, comparatively few have become aware of its existence.

Over three years ago Representative Dietrick, of Cambridge, proposed in the lower house of the legislature that the State should erect, at the cost of $300,000, an institution for the care and education of 300 crippled children of sound mind and unimpaired senses who from physical disability were unable to obtain instruction elsewhere. The proposed bill was referred to and considered by the Committee on Charitable Institutions and was passed both in the House and Senate over adverse reports of the committees which considered the subject. After careful consideration, the bill was signed by Governor Bates.

The trustees, two of them being physicians appointed to carry out the provisions of the act, devoted much time to the consideration of the subject and investigated institutions of a similar character in this country and elsewhere.

Last December the buildings were ready for occupancy, and at the present time the institution has under its care nearly fifty patients, and an increasing number of applicants is received daily awaiting investigation prior to admission.

It is a somewhat singular fact that while our Commonwealth fully recognizes that education is one of the most important duties of government and supports admirable institutions for the care and education of the blind, of epileptics, mutes and even the feeble-minded, it has hitherto failed to see the importance of the education of those who with unimpaired intellect and senses are deprived by congenital or acquired disability of limb from either obtaining any education or an education suitable as a preparation for an occupation not incompatible with the disability in the special case.

A permanently paralyzed child to whom school attendance is impossible is handicapped not only by the paralysis but also by the lack of mental training necessary both for intellectual growth and for the development of character. When private instruction is not possible, such children become mental dwarfs or intellectual cripples, even if of normal natural mental endowments. Even when the disability is not such as prevents school attendance, especial arrangement of school hours or studies is often advisable for those whose lack of strength prevents association with more robust children. Furthermore, it is often found that children whose lives are more shut in than in the case of normal children may develop, in the direction of more delicate artistic tastes, greater delicacy of handicraft or a capacity for more patient effort. They can be made to succeed or even excel in sedentary occupation if given the opportunity of ordinary instruction. It is hardly necessary to say that a paralyzed boy of fourteen who can read and write will be further advanced mentally than a boy similarly affected who cannot.

The first state to recognize the need of the education of cripples was the Kingdom of Bavaria. A royal institution was founded in Munich in 1830, for the industrial training of crippled children. The institution has been in many respects a model, and to-day, the experience obtained not only in the training of the crippled and maimed but in the occupations which can be successfully filled by those suffering from different disabilities, is of the greatest value from an educational and sociological point of view.

In Italy, at Turin and, later, Milan, institutions for the nurture and education as well as the care of cripples were founded in the middle of the last century. In Copenhagen, Stockholm, Christiania, industrial education is furnished to the crippled and maimed in several excellent schools.

In New York the Hospital for the Ruptured and Crippled, founded in 1805, has grown into one of the largest institutions of its kind, and although a hospital, attention is paid to elementary education.

Ten years ago, in Boston, an industrial school for crippled children was established and is now one of our most interesting private charities. The school, at present a day school only, has been well developed and illustrates the value of charitable effort in this direction.

The magnificently endowed Widener Institution of Philadelphia, which was opened in the past year, though at present more a hospital than a school, is planned to provide industrial training in the near future. These and several recently established institutions in Germany illustrate the need of the charitable enterprise such as has been recently undertaken by our state.

The plan of the new institution is primarily to afford care and proper nurture for crippled children between the ages of five and fifteen, and secondarily to furnish education demanded for their intellectual equality with their more sound contemporaries as well as such special instruction as may fit them for suitable special occupations. As a number of the children have suffered from a tubercular invasion of some sort, the dormitories are designed to give the greatest opportunity for fresh air treatment.

While the institution is not planned primarily as a hospital, it is manifest that hospital care will be needed for many of the cases, and ample provision for surgical and medical emergencies incident to the care of a number of children has been made.

Being designed for the care and education of physically defective children, the institution, was originally named "The Massachusetts Home and School for Crippled and Deformed Children"; but for convenience the official name has been changed and it is now termed "The Massachusetts Hospital School," indicating the double purpose of the institution.

The extent of the demand for such an institution is a question to which the trustees have devoted much time. The state bureau of statistics of labor reports that on May 1, 1905, the number of lame persons in our state was 12,109. Considering the population of the state (3,003,680), according to this estimate there would be four in every one thousand lame. In this group the dependent class numbers 2,123 or 17.53%. Of these, 955 were paupers, the remaining 1,168 being dependent upon their relatives or upon private charity. There were 1,001 classed as deformed and 892 were deformities of the back.

In the absence of an accurate census of physically defective children, it was impossible to determine with accuracy the number in our Commonwealth who would be benefited by special care and instruction. With the aid of the State Board of Charity and such an investigation as the trustees were able to make, it was estimated that there were at least 3,000 crippled and deformed children in Massachusetts. The new institution was built to accommodate 150 children, with administrative facilities for the full complement of 300. The accommodations for the remaining 150 will be begun as soon as may be necessary since the amount appropriated is adequate for the completion of the whole plan.

We congratulate those who have planned this deserving institution, and most emphatically recommend it to the interest and support of the medical profession.

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A CHOLERA YEAR?

PROFESSOR CHANTEMESSE, whose work as a bacteriologist and an expert in hygiene has given him deserved eminence, recently read a paper before the Academy of Medicine in Paris, in which he gives warning of a possible epidemic of cholera, which might spread from a center of infection in Mecca. There is cholera in that city now, and it has been brought thither as usual from Asiatic countries (especially from India), where this disease is endemic, by pilgrims who have come overland on foot, by caravan or by the Hedjaz railway, or through the Red Sea by sail or steamboat. Most of these pilgrims are fatalistic and neither know nor care about sanitary procedures. The fear is not without foundation that European and African Mahommedans may carry home with them the infection which their Asiatic brethren have brought to the Holy City; it may thus become distributed in Egypt (whence it was taken by Moslem pilgrims six years ago), into Syria and the Mediterranean countries and through the Black Sea regions into Russia. It has, indeed, been the experience that when there is cholera in Mecca all Europe is threatened, and such is the westward tide of emigration that it would not be reasonable to scout the idea of possible cholera transmission to these United States, especially since so many of our immigrants come from Russia.

We see no occasion to be greatly disturbed regarding this matter, for our coast quarantine authorities are efficient and watchful. Nevertheless, the strictures of Professor Chantemesse are certainly entitled to consideration. Mecca has always been a dirty and insalubrious city;

especially has its water been bad, although enthusiasts are now forbidden to bathe in the holy wells. The conditions on the whole are to-day not greatly improved. Measures of disinfection and of quarantine in general, as they are now enforced, are an insufficient protection. As we have found with regard to typhoid fever, persons in apparent health may, nevertheless, carry about the cholera germs and become a center of infection. Moreover, the completion of the Hedjaz railway is, in the opinion of Professor Chantemesse, a fresh source of danger; and when it is carried as far as Mecca most of the pilgrims from the North will proceed by land in preference to taking the Red Sea route. Thus will they escape the present quarantine. It is therefore essential to reform immediately the sanitary precautions which now exist. Professor Chantemesse is evidently right in counselling the appointment of an international conference which shall have authority to impose the necessary precautions, "which are difficult, owing to the fact that they must be applied on exclusively Ottoman territory," and especially to effect a "sanitary organization of the Mussulman pligrimage by land."

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THE ROCKEFELLER INSTITUTE AND ANTIVIVISECTION.

Dr. M. Allen Starr, Professor of Neurology in the medical department of Columbia University, is authority for the statement, probably derived from Dr. Flexner, that in New York, as well as in Cleveland, Ohio, and Glasgow, Scotland, the Flexner antitoxin for epidemic cerebrospinal meningitis has been successful in reducing the mortality from the disease, in the cases in which it was used, from 80%, the usual death-rate, to 30%. This assertion is made in the course of a letter by Dr. Starr, recently published, which was prompted by the reports of a meeting held at Carnegie Hall, by the New York Antivivisection Society, at which resolutions were passed specifically demanding the suppression of experiments at the Rockefeller Institute. "It seems only right," he says, "that the public should be made aware of the fact that the attention of the entire medical world has been focused upon the marvellous results achieved in that institute during the past winter, in the discovery there of the antidote for the poison of cerebrospinal meningitis, a disease the epidemics of which are, next to those of typhus fever, the most widely fatal, and one in which no remedy has ever before been found. A discovery of this kind, like Behring's discovery of the antitoxin for diphtheria, results in the saving of hundreds of lives annually all over the world, and similar investigations are destined to result in the discovery of antitoxins for all infectious diseases."

A bill to further restrict vivisection is before the New York legislature this season, and it is interesting to note that Mrs. Cadwallader Jones, President of the Woman's Auxiliary of the American Society for the Prevention of Cruelty to Animals, has made a public declaration in opposition to this measure, in which she intelligently defends the practical utility of vivisection, and expresses the opinion (one commonly held by the medical profession) that the regulations at present in force in regard to vivisection are ample to provide against abuses in its practice. The illogical absurdity of the views on this subject of many thoughtless persons in the community is very well hit off in a letter by a mother which has appeared in the newspapers. "I venture to say," she writes, "that there is not one woman in New York who would not hail with enthusiasm the barest chance of saving her own child's life, or of lessening its suffering, by the sacrifice of any animal, big or little; and yet, when the question arises of applying the much discussed doctrine of vivisection to the help of suffering humanity at large, there goes up a wail of tender-hearted protest against the heartless and needless pain inflicted on the poor, dumb beasts, and this in face of the fact that statistics prove the immense benefit derived by human sufferers as the direct result of the skilled and merciful experiments which our highest medical men have been carrying on."

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MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, Feb. 26, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 51, scarlatina 82, typhoid fever 7, measles 131, tuberculosis 55, smallpox 0.

The death-rate of the reported deaths for the week ending Feb. 26, 1908, was 18.48.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, Feb. 29, 1908, was 237, against 225 the corresponding week of last year, showing an increase of 12 deaths and making the death-rate for the week 20.28. Of this number 132 were males and 105 were females; 231 were white and 6 colored; 143 were born in the United States, 85 in foreign countries and 9 unknown; 38 were of American parentage, 177 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 49 cases and 5 deaths; scarlatina, 85 cases and 0 deaths; typhoid fever, 7 cases and 0 deaths; measles, 191 cases and 3 deaths; tuberculosis, 50 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 46, whooping cough 2, heart disease 26, bronchitis 7 and marasmus 3. There were 13 deaths from violent causes. The number of children who died under one year was 46; the number under five years 69. The number of persons who died over sixty years of age was 48. The deaths in public institutions were 66.

There were 2 cases and 2 deaths reported from cerebrospinal meningitis, during the week.

Bequests. — By the will of the late Mrs. Amy R. Sheldon, $5,000 has been left to the Newport Hospital. Harvard University is a beneficiary by this will to the amount of $550,000.

Gift to the Harvard Dental School. — Announcement has been made that Mr. and Mrs. Larz Anderson, of Brookline, Mass., have given $25,000 toward the building fund of the Harvard Dental School.

Industrial School for Crippled and Deformed Children. — A fair in aid of the Industrial School for Crippled and Deformed Children will be held at the Hotel Somerset, Boston, Thursday, March 5, from 10 a.m. to 6 p.m., and Friday, March 6, from 10 a.m. to 1 p.m.

Fire in a Hospital. — On Feb. 28, fire broke out in Grace Hospital, New Haven, entailing a loss of $25,000. The ninety patients in the hospital were safely removed, although a number of them suffered greatly from shock and were not expected to live. Members of the senior class of the Yale Medical School assisted in carrying out the patients and in attending them.

Centenarians. The deaths of persons reputed to be over one hundred years old are announced: Mrs. Charlotte E. Brothers, of Springfield, Mass., a few days over a hundred years; George Montgomery, of Warren, Me., at the age of one hundred and two years; and Mrs. Mary Ellen Baraby, of Brockton, Mass., at the age of one hundred and four.

Charles Follen Folsom Teaching Fellowship. — Harvard University has received the sum of $9,753.64, in addition to which $1,430 is promised to be paid before Jan. 1, 1909, as a gift to the Medical School in memory of the late Dr. Charles Follen Folsom, who as teacher and overseer was intimately associated with the University for a period of twenty-six years. The desire of the subscribers is that this fellowship shall be available to students in hygiene or in mental or nervous diseases.

Jesse Pomeroy Again. — In reply to a petition coming from Virginia for a pardon for Jesse Pomeroy, Governor Guild, of Massachusetts, declines to comply, and adds that "Massachusetts cares neither for lynch executions nor for lynch pardons." Jesse Pomeroy should stay where he is in spite of appeals of sentimentalists.

Board of Trustees of the Massachusetts Hospital School. — The following named are the members of the Board of Trustees of the Massachusetts Hospital School: Edward H. Bradford, M.D., Chairman; William A. Morrison, M.D.; Alfred S. Pinkerton; Leonard W. Ross; William F. Fitzgerald.

The resident physician and superintendent is Dr. John E. Fish, of Canton, Mass.

NEW YORK.

The Order of St. Olav. — Dr. George Frederick Kuntz, of New York, President of the American Scenic and Historical Society, and also connected with the United States Geological Survey, has received through the Norwegian Chargé d'Affaires at Washington, from King Haakon VII, the cross of the first class of the Royal Order of St. Olav, in recognition of his distinguished services to science in the department of mineralogy.

Survival after Leap from Brooklyn Bridge. — John Grant, once a well-known pugilist, leaped from the Brooklyn Bridge, with suicidal intent, on Feb. 13, and still survives. On reaching the water he just escaped striking an enormous block of floating ice in the East River. He was dragged out by men on a passing tug-boat and taken to St. Gregory's Emergency Hospital, where, after remaining unconscious for two hours, he was successfully resuscitated. The physicians who attended him state that the man's physique was one of the most remarkable they had ever met with.

Damages for Loss of Weight. — Mrs. Kate Gallagher, of Jersey City, who had sued for a much larger amount, recently obtained $1,500 in a damage suit she brought in the Supreme Court against the North Jersey Street Railway Company from one of whose cars she was thrown by its premature starting. One of the results of her injuries, she testified, was that she had lost forty-one pounds in weight, and had not been able to regain the loss, and when the verdict was announced her counsel created considerable laughter in the court room by claiming that the award was totally inadequate, because it was only at the rate of about $36 a pound.

Registration of Cases of Pulmonary Tuberculosis. — In the annual report of the State Department of Health, which was submitted to the legislature on Feb. 17, it is requested that authority be given the department to require the registration of all cases of pulmonary tuberculosis occurring in the state. "You cannot give aid to any consumptive or protect his neighbors," the commissioner says, "until you know what help he requires — until the case is properly reported and the conditions described." An appropriation of $75,000 is asked for the campaign against tuberculosis, to be expended in carrying out a system of registration, in an adequate representation of the State of New York in the International Tuberculosis Congress at Washington in September next, and in the completion of the state's tuberculosis exhibit. The department, it is claimed, should have at least three complete exhibitions, to be used simultaneously in different parts of the state.

Diminished Hospital Contributions. — Business depression was strongly reflected in the gifts of the wealthier New York congregations this season in response to the appeals of the Saturday and Sunday Hospital Association. The seven churches which are always among the largest contributors gave last year $23,581; this year, $16,185. St. Thomas's, which in 1906 gave over $10,000, gave this year $6,300; St. Bartholomew's gave last year $2,687, this year $2,000; the Church of the Incarnation, last year $2,210, this year $1,323; Grace Church alone approached in 1907, with $2,273, its contribution of 1906, which was $2,294. The total amount of the collection has not yet been announced.

Death. — Dr. John Henderson Coverly, of Brooklyn, N. Y., died on Feb. 24, at the age of sixty-five years. He was born in Glasgow, Scotland, and received the degree of M.D. from the College of Physicians and Surgeons, Edinburgh, in 1865. For the past twenty-five years he had practised successfully in Brooklyn.

Death. — Dr. Charles Francis Fitzgerald, a promising surgeon of New York, died on Feb. 27, after a brief illness, in St. Vincent's Hospital, where he was assistant attending surgeon. He was a native of Massachusetts and thirty-five years of age. He was graduated from Holy Cross College and from the medical department of Columbia University in 1898; after which he served as interne at St. Vincent's Hospital.

Gifts and Benefactions. — Mrs. Anne Weightman Walker, daughter of the late William Weightman of the firm of Powers & Weightman, manufacturing chemists of Philadelphia, who has for some time past made her residence in New York, was married, on Feb. 26, to Frederic Courtland Penfield, who for a number of years was American Minister Resident and Consul General to Egypt. Mrs. Walker is said to have inherited from her father a fortune of over $40,000,000, and in celebration of her marriage she announced through her attorneys gifts aggregating $1,000,000 to relatives, institutions and societies. Among the beneficiaries and the amounts received by them are the following: The College of Physicians of Philadelphia, $50,000, as a memorial to her father; the Franklin Institute, $50,000, also as a memorial to her father; the Historical Society of Pennsylvania, $50,000, as a memorial to her first husband, the Hon. Robert J. C. Walker; the Society for the Prevention of Cruelty to Children, $20,000; the Society for the Prevention to Cruelty to Animals, $20,000; the Prof. George Allen memorial in the University of Pennsylvania, $5,000.

By the will of the late Maurice Seligmann, of New York, $1,500 each is left to the Mount Sinai Hospital, the Montefiore Home and Hospital for Chronic Invalids and two other Jewish benevolent institutions.

Obituary.

ALEXANDER S. McCLEAN, M.D.

Dr. Alexander S. McClean, of Springfield, died at his home, Feb. 22, at the age of eighty-six. He was Springfield's senior physician, beginning practice there in 1848 and continuing in vigorous work until 1901, when, at the age of eighty, he retired. He had been in good health since that time until the day of his death, when he started out for a walk, but feeling ill returned to his house, removed his coat and seated himself saying that he felt that he was going to have a shock. He immediately became comatose, dying in two hours of the cerebral apoplexy he had diagnosed.

Dr. McClean was born in Gettysburg, Pa., Nov. 15, 1821. He was the son of Judge William McClean, of Adams County, Pa., and grandson of Moses McClean, captain in the Revolutionary Army. He studied with the well-known Dr. Rutherford, of Harrisburg, and took his degree at the University of Pennsylvania in 1846 and practised with Dr. Rutherford for two years. In 1878 he spent an entire year studying in European hospitals, and again for four months in 1881. He joined the Massachusetts Medical Society in 1855.

His life was full of activity and he was "Physician and Surgeon" all through the years before specialization, although he built up a large obstetric practice and reputation which for many years made him the consultant sought in his locality.

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Current Literature.

Medical Record.
Jan. 18, 1908.

1. Kelsey, C. B. *Anorectal Fistula.*
2. *Kiliani, O. *Schlösser's Alcohol Injections for Facial Neuralgia. Experience with Fifty-five Cases.*
3. Baruch, S. *Instruction in Hydrotherapy.*
4. *Koplik, H. *Treatment of Chorea Minor, with Special Reference to the Dangers of the Arsenic Therapy.*
5. MacFarlane, A. *Medical and Scientific Work in New York State Charitable Institutions.*
6. Reyburn, R. *Prevention of Death during Anesthesia by Chloroform and Ether.*
7. Monell, S. H. *Writer's Cramp; What It Is and How it can be Treated by the Family Physician.*

2. Kiliani reports his results with the use of Schlösser's alcoholic injections in facial neuralgia. In a series of fifty-five cases he has had only three failures and one recurrence of symptoms. Only one accident occurred during treatment, where oculomotor paralysis developed and lasted for four weeks. The advantage of this treatment he believes to be self-evident, and the danger very slight when done by one familiar with the technic.

4. Koplik considers the treatment of chorea minor and lays great stress on the dangers of the indiscriminate use of Fowler's solution. He finds that it is the rule for patients treated with this drug to have albumin in the urine. Casts and even blood may be found. He finds that albumin appears before any other signs of toxic action of the drug, and should be the signal for stopping further use of it. He shows that Fowler's solution on standing becomes stronger, so that what is supposed to be a small dose of the drug is in reality a large one. Cases do as well without use of Fowler's solution. The treatment he recommends is modified rest cure, with some mild sedative as trional and, where needed, strychnia as a tonic. Hydrotherapy is always useful. Sodium salicylate may be tried but should not be continued if not well borne. Digitalis should not be used. He believes that isolation and darkened rooms are not indicated, as children do much better with quiet companionship and fresh air.

[W. B. R.]

New York Medical Journal.
Feb. 1, 1908.

1. McCarthy, D. J., and Meyers, M. K. *Carcinomatosis of the Meninges.*
2. Le Breton, P. *Anesthesia by Nitrous Oxide, Nitrous Oxide and Oxygen, Nitrous Oxide and Ether, Chloroform and Oxygen, and Ether Administered per Rectum.*
3. Klingmann, T. *Spontaneous Rupture of the Heart.*
4. Rosenberger, R. C. *Noma.*
5. Smith, O. C. *Notes on European Surgical Clinics.*
6. Goler, G. W. *Milk and Education.*
7. Wile, U. J. *Tuberculosis among Medical Students and its Possible Prevention.*

The Journal of the American Medical Association.
Feb. 1, 1908.

1. Bloodgood, J. C. *Conservative Operations on Bone Tumors, Based on the Clinical and Pathological Study of Their Relative Degrees of Malignancy.*
2. Blue, R. *The Conduct of a Plague Campaign.*
3. Boldt, H. J. *Gonorrhea in Women.*
4. Bandler, S. W. *Unrecognized Gonorrhea in the Female.*
5. Brown, G. V. I. *Speech Results of Cleft Palate Operation.*
6. *Kinnaman, G. C. *The Antimicrobic Action of Bromin.*
7. Mitchell, J. K. *Landry's Paralysis; Recovery, Partial Relapse and Complete Recovery.*
8. Punton, J. *Nervousness: Its Significance and Treatment.*
9. Stern, H. *Iodo-Formic Acid in the Treatment of Chronic Ulcerative Phthisis.*

6. Kinnaman found that a 1% solution of bromin must be used for a period of one hour in order to be effective on all classes of micro-organisms. On cocci and fungi a 1:300 solution is effective in ten minutes. Bromin solution is hard to prepare and is very unstable. It coagulates albumin and is not markedly penetrating. However, it is non-toxic and non-irritating in a strength that is effective, and does not produce an appreciable stain.

[R. I. L.]

The Archives of Internal Medicine.
Jan. 15, 1908.

1. Müller, F. *The Nervous Affections of the Heart.*
2. Weil, R. *The Hemolytic Reactions of the Blood in Dogs Affected with Transplantable Lymphosarcoma.*
3. *Freund, H. A. *The Trichomonas Hominis Intestinalis: a Study of its Biology and Pathogenicity.*
4. *Cowie, D. M., and Munson, J. F. *An Experimental Study of the Action of Oil on Gastric Acidity and Motility.*
5.* Stewart, H. A. *Experimental and Clinical Investigation of the Pulse and Blood Pressure Changes in Aortic Insufficiency.*

3. The author makes a strong plea for the pathogenicity of the trichomonas hominis in a carefully worked out article, in which he considers the classification of these organisms, their habits and habitats, and the clinical aspects of cases of trichomonas infection. He gives a very minute description of the organism, and describes his method of fixing and obtaining stools containing them. He has found the best results by the following method: a little egg albumin is mixed with the stool, which is then spread very thinly and dried with fumes of 1% osmic acid, and then immediately stained with Wright's stain. The article gives very convincing reasons for the author's belief that the trichomonas is the direct cause of certain forms of acute, chronic and recurring enteritis, characterized by abdominal pain, diarrhea, loss of weight and strength, with slight temperatures at times, and anemia.

4. Cowie and Munson have made a large number of examinations of the gastric contents in normal individuals and in cases showing various gastric conditions, and report the results of the effect of oil on the gastric secretions. They find that oil (olive or cotton seed) has a marked influence to diminish the secretion of hydrochloric acid, and that this is due both to the mechanical effect and to reflex central inhibitory stimulation. Its advantage over antacids is evident on account of its caloric value. In hyperchlorhydria it should precede the meal; in hypochlorhydria it should follow. On account of its effect on motility it should not be given where stasis exists. In hypermobility it may be given before, during or after meals. The use of oil must be kept up, as its action is only temporary.

5. Stewart gives an account of a most complete investigation of artificially produced aortic insufficiency. His conclusions are as follows: (1) The work of Henderson is confirmed in that the cardiac cycle is not diphasic but triphasic, and consists of systole, the period of ventricular discharge; diastole, the period of ventricular relaxation and filling; diastasis, the period of rest. (2) The effect of the production of aortic insufficiency in the dog is to increase the amount of systolic output by only a fraction of a cubic centimeter of blood. (3) The volume of blood which regurgitates is negligible. (4) The transmission of pressure to the ventricle increases ventricular tonus. (5) It also produces a reflex inhibition of the vasomotor center. (6) The fall of pressure in aortic insufficiency is due to the diminished peripheral resistance thus induced and is not caused by the regurgitation of blood through the aortic valve. (7) The increase of pulse pressure — the difference between maximum and minimum pressure — is due to a lowering of the diastolic pressure. There is no increase in systolic pressure. (8) The main fall in pressure is systolic in time and is due to an increased blood flow through the capillaries. (9) So long as the tonus of the ventricle is maintained a slowing of the heart rate does not favor increased regurgitation.

[W .B. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.
FEBRUARY, 1908.

1. Welch, W. H. *Some of the Conditions Which Have Influenced the Development of American Medicine, Especially during the Last Century.*
2. Mitchell, J. K. *Diagnosis and Treatment of Neurasthenia.*
3. Bushnell, F. G. *Abscess of Bone Caused by an "Intermediate" Bacillus (B) Allied to B. Paratyphosus.*
4. Calvert, W. J. *Sudden Death in Pleurisy with Effusion Due to a Change of Position.*

THE JOURNAL OF EXPERIMENTAL MEDICINE.
JAN. 1, 1908.

1. Lewis, P. A. *The Induced Susceptibility of the Guinea Pig to the Toxic Action of the Blood Serum of the Horse.*
2. *Noguchi, H. *On the Inhibitory Influence of Eosin upon Sporulation.*
3. McConnell, G. *The Transplantation of Human Carcinomatous Material into Lower Animals.*
4. Meltzer, S. J., and Auer, J. *Rigor Mortis and the Influence of Calcium and Magnesium Salts upon its Development.*
5. Rowley, M. W. *A Fatal Anemia with Enormous Numbers of Circulating Phagocytes.*
6. *Carrel, A. *Transplantation in Mass of the Kidneys.*
7. *Flexner, S., and Jobling, J. W. *The Serum Treatment of Epidemic Cerebrospinal Meningitis.*
8. Marks, L. H. *Stomach Feeding in Mice.*

2. Noguchi found that sporulation did not take place in an agar medium containing eosin "Gelb" in a concentration exceeding 0.5%. The inhibitory action of eosin was more pronounced upon the anaërobic than upon the aërobic species of bacteria. No permanent loss of power to produce spores ensued.

6. Carrel transplanted from one cat to another both kidneys, their vessels and the corresponding segments of the aorta and vena cava, their nerves and nervous ganglia, their ureters and the corresponding part of the bladder in mass. Some of these animals secreted almost normal urine with their new organs and lived in good health for a few weeks. All the animals eventually died from a variety of complications resulting from such an extensive operation.

7. This article was made the subject of an editorial in this Journal on Jan. 9, 1908.

[R. I. L.]

THE LANCET.
FEB. 8, 1908.

1. Morison, A. *Lecture on Sleep and Sleeplessness.*
2. Lockwood, C. B. *Lecture on Some of the Sources of Wound Infection.*
3. Turner, F. M. *Is the Death-Rate the Best Measure of Severity in Disease?*
4. Lane, W. A. *Excision of the Rectum for Carcinoma.*
5. Hellier, J. B. *Methods of Primitive Midwifery.*
6. Harrison, R. *Observations on Phosphaturia and the Treatment of Disease by Conversion.*
7. Baskin, J. L. *Hemo-pericardium Associated with Syphilis.*
8. Vining, C. W. *A Case of Acute Ascending Paralysis with Recovery.*
9. Williamson, H. *A Case of Enucleation during the Seventh Month of Pregnancy of a Uterine Fibromyoma weighing 17½ Pounds. Premature Labor Two Days Later.*
10. Marr, H. C. *Five Years' Experience of a Reception House for Recent Cases of Insanity.*

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 1.
JAN. 2, 1908.

1. Kraus, F., and Nicolai, G. *The Functional Solidarity of Both Halves of the Heart.*
2. Loeffler, F., and Rühs, K. *The Cure of Experimental Nagana (Tsetse-Fly Disease).*
3. *Boas, I. *Operations for Cancer of Stomach and Intestines from the Point of View of Internal Medicine.*
4. Wegele, C. *The Use of Yoghurt in Diseases of the Stomach and Intestines.*
5. Hoffmann, A. *Recent Progress in the Diagnosis of Heart Affections.*
6. *Balas, D. *A Contribution to our Knowledge of Hyperacidity.*
7. *Kreibich, C. *The Treatment of Ulcus Molle and Buboes.*
8. Iwanowa, A. *The Treatment of Circulatory Disturbances in Diphtheria.*
9. *Fermi, C. *Can the Pasteur Serum Produce Rabies?*
10. Wieting. *The Leucocyte Count as a Means of Differentiation between Hematoma and Suppuration.*
11. Loeb, L. *Development of a Sarcoma after Transplantation of a Carcinoma.*
12. Ogata, K. *The Cosmetic Treatment of Nevi and Telangiectases.*

3. Boas reviews his own experience and that of the Mikulicz clinic, which shows that the best results of operative treatment of cancer of the stomach and intestines were obtained in those cases which had the longest interval between the onset of symptoms and the operation. Cancers which early show such symptoms as to lead to immediate operation are of a more malignant type, hence the ill success in cases with the shortest intervals. He does not believe that we shall ever be able to diagnose cancer of the digestive tract in an early stage, and there are very many objections to exploratory operations in doubtful cases. Therefore the internist must select more carefully the cases for operation and weed out the more malignant, so that the surgeon's statistics may show better results, and patients be more ready to be operated upon. This can the more readily be done since statistics show no better immediate or remote results for the early operation than for the later ones. At the Mikulicz clinic results have greatly improved in recent years. Thirty per cent of the cancers of the stomach survived operation for more than three years, and 10 are living now, five years after operation. Carcinoma of the colon gives 34% of survivors. Kocher reports a mortality of only 17.7 % in cancer of the stomach after operating on 122 cases.

6. Balas reports three cases of persistent uncomplicated hyperacidity of the stomach cured by gastro-enterostomy. In none of these three cases was there any evidence of stenosis of the pylorus or of ulcer. These results coincide with the Katzenstein theory that bile and pancreas secretion regurgitating into the stomach reduce the acidity through neutralization, also through inhibition of the gastric secretion. Both these secretions were found in the stomachs of these three cases after operation.

7. Kreibich prefers copper sulphate $\frac{1}{1000}$ as a dressing for venereal sores. This removes the diseased tissue and leaves a clean base for healing. If lymph glands become involved, rest in bed is essential. The cupping-glass as advocated by Bier relieves the pain, and if the bubo be pricked and a glass large enough to rest on sound tissue all around be used for one hour daily the period of disability

is much shortened. If several glands are involved operative treatment is necessary.

9. Fermi describes some experiments on rats and mice, showing that the Pasteur treatment sometimes causes rabies to develop in these animals, and that they are not always protected from inoculations of the disease later. The cause of this is the varying virulence of the virus used, as prepared by the Pasteur method. He now uses and strongly advocates a serum which is a 5% emulsion of a fresh fixed virus, sterilized with carbolic acid. He states he has demonstrated the superiority of the vaccine thus made by a long series of parallel experiments with the Pasteur serum, and by a year's experience in the clinic. [L. G. M.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 1.
JAN. 7, 1908.

1. *Forster, J. *The Relation of Typhoid and Paratyphoid to the Bile Passages.*
2. *Feer, E. *The Cutaneous Tuberculin Test of v. Pirquet in Children.*
3. Dietlen, H. *Observations on the Position of the Heart in Certain Pathologic Conditions by Means of the Orthodiograph.*
4. Jehle, L. *New Contributions to the Etiology of Orthotic Albuminuria in Childhood.*
5. v. Dungern and Coca. *Specific Hemolysis Caused by Isotonic Salt Solution.*
6. Lerey, A. *A Case of Cholecystitis due to the Paratyphoid Bacillus.*
7. Grimme. *The "Typhoid Bacillus Carriers" in Insane Asylums.*
8. Mandelbaum, M. *The Typhoid Fever Problem in Munich.*
9. Runge, E. *The Value of Some of the New Methods of Gynecologic Treatment.*
10. Feldmann, H. *The Treatment of Lysol Poisoning.*
11. Klaussner, F. *Foreign Bodies in the Nose.*
12. Salzer. *The Physician as Mirrored in Poetry, Ancient and Modern.*

1. In typhoid fever the infection is different than in cholera, the bacilli develop not in the intestine, but in the blood stream. Then they go into the liver and bile passages. This is easily shown by injecting typhoid bacilli into the veins of animals, and after a period they appear in the bile. The bacilli then are discharged into the intestine, and, mixed with the feces, are passed out of the body. It is, then, naturally not at the first of the disease that the bacilli appear in the stools. Also the typhoid bacilli can grow in the gall bladder almost indefinitely, and the patient though well may spread infection about him. Forster has looked into a number of epidemics about Strassburg, and could trace each one to such a bacillus carrier. He believes that these carriers are not only the most frequent cause of sporadic cases, but are also most important etiological factors in starting epidemics. In sporadic cases the carrier should be chased down, and not only should be forced to take the most rigid care of the dejections, hands, clothing, etc., but should be treated also with doses of bile, which causes an increased flow of bile, and helps to dislodge the bacilli from the gall bladder. Much work along the lines of treatment for these carriers is yet to be done.

2. Feer, speaking from his experience with v. Pirquet's reaction in over 300 cases, believes it to be of great diagnostic importance in tuberculosis in children. The younger the child, the more serious is the prognosis to be put upon a positive reaction. A negative reaction may be taken as positive proof of the absence of tuberculosis. The article includes a clear description of the technic, and of the papule appearing with a positive reaction. [R. D.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 1.
JAN. 1, 1908.

1. Olshausen, R. *The Management of Labor in Patients with Narrow Pelves.*
2. Landau, F. *A Method of Shortening the Normal Confinement.*
3. *v. Hausemann. *True Megalencephaly.*
4. *Bickel, A., and Grunmach, E. *A Rare Case of Bronchial Stones.*
5. Silbergleit, H. *The Influence of Baths Containing Radium on the Gas Metabolism of Man.*
6. Mühsam, H. *The Clinical Possibilities of the Serum Diagnosis in Syphilis.*
7. Karewski, F. *The Significance of Wasserman's Syphilis Reaction in Surgical Differential Diagnosis.*
8. Ranzi, E. *Points in Differential Diagnosis between Cystic Tumors of the Genitalia and Appendicitis in Women.*
9. Maass, T. *New Methods of Research in Pharmacology.*

3. v. Hausemann has had the opportunity to study the brain of a sixteen-year old boy who suffered from epileptic attacks. The skull and brain were both very large, the brain weighing 1,860 gms. No signs of a previous hydrocephalus were present, and structurally the brain was normal but for its size. Possibly a previous circumscribed meningitis might account for the size of the brain. The author believes that in many extremely large brains, in which the size is due to some early pathological process, the structure of the brain itself may be, and often is, perfectly normal.

4. The authors report the case of a woman of thirty-five who now and then while coughing would bring up many small calculi, which on examination contained much mucin. The patient was suffering from tuberculosis of the lungs. On x-ray examination many small bodies about the size of a cherry stone were seen throughout the lungs in the region of the larger bronchi. The case was undoubtedly one of bronchial stones. [R. D.]

ZEITSCHRIFT FÜR KLINISCHE MEDIZIN. BD. 64.
HEFT 3 AND 4.

1. *Schnütgen. *The Relations of the Leucocytes of the Blood after the Application of Cold.*
2. Möller, S. *Acetone Determination in the Urine.*
3. v. Torday, A. *A Study of Gastric Absorption.*
4. *Landau, H. *The Anatomic Changes of the Adrenals in Arteriosclerosis.*
5. Thomas, K. *Clinical Meaning of Urobilinogen, its Chemical Properties and its Color Reactions.*
6. Dmitrenko, L. F. *Dicratism as a Diagnostic Symptom in Aorto-Mitral Insufficiency.*
7. Lewandowsky, M. *Transcortical Sensory Aphasia.*
8. Bruns, O. *The Influence of Sitz Baths upon the Distribution of Blood in the Body.*
9. Bruns, O. *Collateral Stasis after Cold Applications.*
10. *Askanazy, S. *The Granulation of Red Blood Corpuscles in Anemia.*
11. *v. Jaksch, R. *A New Radio-Therapeutic Method.*
12. Schirokauer, H. *Salt Metabolism in Experimental Nephritic Hydrops.*
13. *Gross, O., and Allard, E. *Observations on Alkaptonuria.*
14. Brugsch, T. *The Neutrophilic Blood Picture in Infectious Diseases.*
15. Fuld, E. *Methods of Pepsin Determination.*

1. Schnütgen reports a careful study of the effect of warm and cold baths on the blood count and on the ratios between the various forms of white cells.

4. Landau has made careful histological studies of the adrenal glands in man, and in animals treated with injections of adrenalin chloride, with the purpose of determining whether there is any relation between arteriosclerosis and the adrenals. He finds certain changes in the adrenals in arteriosclerosis, partly of atrophic, partly of inflammatory, nature, which he considers to be related to sclerotic changes in the blood vessels of the adrenal, since they differ in no wise from the changes found in the other viscera. There is nothing in the adrenal to suggest any causal connection between the adrenal and the arteriosclerosis, and the view advanced by others, that arteriosclerosis is primarily caused by lesions of the adrenal, is not supported by this work.

10. In 1893 Askanazy described in the red blood corpuscles of pernicious anemia a basophilic granulation commonly spoken of now as stippling. In the present paper he discusses this granulation on the basis of his subsequent personal experience and the results obtained by numerous other observers. His earlier view was that the granulation arose as the result of nuclear fragmentation,

nd so the basophilic granules were of nuclear origin. ubsequent study has convinced him that the granules rise from the cytoplasm. It has been shown that this ranulation is present in many varieties of anemia and hat in some of the animals it appears to be present under normal conditions. Askanazy considers the presence of basophilic granulations as indicative of a regenerative ctivity on the part of the bone marrow and not as the esult of degenerative changes in the red blood corpuscles s maintained by Grawitz. Askanazy believes that many ransitions may be found between the diffusely polyhromatophilic cells and those which show the very beginning of the differentiation into the finest granules. Later, he granules become larger and the intervening cell subtance tends to lose its polychromatophilic reaction. A very strong proof against the granules being an expression of a degenerative process is their constant presence n the embryos of white mice under physiological conlitions, and their presence in conditions of anemia in man n which the circulating blood shows other evidence of activity in the blood-forming centers, such as the presence of nucleated red blood corpuscles, etc. However, Askanazy does not believe that this granulation appears in the cells until they reach the circulating blood, since he does not find it in red blood cells from the bone barrow. He considers the granulation to be the result of changes in the polychromatophilic substance brought about by the action of the blood serum.

11. v. Jaksch reports here some observations which seem to show that thin silver plates have the property of intercepting that portion of the Röntgen light which produces injurious action on the skin, without at the same time stopping rays which are radio-active in the therapeutic sense. He treated a case of leukemia by means of Röntgen rays passed through such a silver plate, and even with thirty-minute exposures produced no skin lesions, though there was a marked result on the disease process, expressed by a diminution in the size of the spleen and a very striking fall in the leucocyte count. This observation seems to be of much importance, and, as v. Jaksch suggests, may indicate the possibility of obtaining various specific actions by using different metals as screens in connection with the x-ray. He is making further experiments along these lines.

13. Gross and Allard give the results of some further studies on the metabolism of a case of alkaptonuria, in which they have followed quantitatively the excretion of homogentisinic acid in the urine under varying conditions of feeding, and during an intercurrent fever. This case is further of interest because during the course of the observation the nails of the fingers and toes have begun to show a light brownish discoloration, and a chronic arthritis has developed of a progressive and resistant character. This suggests that the alkaptonuria, as in a number of other cases, is associated with a condition of ochronosis.

[H. A. C.]

REVUE DE CHIRURGIE.

FEBRUARY, 1908.

1. *SAUVÉ, L. *Pancreatectomies, Especially Cephalic Pancreatectomy.* (To be continued.)
2. *DELORE AND BALLIVET. *Dorsal Pain in Cancer of the Breast.*
3. *BERTEIN, P., AND WORMS, G. *Vertebral Diastasis.*
4. MATHIEU, P. *Non-neoplastic Constrictions of the Main Biliary Passages.* (Concluded.)
5. *DUFOUR, H., AND FREDET, P. *Hypertrophic Stenosis of the Pylorus in the Infant, and its Surgical Treatment.*

1. In his study of the new and rather daring subject of pancreatectomy, Sauvé begins with a careful investigation of the normal and pathologic physiology of the pancreas. Next he reports a series of animal experiments, from which he concludes that in the dog partial pancreatectomy, whether caudal or cephalic, is technically practicable and not incompatible with subsequent life and health. He believes that electric anesthesia diminishes the shock of such operations and that after cephalic pancreatectomy the establishment of a pancreatic fistula is desirable to prevent fat necrosis. The application of these conclusions to human pancreatic surgery will be discussed in a later paper.

2. From observations on four reported cases, the writers conclude that dorsal pain in cancer of the breast is not necessarily a symptom of extension of the disease into the vertebræ, but may be due to pressure of axillary glands on the subscapular filaments of the brachial plexus.

3. Under the name of vertebral diastasis the authors describe a traumatic lesion of the spine, most common in the lower cervical region, characterized by separation of the vertebræ, with more or less complete rupture of the ligaments, but without articular displacement, and by the persistence of grave and generally fatal cord symptoms, — paraplegia, anesthesia, loss of reflexes, priapism, spasm of the sphincters. It is differentiated from fracture or dislocation by absence of local tenderness and of deformity, external or on the posterior pharyngeal wall, and by preservation of the normal movements of the head and neck. Treatment is purely symptomatic.

5. Congenital pyloric stenosis seems to have attracted less attention in France than in this country. Dufour and Fredet revew the literature, and add two to the four cases previously reported by French surgeons. They prefer submucous pyloroplasty, when practicable, in the surgical treatment of this condition, and tabulate operative results to show it less severe and more efficient than gastro-enterostomy.

[R. M. G.]

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Correspondence

AN APPEAL FOR SUBSCRIPTIONS FOR A NEUROLOGICAL WARD.

BOSTON, Feb. 29, 1908.

Mr. Editor: I respectfully call your attention to the fact that a circular of appeal for subscriptions to a fund for a neurological ward at the Massachusetts General Hospital has recently been widely distributed. The hope is entertained that some of your readers may have the opportunity to give advice as to the willing of property, and may recognize in the enterprise an important if not a paramount need of a sort that your editorial in a recent number of the JOURNAL calls attention to.

I beg to assure you that a new field of usefulness has been opened, through the studies of late years, for the skill, the insight and the devotion of the neurologist, in the treatment of patients, old and young, whose distressing illnesses are often curable through influences of a sort that only long and well-trained specialists can adequately exert. It is possible to-day to an extent that it has never been before to "minister to a mind diseased," to "pluck from the memory a rooted sorrow."

The Massachusetts General Hospital is, moreover, particularly well organized to carry on this sort of work, because of the affiliation with the Out-Patient Department of the "Social Service" workers, a band of intelligent, skilled and devoted women, whose labors materially extend and reinforce the work and the advice of the neurological staff.

Very truly yours,
JAMES J. PUTNAM, M.D.

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THE IMPORTANCE OF EXAMINING DIPHTHERIA OUTFITS BEFORE USE.

BOSTON, Feb. 28, 1908.

Mr. Editor: A recent personal experience shows the necessity for care in respect to the above subject.

Obtaining a culture at one of the regular culture stations in the city I happened by chance, just before taking the culture from my patient, to see that there was writing on the blank to be filled out. Investigation showed that it was a culture taken from a case of diphtheria for a second negative. Had I taken out the tubes quickly without noticing that the blank was filled out, it would have been perfectly possible to have passed a swab of virulent bacilli over the unfortunate patient's throat.

Yours very truly,
WM. PEARCE COUES, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, FEB. 22, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	4	1
Chicago	—	—	Waltham	7	1
Philadelphia	—	—	Pittsfield	7	1
St. Louis	—	—	Gloucester	—	—
Baltimore	204	56	Brookline	2	0
Cleveland	—	—	North Adams	7	1
Buffalo	—	—	Chicopee	13	9
Pittsburg	—	—	Northampton	8	1
Cincinnati	—	—	Medford	7	0
Milwaukee	—	—	Beverly	4	—
Washington	—	—	Leominster	—	—
Providence	91	22	Hyde Park	2	—
Boston	218	61	Melrose	4	0
Worcester	42	12	Newburyport	—	—
Fall River	55	28	Woburn	3	1
Cambridge	29	9	Westfield	2	—
Lowell	44	17	Marlboro	11	1
Lynn	34	9	Revere	2	—
New Bedford	24	10	Attleboro	3	0
Springfield	26	3	Peabody	—	—
Lawrence	30	6	Adams	—	—
Somerville	—	—	Clinton	1	0
Brockton	18	5	Gardner	—	—
Holyoke	17	8	Milford	5	—
Malden	13	2	Watertown	1	0
Chelsea	10	4	Plymouth	—	—
Newton	5	1	Weymouth	8	0
Salem	10	2	Framingham	5	—
Haverhill	12	1	Southbridge	9	3
Fitchburg	6	1	Wakefield	—	—
Everett	7	2	Webster	—	—
Taunton	12	2	Arlington	2	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED FEB. 19, 1908.

BAHRENBURG, L. P. H., passed assistant surgeon. Granted leave of absence for twenty-one days from Feb. 23, 1908. Feb. 17, 1908.

MCCOY, G. W., passed assistant surgeon. Granted leave of absence for one month and twenty-one days from Nov. 28, 1907, on account of sickness. Feb. 13, 1908.

FRIEDMAN, H. M., acting assistant surgeon. Granted leave of absence for one day on account of sickness, Feb. 10, 1908. Feb. 18, 1908.

KEATLEY, H. W., acting assistant surgeon. Granted leave of absence for eight days from Feb. 18, 1908. Feb. 18, 1908.

PARKER, T. F., acting assistant surgeon. Granted leave of absence for two days from March 4, 1908. Feb. 19, 1908.

STANTON, J. G., acting assistant surgeon. Granted leave of absence for twenty-one days from Feb. 14. 1908. Feb. 17, 1908.

TAPPAN, J. W., acting assistant surgeon. Directed to proceed to Douglas, Ariz., for special temporary duty; upon completion of which to rejoin his station at El Paso, Tex. Feb. 13, 1908.

MILLER, CHARLES, pharmacist. Temporarily relieved from duty at the Marine Hospital at San Francisco, Cal., and directed to report to Passed Assistant Surgeon Rupert Blue for special temporary duty. Feb. 14, 1908.

THOMAS, A. M., pharmacist. Temporarily relieved at the Angel Island Quarantine Station, California, and directed to report to the medical officer in command of the Marine-Hospital Station at San Francisco, Cal., for temporary duty. Feb. 15, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at San Francisco, Cal., Feb. 21, 1908, for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Surgeon H. W. Austin, chairman, and Passed Assistant Surgeon C. H. Gardner, recorder. Feb 15, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING FEB. 29, 1908.

A. H. ALLEN, assistant surgeon, Lajas, Province of Santa Clara, will stand relieved from duty in Cuba upon arrival at Lajas of Passed Assistant Surgeon R. E. Riggs and will comply with orders from the Navy Department.

R. E. RIGGS, passed assistant surgeon, Camp Columbia, Province of Havana, will proceed to Lajas, Cuba, for duty.

F. M. MUNSON, passed assistant surgeon. Ordered to the "Barry."

C. E. STRITE, assistant surgeon. Detached from the "Barry" and ordered home.

V. C. B. MEANS, surgeon. Retired from active service Feb. 22, 1908, under the provisions of Section 1453, Revised Statutes.

E. W. BROWN, assistant surgeon. Ordered to the Naval Medical School, Washington, D. C.

A. B. CLIFFORD, passed assistant surgeon. Detached from the Naval Medical School Hospital, Washington, D. C., and ordered to the Naval Hospital, New Fort Lyon, Colo., March 12.

A. C. STANLEY, assistant surgeon. **C. L. MORAN**, appointed assistant surgeon from Feb. 10, 1908.

J. O. DOWNEY, assistant surgeon. Unexpired portion of leave revoked; ordered to the "Relief."

APPOINTMENT.

DR. EUGENE ABRAHAM DARLING has been appointed Assistant Professor of Physiology at Harvard University. Dr. Darling has held the appointments of Assistant in Bacteriology, Instructor in Hygiene and Instructor in Physiology. His work and teaching are connected with the Academic Department of the University.

SOCIETY NOTICE.

FELLOWSHIP IN PATHOLOGY.

MOUNT SINAI HOSPITAL announces the establishment of the George Blumenthal, Jr., Fellowship in Pathology, with a stipend of $500 per annum. All graduates in medicine are eligible; the term is one year, and the fellowship cannot be held more than twice by the same person. The object of this fellowship is to further the scientific work of Mt. Sinai Hospital and to aid those anxious to obtain a laboratory training. The work done under the fellowship is to be carried on in Mount Sinai Hospital or elsewhere under the direction of the pathologist.

Applications may be sent to Dr. F. S. Mandlebaum, the pathologist of the hospital, before March 15, 1908.

RECENT DEATHS.

ORLANDO MIXTER, M.D., M.M.S.S., died in Worcester, Feb. 5, 1908, aged sixty-six years.

DR. JOHN B. PROBASCO, a leading practitioner of Plainfield, N. J., died suddenly from cardiac disease on Feb. 25, in the sixty-sixth year of his age. He was a native of Pennsylvania and entered Bucknell College in the class of 1864. Soon after the outbreak of the Civil War, however, the entire class enlisted in the 28th Pennsylvania regiment of Cavalry. Dr. Probasco served for about two years and a considerable number of his classmates were killed in battle. He was graduated from the medical department of the University of Pennsylvania in 1869 and the following year commenced practice in Plainfield. For a number of years he was a visiting surgeon to the Muhlenberg Hospital and at the time of his death was consulting surgeon to that institution. He was active in municipal affairs and especially interested in the public schools. From 1889 to the time of his death he served continuously as a member of the Board of Education, and since 1894 had been President of the Board.

BOOKS AND PAMPHLETS RECEIVED.

Detection of the Common Food Adulterants. By Edwin M. Bruce. New York: D. Van Nostrand Co. 1907.

Studies in Laboratory Work. By C. W. Daniels, M.B. Camb., M.R.C.S. Eng., and A. T. Stanton, M.D. Tor., M.R.C.S. Eng., D.T.M. & H. Camb. Second edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1907.

Bulletin of the Ayer Clinical Laboratory of the Pennsylvania Hospital. No. 4. Issued December, 1907. Philadelphia.

Hemorrhage into the Spinal Meninges. By I. A. Abt, M.D. Reprint.

Urinary Infection in Children. By I. A. Abt, M.D. Reprint.

A Note on the Reducing Power of Urine Following the Administration of Urotropin. By I. A. Abt, M.D. Reprint.

Acute Non-Suppurative Encephalitis in Children. By I. A. Abt, M.D. Reprint.

The Treatment of Congenital Syphilis in Infancy. By I. A. Abt, M.D. Reprint.

The Value of Chemical and Biological Methods in Medical Diagnosis. By Alfred Stengel, M.D. Reprint.

Original Articles.

THE GENESIS AND NATURE OF HYSTERIA: A CONFLICT OF THEORY.*

BY J. W. COURTNEY, M.D., BOSTON.

It is not my purpose to inflict upon you an historical recital of all the theories which have been advanced regarding the genesis and nature of hysteria. It would be a task akin to the writing of a universal history and about equally worth while. To be entirely frank, I must say that the mere perusal of even an infinitesimal portion of the literature bearing upon the subject under consideration causes me the most poignant dissatisfaction at the freedom of the medical press.

In a general way, we may say of hysteria at the outset, that we are entirely dissatisfied with its name, and properly so; and that we cannot, even by analogy, reason out for it a tangible pathology.

With this preamble I come to the question of the genesis of hysteria. Most of us will, I think, agree that hysteria has certain causes that are thoroughly well established. Practically no one disputes the strong predisposing influence of heredity or the actual etiologic rôle played by infectious diseases, such as influenza, or the toxic, such as alcoholism and saturnism. We all accept as a fact the tremendous pathogenic activity in the same direction of incessant emotional strain and even of organic diseases, such as brain tumors, goiter and multiple sclerosis. On the last-named disease in particular too much emphasis cannot be laid in this connection, since all of us are aware of the amazing similitude between the clinical pictures of multiple sclerosis in its early stages, when organic death is beginning to take place in disseminated areas of the brain, and hysteria. Some of us, with almost traumatizing insistence, demand a prominent place for bodily injuries in this etiologic list, and I plan to say just a word on the subject of traumatic hysteria, so-called, later on.

As already stated, the above-mentioned etiologic factors, with the exception of bodily injury, meet with general acceptance and demand no special comment. I will, therefore, devote my attention to two particular theories of causation, which, by reason of the unusual stand taken by their originators, do merit special comment. I refer to the sexual genesis of hysteria, as upheld by Freud, and to the "suggestion" hypothesis promulgated by Babinski.

For more than ten years now Freud has been contending that the most important, if not the only, causative factor in hysteria, is a disturbance of some sort (usually of a highly dramatic nature), in the sexual sphere, the term "sphere" being used in its broadest sense. This notion is with Freud a veritable "*idée fixe*," and he still continues to defend it against the objections of its numerous opponents, with his characteristic argumentative subtlety and vigor. An excellent illustration of this writer's point of view is to be found in one of his more recent papers, published in the *Monatsschrift für Psychiatrie*, and which he has, with unconscious naïveté entitled: "*Bruchstück einer Hysterieanalysie.*" This "fragment," 182 pages long, is so typical that I purpose to use it as the basis of my comments on the Freud hypothesis. It recites the case of one Dora, the offspring of parents sufficiently defective in themselves, both nervously and otherwise, to account for any deviation in the fruits of their union. The mother, a victim of what Freud terms "*Hausfrauenpsychose*," a mania for furbishing up everything about the house, regardless of the consequent discomfort of the entire family, is unable to hold the affection of the father, who, in parenthesis, is a syphilitic with a reprehensible fondness for the wife of an intimate friend. An elder brother of the patient is markedly hypochondriacal; and an elder sister, the victim of some weird form of psychoneurosis, died of a peculiar progressive marasmus shortly after her unhappy marriage.

To reproduce Dora's case in its entirety, even after the so-called fragmentary fashion adopted by Freud, would occupy almost an entire issue of the average medical journal. Briefly stated, Dora is an hysteric whose congenitally unwholesome mind appears to have occupied itself at an unusually early period of its development with matters sexual, the pseudoscientific pornography of Mantegazza constituting an important element in her intellectual pabulum.

The origin of Dora's hysteric manifestations is traced by Freud to a psychic trauma in the form of an over-ardent embrace offered by the husband of her father's suspected paramour. The train of morbid mental and physical processes started by this display of unlawful passion is most ingeniously worked out by the author, and from the moment of its receipt Dora appears to view everything that happens from a sexual standpoint, just as persons suffering from an irritation of the optic nerves see everything green or red. The most commonplace objects assume a symbolic importance of a sexual hue. This is true not only of her waking but also of her sleeping hours. Even her dreams are pregnant, so to speak, with sexual import.

The curious and interesting part of it all is that Dora herself is seldom fully aware of the sexual significance of her doings, sayings and dreamings. It is only when the searchlight of psycho-analysis is thrown upon them that this sexual element stands forth revealed.

To thoroughly understand the workings of this diagnostic procedure, psycho-analysis, one must follow a case like Dora's through all the windings of its psychopathologic maze. As exploited by Freud, psycho-analysis is well-nigh impossible to define. To utilize it clinically with success, one must start with a preconceived theory and sufficient artistry to mold the facts to this theory as a sculptor molds his clay.

The recital of Dora's case by such a finished literary artist as Freud is extremely well worth reading in its entirety. Machination and intrigue are so intimately blended with commonplace clinical phenomena that one's interest never flags for a moment; and even if one is not convinced of the author's views on etiology, one cannot help feeling an augmentation of an old conviction that, with certain women, hysteria is but a valuable means to a multiplicity of ends, and that such women are almost, if not quite, as loth to part with it as they are with life itself.

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* Read before the Boston Society of Psychiatry and Neurology, at a meeting held Dec. 19, 1907.

To summarize my views on the Freud theory I wish to express myself as follows: The sexual instinct, like the instinct of self-preservation, is as natural to the average human being as the desire for food and drink. If we trace its development in the normal individual from its dormant period in childhood up to and past the stormy crisis of puberty, we find extremely few cases in which education and environment, coupled with the individual's own power of inhibition, do not shield him or her from the dangers which, both from within and without, may accompany the externalization of the instinct in any of its forms. On the other hand there are always to be found a certain number of congenital deviates, of whom, by the way, the Dora of Freud's case is a noteworthy specimen, who may be classed either as sexual hyperesthetes or anesthetes, and in whom any unusual accident in the sexual sphere may result in hysteria. In my judgment it is to this unwholesome type, and to this only, that Freud's ingenious theory applies. An attempted wider application of it, even when aided by such an astoundingly manipulable agent as psycho-analysis, leads only to sinning against clinical accuracy.

I now come to the "suggestion" theory of Babinski, as recently set forth by him in an exceedingly forceful and altogether revolutionary paper entitled: "*Ma Conception de l'Hystérie et de l'Hypnotism.*" Stated baldly, Babinski's idea of hysteria is that it is a special psychic state which manifests itself principally by disturbances that may be termed primary, and accessorily by disturbances that are secondary. The characteristic feature of the primary disturbances consists, for Babinski, in the possibility of reproducing them by suggestion in certain subjects, with a rigorous exactitude, and of making them disappear under the exclusive influence of persuasion. The characteristic feature of the secondary disturbances is that they are strictly subordinated to the primary.

Such a conception as this, coming as it does from a man of large mental caliber, of broad clinical experience with his subject and of uncommon astuteness, cannot be dismissed lightly as idle vaporing. It has met with violent opposition from many quarters and will, doubtlessly, be adversely criticised by certain of you here present.

To thoroughly comprehend Babinski's point of view one must carefully examine the various steps by which he has arrived at it. According to the classical conception, hysteria manifests itself by two orders of symptoms, — the permanent, the so-called stigmata, and the transitory. Of these two orders of symptoms Babinski says, as follows: "The stigmata, to which great importance is attached, are supposed to be characterized by their fixity and by their habit of developing without the consciousness of the patient; these consist of anesthesia of the back of the throat, the sensori-sensorial hemi-anesthesia consisting, when it is fully developed, in an abolition of the divers modes of general sensibility, an unilateral diminution of the acuity of the special senses, vision in particular, with concentric limitation of the visual field, monocular diplopia or polyopia, and a dyschromatopsia which, contrary to that observed in tabes and alcoholism, involves blue and violet, while sparing the perception of red. Let us mention also among the stigmata the various painful points, such as the hysterical nail in the head and the ovarian hyperesthesia. The crises or attacks, the paralyses, the contractures, aphonia, mutism, etc., are supposed to constitute the transitory or mobile manifestations, to appear, as a rule, brusquely under the influence of an emotion, and to disappear, after the lapse of a certain period of time, in a sudden or rapid manner; they are also capable of replacing one another, and do not ordinarily produce any notable action upon the general condition."

Babinski says further:

"You will have an idea of the extent of the domain assigned to it [hysteria] when I have enumerated to you succinctly, as I purpose to do, the various troubles which are ascribed to it. First of all, without counting the attacks and the anesthesias already mentioned, there are the paralyses which are supposed to take on all sorts of forms, to reproduce the features of cerebral hemiplegias and monoplegias, as well as those of spinal paraplegias, and to be capable of localizing upon the nerves and of presenting the characteristic features of peripheral paralyses; for example, those of radial paralysis and of paralysis of the third or sixth pair. Hysterical neuralgias have also been described, the sciatic forms in particular.

"Hysteria is also supposed to give rise to mental troubles which, it is claimed, may at times become most grave and constitute what has been called 'hysterical mania.'

"The visual apparatus is looked upon as paying a large tribute to hysteria; in addition to the diminution of the visual acuity, the limitation of the field of vision and the ocular palsies, already mentioned, one is supposed to observe also at times pupillary immobility during the attacks and, even outside of the attacks, hysteria is claimed to produce inequality of the pupils and mydriasis with abolition of the reflexes.

"Cutaneous and vasomotor troubles are said to be engendered frequently by the neurosis which we are considering, that is, if we rely on the classical data; it is supposed to give rise to erythematous eruptions, hemorrhages, blisters, blebs, ulcerations and even gangrene; there have been published numerous reports of cases of hysterical edema, and of blue edema in particular.

"On the score of the respiratory apparatus there have been described aphonia, mutism, spasm of the glottis, pulmonary congestions and hemoptyses.

"From the cardiac side, there have been reported cases of angina pectoris, tachycardia and slow pulse.

"Hysteria is supposed to manifest itself in the stomach by gastralgias, emeses and hematemeses.

"Polyuria, anuria, hematuria, albuminuria, incontinence and retention of urine have also been claimed as manifestations of this neurosis.

"Finally, hysterical fever has been described long since, and quite recently cases have been reported which were considered indisputable."

The author then begins his destructive criticism of these claims. He shows, to his own satisfaction at least, that the fixity of the stigmata is a myth, and that they can be made to disappear in one or more séances by his method which he describes as follows: "When I have before me an hysteric afflicted with general anesthesia or with hemi-anesthesia, however complete it may appear on first inspection, and in whom the ordinary method consisting of pricking his skin with a needle appears to have revealed an abolition of painful perceptions, I proceed in the following manner: I suddenly apply to the pulp of the fingers, a particularly sensitive region, the two electrodes of a little volta-faradic apparatus, using the full strength of the current; I then observe, nineteen times out of twenty, that the individual undergoing the test makes a grimace denoting the painful perception and withdraws his hand. Among these subjects, certain ones refuse to allow a second use of the current and beat a retreat to some other service, where the electrical apparatus is out of order; others, and I would say the majority, admit that they felt the stimulation. I then renew the experiment, assuring them that my procedure is an infallible cure for anesthesia and I almost always get the desired result in a very short time, often in one sitting."

In a similar fashion Babinski rids these people of their contracted fields of vision, their dyschromatopsias and their pharyngeal insensibilities.

The next point he attacks in his argument is the notion that these stigmata develop without the knowledge of the patient. His claim is that they are always the result either of autosuggestion or of actual suggestions unconsciously made by the physician while employing faulty methods of examination. Even concentric limitation of the field of vision is, according to him, the direct result of such faulty methods.

The author next takes occasion to define exactly what the words "suggestion" and "persuasion" mean to him. Suggestion he makes synonymous with "harmful insinuation" or an allegation in flagrant discord with the observed fact. To insist, for example, to an individual whose muscles functionate in normal fashion that he is hemiplegic or paraplegic is in direct contradiction to good sense, and therefore suggestion; on the other hand, to declare to a person who is the victim of a psychic paralysis that his trouble can be made to disappear by a simple effort of the will, by the aid of electrotherapy or some other form of treatment, is not suggestion but persuasion, since the idea emitted is reasonable, or at least does not offend reason.

Babinski then goes on to admit that hysteria may give rise to nervous crises of the most varied sort, to paralyses affecting a member, a segment of a member, one side of the body or both lower extremities; these paralyses may be at times flaccid and at times accompanied by contractures; that it may engender anesthesia of the whole body, of one half of the body, of a single member or segment of a member; that it may produce hyperesthesias, limitation of the field of vision, diminution of the visual acuity, blindness, aphonia, mutism, vomiting, retention of urine, even apparent involuntary emission of urine. He says: "All this is incontestable, since one sees patients in whom it is at times possible to cause to disappear in short order, by persuasion alone, phenomena of this order, and because one is in a position to reproduce with precision, in certain subjects, identical phenomena, by suggestion." But inasmuch as it is impossible to reproduce by suggestion many of the other alleged phenomena of hysteria, he eliminates them forthwith from its semeiology. The phenomena elided are as follows: nervous crises accompanied by lividity of lips and followed by small cutaneous ecchymoses; exaggeration of the tendon reflexes associated with ankle-clonus; peripheral nerve palsies; degenerative atrophy; hysterical mania; complete anesthesia of the cornea and conjunctivæ; neuralgias of specific nerves, such as the sciatic; abolition of the pupillary reflexes and inequality of the pupils; cutaneous and vasomotor troubles, such as blisters, blebs, ulcerations, gangrene and edema; true paralysis of the vocal cords, edema of the glottis and pulmonary congestion; the hemoptyses, hematurias and hematemeses; angina pectoris, tachycardia and the so-called slow pulse; true urinary incontinence, anuria, albuminuria; hysterical fever.

To one who has followed Babinski's notions thus far, this query naturally presents itself: Does Babinski mean to imply that hysteria is not a pathological state and that the so-called hysterical manifestations are merely the result of simulation? The author's answer to this is as follows: "From the observation of a large number of hysterics, I have come to this conviction, which is also that of all neurologists, that many of these people are sincere and cannot be regarded as simulators, although I must confess that this idea is founded on arguments of a moral order and cannot be demonstrated with the scientific exactness that one can apply to the study of organic affections. A simulator who is skillful and well trained might succeed in reproducing with precision all the hysterical accidents. There is also every reason to believe that many hysterics become simulators and succeed in reproducing at will, according to their caprice or interest, troubles which, at the outset, were the result of suggestion or autosuggestion. I would also add that the real, the sincere, hysteric is never absolutely unconscious of his state; if he has, for example, during an attack, an hallucination in which he sees himself surrounded by flames, he, unlike other hallucinated persons, takes very good care not to shun the imaginary danger and expose himself to a real one. According to my way of thinking, the hysteric is not unconscious; no more is he completely conscious; he is in a state of subconsciousness."

It must be obvious to you that nowhere in the exposition of his ideas on hysteria, not even in his definition, does Babinski attempt to enlighten us on the *nature* of hysteria. To say that in certain subjects the symptoms, which he somewhat arbitrarily assigns to hysteria, may be rigorously reproduced by suggestion, is merely to emphasize one of the clinical attributes of this morbid condition, namely, hypersuggestability; we must still seek to determine the nature of the disturbance of the psychic functions which give rise to this exaggerated suggestibility.

As one advances in his search for this basic factor of the problem, one encounters on every hand theories which are certainly worthy of admiration as evidencing the marvellous ingenuity of the minds that produced them; but do they answer the question as to what hysteria really is? Let us consider, for example, the views of Janet, which make of hysteria a purely psychic disorder, and at the present time are commanding so much attention in the neurologic world.

Janet's definition of hysteria is as follows: "Hysteria is a form of mental depression characterized by the retraction of the field of personal consciousness and a tendency to the dissociation and emancipation of the systems of ideas and functions that constitute personality." This retraction of the field of consciousness is, according to him, not encountered in the anesthesias alone, but forms an integral part of all the other symptoms of hysteria. What he means by the field of consciousness is explained by him as follows: "A sensation is composed of two operations, one of sensation pure and simple and one of synthesis, which take place in two successive intervals of time. In the first interval there is produced in the cells of the cortex a great number of little elementary psychologic phenomena, a consequence of the external or internal excitations, coming from the impressions which are continually assailing our senses and from the functions of the organic life."

These are what Janet calls subconscious phenomena. Their essential character is that they are simple and isolated, and the idea of personality does not enter into them at all. In the second interval of time, there takes place an "assembling, a synthesis of all these elementary phenomena which are combined among themselves, and particularly combined with the vast and prior notion of personality." This assimilation Janet calls *personal perception*. Now the subconscious phenomena, the elementary sensations, are innumerable; they spring into existence from all quarters, simultaneously, every moment. The most normal individual is incapable of reuniting them all in his personal perception. There is a maximum which may be thus assimilated, and which varies with the individual. To this maximum which an individual can, at a given moment, assimilate to himself and of which he is able to have a personal perception, Janet applies the designation ***field of consciousness***. From this it follows that the field of consciousness becomes the more retracted as the number of assimilable phenomena actually assimilated decreases.

This theory of the retraction of the field of personal consciousness is, as everybody will readily admit, a most ingenious one, but it is, unfortunately, open at the start to the very logical objections made to it ten years ago by Sollier. As the last-named author then said, when one has demonstrated that in hysterics there is a retraction of the field of consciousness and a defect in the personal synthesis, one has done nothing more than to make a simple statement; in a word, nothing more than describe one of the attributes or stigmata of the morbid condition under consideration. The logicalness of this objection is emphasized, to my way of thinking, when we consider that in epilepsy, a condition oftentimes distinguishable only with difficulty from hysteria, nobody has ever dreamed of considering the well-known doubling of the personality which takes place as constituting the disease; it is too obviously only a symptom of the brain defect we term epilepsy. What warrant have we, then, in attempting to reverse the order of events when it comes to hysteria? These are not the only objections to the Janet theory. Even its application by him in his explanation of the anesthesias seems to me not wholly free from objection. I will endeavor to make clear what I mean by this statement by referring to certain passages in his most recent book, "The Major Symptoms of Hysteria." On page 169 he says: "We propose to Is. [the patient] a little contrivance to verify her anesthesia quickly. She is to answer 'Yes' when she feels and 'No' when she *does not feel* anything. As she is very simple minded, she accepts without demurring, and we discover then a curious contradiction. Although she has her eyes carefully concealed behind a screen, although we avoid any kind of rhythm and pinch her several times irregularly on the same side before we pass over to the other, she is never mistaken and always says 'Yes' when we pinch her on the left and 'No' when we pinch her on the right."

How are we to explain this "curious contradiction"? Janet holds that we have no right to assume that the subject's insensibility was simulated and that his process merely unmasked a fraud; that we must consider the anesthesia a psychologic fact and seek, among the notions psychology furnishes us, that which best summarizes facts of this kind. He says: "Anesthesia is surely not ordinary absent-mindedness; it has much more clearness and duration. . . . There is in it a pathological incapacity to collect the elementary sensations in a general perception."

I must confess that I cannot, even by the utmost mental endeavor, comprehend how this psychologic interpretation of anesthesia covers the above-cited case. The very nature of the test directed, one might say forcibly directed, this woman's attention in one specific direction, and that her attention did not wander is abundantly proved by the fact that, in spite of the varied manner in which the pinches were given, she always answered and her answers were invariably correct. Now, if it was the normal functioning of the personal perception which enabled her to recognize instantly stimuli coming from the sound side — and we have every right, according to Janet's own theory, to assume that it was — are we to conclude that the personal perception became suddenly annihilated every time a stimulus was sent up from the supposedly anesthetic side and the answer "No" promptly given? Any such conclusion seems to me quite as untenable as that of fraud does to Janet. Logically, there should have been no *personal* perception whatsoever from the anesthetic side and consequently no response.

Let me hasten to say that I do not instance the above case in any captious spirit. I merely instance it as one of the *tours de force* to which all authors are sometimes put to make fact conform to theory.

I plan now to discuss for a moment another point made by Janet, namely, that retraction of the field of consciousness forms an integral part of all the other symptoms. In my opinion this statement does not hold true and cannot, even in the skillful hands of its most ingenious author, be made to hold true of at least one of the most curious and interesting manifestations of hysteria. I refer to anuria. I have not forgotten that Babinski has struck this symptom from the semeiology, and I am not certain that Janet has not done the same, but of this I am certain, that in one of the most typical cases of hysteria I ever saw — a case reported by Garceau and myself in the *American Journal of Urology* — complete anuria, lasting on one occasion for three days, was one of the prominent symptoms over a period of years. A detailed report of this case is to be found in our paper, and I will not devote any further space to it here. The point I have to make is this: that a complete suppression of the urine from retraction of the field of consciousness has no analogy elsewhere in the domain of disease. In support of this contention I need only to refer to the commonplace observation of overflow and even rupture of the bladder from neglect, in cases in which consciousness is seriously disturbed.

In summarizing Janet's work, I would say that, while he has furthered our understanding of one of the most remarkable and important stigmata of hysteria, the regression of the field of consciousness, to a degree hitherto unattained, he has left us, so far as concerns our understanding of what is behind this peculiar stigma and causes it, exactly *in statu quo*.

Our own Dr. Prince, working independently along the same psychologic lines as Janet, has gone deep below the surface of things and shown us that in this hysteric retraction of the field of consciousness there are sometimes reunions of groups of dissociated personal perceptions, which give rise to the multiplication of the hysteric's personality, but it still remains for some one to tell us the exact "why" of it all.

Sollier has attempted to do this in his well-known work, "*Genèse et Nature de l'Hystérie.*" You are all, doubtless, familiar with his famous notion that hysteria is a peculiar going to sleep of parts and, at times, of the whole brain. In his own words: "Hysteria is a physical, functional disturbance of the brain, consisting in a torpor or sleep, local or general, of the cortical centers, manifesting itself, according to the centers affected, by vasomotor and trophic, visceral, sensorial and sensory, motor and psychic disturbances, and, according to its variations, its degree and duration, by transitory crises, permanent stigmata or paroxysmal accidents. Confirmed hysterics are only vigilambulists, whose state of sleep is more or less profound, more or less extensive."

For those who favor a physiologic interpretation of hysteria, Sollier's conception should offer many attractions. It is certainly a laudable attempt to put the horse before the cart instead of the cart before the horse, as other theorists have done. The serious objection to it is that the "going to sleep of the brain" portion of it is assumed rather than proved.

In casting about me for a subject for this paper, I endeavored to select one which gave promise of bringing out a general discussion and a free expression of personal opinion. I trust that this promise may be realized. I have no theories of my own to offer, but I cannot refrain from expressing certain convictions I hold concerning hysteria, which have been gained from clinical experience. I believe that hysteria is the clinical expression of a simple adynamic condition of the brain, and that in our part of the world we rarely see more than a "*forme fruste*" of the classical picture. By this I mean that the somnambulistic phenomena (which, Janet says, constitute more than half the so-called accidents of hysteria), the complete abulias, the deliria, the paralyses and contractures, even the absolute hemianesthesias and amauroses, are genuine rarities.

In view of these observations, I am firmly convinced that the generally unfavorable prognosis laid down by American writers on hysteria represents the teaching of the French school rather than an independent conviction based on their own experience. I am also satisfied that in environment and psychotherapy we have two agents that are absolutely adequate for the cure of practically every case we meet in our daily work.

To put my conception of psychotherapy in a form of words is difficult, since the term has such wide connotations. In essence it is based on this fact, that the infusion of force and activity into brain cells is by no means a purely endogenous process. This truth was obvious to the mind that first conceived the idea of placing a band of music at the head of a regiment of soldiers; and we are all familiar with the tremendous dynamogenic capabilities of a patriotic tune. A waltz measure, for some of us, possesses the same energizing quality. For others the spoken or written word, the personal example, are all-sufficient. I could prolong the list indefinitely if it seemed advisable. Psychotherapy stands for anything and everything that acts upon the intellect and the emotions in a way to recharge depleted brain cells.

In speaking of the etiology of hysteria, I promised to say a word on the rôle played by bodily injuries. I have reserved this for the end, and shall say what I have to say in all sincerity, without malice and without the slightest wish to stir up acrimonious discussion.

I hold that it is logical to assume that, from a remote period in history, even as far back as the time when the misbegotten term "hysteria" was conceived in the medical mind, human beings of both sexes have been the victims of bodily injuries, and that these injuries have been incurred under circumstances quite as harrowing to the emotions as any which obtain to-day. In the face of this logical assumption, it seems to me nothing short of marvellous that medical history should be so absolutely barren of reference of trauma as a cause of hysteria, up to the time when corporate bodies began to direct the great commercial enterprises of the world and were held responsible by law for the safety both of those in their employ and of those whom they undertook to convey from one place to another. There is to me a sinister significance in the rapid growth in importance attached to bodily injuries in the causation of hysteria from that time to the present. There is to me, also, a sinister significance in the facility with which bodily injuries of the most trivial sort appear to be capable of producing this untoward result in persons previously as unemotional as so many Teddy bears and whose family history is so universally free from everything that might suggest nervous or mental deviation.

Some of you are going to instance to me cases — I can feel it in the atmosphere — to which my strictures do not apply, and I am going to anticipate your criticism by saying that you are able to cite such cases simply because they occupy a prominent place in the foreground of a memory picture whose background is composed of a dull, monotonous succession of cases of bodily injury in which the nervous system escaped unscathed.

I do not contend that hysteria never results from traumatisms, but I do maintain that the injury is rarely anything more than the last straw, and that if half the zeal that is every day exhibited in proving that hysteria can result from bodily injury were directed toward therapeutic ends, our professional duty would be more profitably fulfilled.

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As a part of the vigorous prophylaxis against plague being carried on by the health authorities in San Francisco a corps of two hundred inspectors and rat catchers has been organized, and a bounty is paid for the dead rodents. — *Medical Record.*

SOME CLINICAL OBSERVATIONS ON THE DIAGNOSIS AND TREATMENT OF EXOPHTHALMIC GOITER.

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Basedow's disease, exophthalmic goiter, or Graves's disease, is one of the most interesting of diseases on account of the peculiarity of its symptoms and the mystery of its etiology and pathology. It was first described in 1835 by the celebrated Dublin physician, Graves, and in 1840 Basedow gave a complete and elaborate account of its clinical features. Since that date the literature of the subject has reached enormous proportions, as can be readily gathered from Albert Kocher's monograph on the surgical treatment of the disease which contains no less than 1,423 references. A consideration, therefore, of some of its many clinical features, as seen in the material afforded by the clinic of a large hospital, has seemed to us to be of interest. This material is entirely made up of patients seen in the Out-Patient Department of the Massachusetts General Hospital, a clinic which serves largely as a diagnostic agency, but as many of those seeking its aid come from a distance it is difficult to follow up for any considerable time a large number of the cases. For the purposes of this article we have selected 85 well marked cases which have been followed for a longer or shorter period of time, 34 of whom first appeared in the clinic over five years ago. All the so-called "fruste" cases we have intentionally disregarded, although a few have been called "fruste" at some period. We also have not included cases in which there were slight goiter and nervous symptoms, unless there were the more important signs, such as tachycardia, tremor, or exophthalmos.

The clinical data obtained from these cases differs notably from those currently reported and regarded as important, more especially in the scanty family history of nervous and mental disease, in shock, worry or fright. The affection seems to come on in our cases as do many other diseases, leukemia, diabetes, etc., without definite or assignable cause. Perhaps further investigations will enable us better to recognize the exciting as well as the predisposing causes. At present, we have to diagnose the disease from the objective examination and some rather simple historical data. Our 85 cases consisted of 80 women and 5 men, but as most of our material came from a female medical clinic, these proportions cannot be regarded as important, although they are in accordance with Murray's figures of 17 women to 1 man. In age the youngest was sixteen; 8 were between sixteen and twenty years; 26 between twenty-one and twenty-five; 39 between twenty-six and thirty; 14 between thirty and thirty-five; and 8 between thirty-five and forty.

Of the women 42 were or had been married; 29 were single. The men were 2 married and 2 single.

There is little noteworthy in the occupations.

All the married women kept house. The single ones were students, milliners, stenographers, etc. Comparatively little can be ascertained regarding predisposing causes. Some of the patients were perfectly well up to the beginning of symptoms; many of them had the usual histories of diseases of childhood and mild infections. Twenty-six cases only gave more or less distinct histories of more serious affections that may have had some influence on the development of the disease. Shock, worry or fright are mentioned in only a few instances and do not seem of great importance in the onset of these cases.

The family histories were almost wholly negative, and especially so as regards the often mentioned neuropathic tendencies. Tuberculosis is present in the families in only 16 cases. In one case a brother and in two others a sister were epileptics. In 12 cases some member of the immediate family had simple goiters. In 3 cases there was well marked exophthalmic goiter among other members of the family.

There was no discoverable relation between pregnancy or its complications and Graves's disease. Ill health and uterine disease seemed to have no direct bearing.

In 21 cases the goiter was the first symptom, followed rapidly by the others, such as exophthalmos, tremor, palpitation, weakness, tachycardia, emaciation, or nervousness and irritability, but in 18 others the goiter persisted for years before other symptoms came on. In 11 cases it is recorded that the goiters came on late in the course of the disease, but it is easy to see how patients may be mistaken in this as it is not uncommon to find individuals who deny having enlargements of the neck, but who have very distinct goiters.

Palpitation on the other hand is a symptom which is much more likely to be first noticed, and in fact 62 patients gave this as the earliest, or one of the earliest, symptoms.

The thyroid gland was enlarged in all cases when first examined. Usually the enlargement was not very great, but the lobe or lobes could easily be felt to be enlarged on palpation. In 38 cases the enlargement was almost or quite symmetrical. In 32 the right lobe was larger, in 14 the left was the larger. The consistency was described as "hard" only once; usually it was "elastic" or "soft." The blood vessels were often so full as to give a characteristic feeling. In 12 cases there were well marked pulsations. A thrill was present in 68 cases, absent in 18. A systolic murmur, usually blowing, rarely humming, could be heard over the gland in 76 cases, ordinarily best heard just above the right sterno-clavicular articulation. In 9 cases there was reported to be a diastolic murmur. The murmurs varied from time to time in character and were sometimes continuous.

The circulatory system presented signs of great interest. Palpitation, so frequent as an early symptom, was often present under observation, although it usually grew less troublesome under treatment. Tachycardia was almost always present, and in some cases persisted, though less severely, after improvement had occurred in other respects. In 58 cases the rate was between 120 and 140. In 12 between 100 and 120. In 8 it averaged between 110 and 120, but under excitement would rise to 190 and 200. Visible pulsations in peripheral arteries were noted in 40 cases, while in 5 cases there was a capillary pulse without evidence of aortic disease. Flushing over the face, thorax and extremities was very common and was often associated with coldness of the extremities.

The apex beat was displaced to the nipple line or beyond in 70 cases. The absolute dullness was enlarged to the left in 58 cases, and in 14, absolute dullness extended beyond the right edge of the sternum. The apex beat was usually distinct or strong. Often it was heaving, sometimes described as "pounding." Arrhythemia was not uncommon and often came on during observations of the pulse without subjective symptoms. Reduplication of the second sound was noted 42 times; gallop rhythm 18 times. The sounds were usually loud but murmurs were often associated with them. In 33 cases there was a murmur at the apex with the greatest intensity there and transmitted in various directions resembling mitral regurgitant murmurs in general, and usually very audible over the whole precordia. In 11 of these cases there was a different systolic murmur at the base. There were no diastolic heart murmurs noted.

The pulse had rarely the qualities of softness and quickness, either large or small; but was mostly described as high tension and there were a few recorded blood pressures of 177 to 196 mm. of mercury. The average, however, fell between 130 and 140 mm. In nearly all the cases on which it was tried the pressure fell quickly during treatment. Twelve of the severer cases had edema, usually in the legs only.

Next to the thyroid, heart and circulation, the eyes are of chief interest in exophthalmic goiter, and in this series of 85 cases the eyes were negative or unnoted in 8. In 20 cases the four cardinal signs, exophthalmos, von Graefe's lid sign, Stellwag's and Moebius' weak convergence, were all present. Exophthalmos, von Graefe's and Moebius' were present in 8. Exophthalmos and von Graefe's in 8. Exophthalmos and Stellwag's in 10. Exophthalmos and Moebius' in 4. Exophthalmos alone in 20. Reflex winking was sometimes lessened, as was also the wrinkling of the forehead in looking up, but neither of these seem important symptoms.

The nervous system in these cases showed the usual changes. A majority had an anxious expression that harmonized with the appearance of the eyes. In several, cachexia was the most striking feature of the facies, while some of the patients looked fairly well. Tremor was common to all. Several had tremor of all the extremities, sometimes of the head also. The tremor was fine varying from 6 to 10 in a second. Choreic movements occurred in three, of whom two had a history of chorea in infancy. Tingling and numbness were often complained of. Agitation and restlessness were very common, as was the tendency to cry without sufficient cause. Poor sleep was one of the most common complaints, and it existed in most of the cases, yielding quickly to treatment as a rule. Psychic anomalies were not encountered. All complained of weakness, especially in the legs, and had weak grips.

The emaciation of Graves's disease is well illustrated in these cases. Seventy-eight out of these 85 cases had a well marked loss of weight. Some of the cases are remarkable, as the rapid and great loss in weight does not seem wholly attributable to the diarrhea, although this is often a part of the process. In these few cases this loss in weight equaled 40 to 80 lb.; in the majority of the cases, however, it averaged between 20 and 40 lb. Loss of appetite was only rarely present.

Dyspnea is a very common subjective symptom and is especially noticed on exertion, such as walking. Objectively it was noted only 18 times aside from exertion.

The temperature was increased in only the very severe cases, but as our cases were mainly such as could be treated in an out-patient department, accurate observations could not be made. There were occasional single observations of 100°, 100.6°,101.3°.

The skin changes were of the usual variety. There was an unusual tendency to sweating in 80, none in 5. In some of the former it was profuse. A very characteristic feature of the examination of them all was the warm, sweating palms which they presented. In 33 cases there was excessive pigmentation on the flexor surfaces or the abdomen. In many, the eyelids were pigmented before other parts of the body. Falling of the hair was very common.

In only a few of the cases was the blood condition noted, and in these it is not remarkable, the most striking feature being a slight diminution of the leucocytes below the normal with a slight anemia, resembling chlorosis.

The cervical lymphatic glands were often enlarged showing a possible relation to the thyroid secretion. In 6 cases the spleen was enlarged.

The digestive system was often upset, especially as to nausea, vomiting and diarrhea. Eighteen cases had a distinct history of nausea and vomiting, but there were no distinct gastric crises. The great majority had diarrhea, usually in attacks, and usually followed by constipation. Sometimes the attacks persisted for days in spite of astringents and intestinal antiseptics, and in others it stopped with no other treatment than light diet. The stools showed nothing especial except poor digestion in some cases. Gastroptoses, with or without other ptoses, occurred in about the same proportion as among those without Graves's disease, being 1 to 4.7 in our cases.

The examination of the kidneys showed but little of interest. With cardiac insufficiency there were albumin and casts.

The pelvic organs showed less abnormality than one might expect. Three women had passed the menopause before or about the time the disease came on. Two had had their ovaries removed for cystic degeneration. Fourteen had operations for repair of cervix. Nineteen had histories of amenorrhea. Eight patients went through pregnancy without ill consequences after improvement had set in.

The diagnosis of exophthalmic goiter has not been given the attention it deserves. Most of the textbooks dismiss the subject with a few words on the impossibility of mistaking a well marked case for anything else. Others are less optimistic, but suggest that, in cases not typical, time will make the case certain. In other words, as was the case with tuberculosis not very long ago, recognition begins with advanced cases. And yet, in this disease of obscure origin, treatment is unsatisfactory in proportion to the lateness of the period at which it is begun. In the diagnosis of early cases attention to a number of details will go far to prevent error.

Goiter alone is no proof of the existence of Graves's disease, but a medium sized goiter of recent or long standing should always lead to further examination. If the goiter is of a consistency suggesting vascular enlargement rather than parenchymatous or cystic growth and if the vessels are prominent and pulsate more forcibly than normal, the suspicion should be still further aroused. Of course it must be remembered that Graves's disease may exist with simple parenchymatous, colloid or cystic goiters, but the vascular form is much more frequent. If there is a vascular murmur over the thyroid gland the goiter is almost certain to be exophthalmic. This murmur was found in 87% of our cases. In case such a goiter is present, the search for exophthalmos or other eye changes, tachycardia, tremor and other symptoms is in order. If there is no goiter or exophthalmos, but only tachycardia and tremor, a diagnosis by exclusion must be made as regards both heart and tremor. Rapid heart action should always call for a very careful examination, since it occurs in so many other diseases. The character of the tremor in most patients, if carefully examined, is so striking that it is one of the most important signs. The symptoms on the part of the nervous, digestive and cutaneous systems, the loss of weight and the dyspnea are of the utmost value in such cases. The diagnosis of the degree and type in Graves's disease is of considerable importance, both for therapeutic and scientific reasons, but such distinctions should never blind us to the fact that the disease, so far as we can now tell, is one and the same, whether we call it complete or incomplete, primary or symptomatic. Much has recently been written on the pathology of the disease, but as our knowledge has been confined to reading the experiments of others and as we have not been able to add anything to what has already been done, we have considered it more fitting to leave out a consideration of this complicated subject from this purely clinical paper.

Many methods of treatment have been successfully used in Graves's disease, directed against either the toxins or the cause of the disease. Our favorite method has been the more or less continuous use of the neutral hydrobromide of quinine, and it is with special reference to our experience with this drug that we shall confine the discussion of treatment.

Dr. Forchheimer, of Cincinnati, was the first to suggest the use of this salt which has been especially put up for us by Parke, Davis & Co. It is a combination of quinine and hydrobromic acid in which all the bonds are satisfied and we have a neutral hydrobromate of quinine with a formula $C_{20}H_{24}N_2O_2.HBr + H_2O$, and consists of white silky needles soluble in 0.6 parts of alcohol, 6 parts of ether, 12 parts of chloroform, and 54 parts of water. Great difficulty was at first experienced in getting a strictly neutral salt. The acid salt, which we were obliged to use at first, did not give as satisfactory results. It is given in five-grain capsules three times a day and this is as much as can ordinarily be borne, although we have found patients who could take four capsules a day for a long time without the unpleasant symptoms of tinnitus. On the other hand we occasionally find a patient who cannot take more than one or two capsules a day. At the beginning of treatment patients are told that no marked effects may be seen short of a month and they must be prepared to continue it for at least two years. Great stress is laid upon this because patients become very easily discouraged if no immediate results are obtained. Usually after a week or two of treatment the pulse rate will be slowed, the thyroid diminished and the sweating and tremor lessened. It should be continued until all the symptoms have disappeared, which may be in four months or as long as three years. The order of disappearance of the symptoms seems to be, first, the tachycardia subsides, then the sweating, then the thyroid gland diminishes, and finally the exophthalmos and tremor, the last two after only a prolonged course of treatment. In a few instances the goiter and exophthalmos persisted more or less marked after all other signs had disappeared and the patient was practically well and at work. We have never seen any bad permanent effects follow from the administration of the quinine, and the only unpleasant effect is occasional tinnitus, especially if large doses be given. It is advisable to continue the drug in small doses, one capsule three times a week during the second year, and the patients are cautioned to immediately return to former doses at the first indication of any reappearance of their old symptoms.

Relapses are not uncommon but if taken early yield very quickly to treatment. A relapse has been noted in a number of cases following some nervous shock, as accidents or sudden deaths in the family. They have also been noted in cases that have been without symptoms for two years but have never proved serious.

How the quinine acts it is impossible to say; it may act indirectly upon the toxic bodies in the blood, by slowing the heart, by contracting the arterioles, or by stimulating inhibitory centers. But to convince oneself that it does act it is only necessary to withdraw the quinine in a given case and see how promptly the symptoms recur.

At this writing we have the records of 85 cases of Graves's disease treated with this method. Three of these cases have been followed continuously for the last eight years. Twenty-two have been under observation for from two to five years. The remaining 29 cases are made up of those who were treated for a time but who have migrated to other localities and have since been communicated with by letter. It is a somewhat remarkable fact that of these 85 cases only 3 have progressed to a fatal termination. Only 1 patient died while under our care, but he was brought to the hospital in the very latest stages with a heart enormously enlarged, a pulse of 220, and generally in a desperate condition. The other two fatal cases, after a temporary improvement, died in other localities, from exacerbations of the disease. This mortality record bears out our conviction that the disease in a large majority of cases tends to run a mild course and can be cured by simple measures.

Of our original 34 cases all but one, to be mentioned more in detail later, are practically cured. They are pursuing their ordinary avocations and have been without symptoms for over three years. There have been 14 pregnancies among them, one patient having had three children, and no bad effects have followed although most of them have been distinctly worse during the period of gestation.

Of our second series of 22 cases, which have been followed from two to five years, 9 are completely free from signs or symptoms and have had no relapses for over two years and can be called cured. Seven have relapsed within one year or have signs still present, and 6 are now under treatment by other methods, the bromide of quinine having apparently failed to relieve.

Of the 29 heard from by letter, two have died, 20 write that they are either entirely well or only take the medicine rarely, and 7 are unimproved.

Briefly recapitulating our results, leaving out those cases heard from by letter, our experience has been as follows with the remaining 56 cases:

Forty-two cases cured (no signs or symptoms for two years) or 76%. Seven cases benefited (signs or symptoms recurring within two years) or 13%. Six cases failures or 11%.

While we cannot claim that these cures are permanent, yet these patients are sufficiently well to be without signs or symptoms and to perform their customary work in life. We have been very well satisfied with the results obtained and do not believe that any other mode of treatment thus far advanced can show any better results than those here noted. Of course, in addition to the hydrobromate of quinine, we employed such general treatment as rest, diet, care of the stomach, intestines and skin.

In extreme cases with pathological changes in the heart a cure can hardly be expected, but we have seen marked amelioration of symptoms following this treatment.

One case of our original series gained only temporary benefit from the quinine, and on May 20, 1902, Professor Mikulicz, of Prague, operated at the Massachusetts General Hospital and removed the right lobe of the thyroid and tied off the left. A cure was apparently effected but within six months the left lobe enlarged and there was a return of all the old symptoms so that the patient was in about the same condition as before the operation. The hydrobromate of quinine was then administered and a very rapid improvement followed and the patient has remained well but occasionally has to take the quinine. In this connection it seems to us that better results would be obtained from operative treatment if a preparatory course of this drug were administered and if it were to be continued after the operation.

We have used thyreoidectin for a considerable time in 12 cases. The powder form of the serum was used in a dose of from 15 gr. to 40 gr. a day, in divided doses. The results were varying, but in no instances have the favorable results recorded by other physicians been obtained. In many instances the symptoms seemed aggravated by the remedy.

We have had no experience with the specific serum treatment, as prepared by Rogers and Beebe, of New York. This may prove more efficacious, but until we more fully understand the action of these agents, it seems to us we should be very cautious in adopting them.

In conclusion we wish to say a few words about the surgical treatment of this disease. We cannot advocate sending early cases to the surgeon. The results of medical treatment are too favorable, from 70% to 80% of the cases being cured by it. This is especially true in the rudimentary forms; better in the form which develops gradually than in the form which develops suddenly with full force; better in the old than in the young. But notwithstanding the good results from medical treatment there will always remain a certain number of cases for the surgeon, viz., when the thyroid gland becomes so large that it produces symptoms of compression or when the patient gets rapidly worse on medical treatment. Organic heart changes and bad general condition are surely contra-indications to operation.

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STRICTURES OF THE ESOPHAGUS DILATED THROUGH THE ESOPHAGOSCOPE.

REPORT OF A CASE.*

BY J. PAYSON CLARK, M.D., BOSTON.

Since esophagoscopy may be said to be still in its infancy or, at most, early childhood, and only a comparatively few laryngologists have had any experience in its application, it seemed to the writer that the report of the following case might be of interest and value:

Arthur St. P. L., age six, of French Canadian parentage, was brought to the Throat Department of the Massachusetts General Hospital, on June 10, 1907, with the history of having swallowed a small quantity of caustic potash about six months before. For a few days after the mishap he could swallow nothing. Then he was able to swallow liquids but not solids until three days before coming to the hospital, during which time he could not swallow liquids. On passing bougies a firm obstruction was encountered about eight inches from the incisor teeth. The patient was then etherized and a Jackson esophagoscope passed. This brought up in an apparently blind pouch or dilatation seven and a half inches from the incisor teeth. The greater distance shown by the bougie was doubtless due to its flexibility. After considerable search no outlet was discovered. After recovery from ether it was found that the patient could swallow liquids with apparent ease.

To facilitate the finding of the lumen of the stricture he was given, on the morning of the thirteenth, silk thread in a glass of water to swallow, the nurse keeping hold of one end of the thread which was then fastened to his cheek with a strip of plaster. He was then etherized and the esophagoscope introduced. The thread could be easily followed as the tube was pushed slowly down until the latter reached the dilatation above the stricture, when the silk thread could be seen disappearing through a minute opening. The stricture was too small to admit bougie No. 15 F. at first, but a No. 13 was passed and then a No. 15. During the next fortnight three or four unsuccessful attempts were made to pass bougies without the aid of the esophagoscope and general anesthesia.

On June 26, the boy was again etherized and guided by the esophagoscope bougie No. 18 F. was easily passed, No. 20 with somewhat more resistance. It was discovered at this time that there was another stricture, of larger caliber than the first had been, about an inch beyond the first. This was also dilated. The use of the silk thread was found unnecessary at this second operation on account of the larger size of the lumen. On June 28, another unsuccessful attempt was made to pass bougies without ether and the tube. On July 1 bougies Nos. 18, 20 and 21 were passed through the esophagoscope under ether anesthesia. The patient could now swallow soft solids. On July 31 bougies up to and including No. 23 F. were passed under the same conditions. There was generally some bleeding when a tight-fitting bougie was used. Again, on Aug. 28, bougies Nos. 20, 21 and 23 were passed in the same manner. The patient was then instructed to report once a month for treatment. Up to the last visit bougies could not be passed through the stricture without the tube. At last accounts the boy was eating without difficulty.

According to the table compiled by Mosher from Starck, the length of the esophagus from the teeth to the cardia in a child of five years of age is 26 cm. For a child of six it would probably be between 26 and 27 cm., or about ten and a half inches. This would bring the first stricture in this case about three inches from the cardia. Dr. Chevalier Jackson[1] says, "Flexible bougies of 8 mm. in diameter should pass in infants and children up to ten years in age." Bougie No. 23 F. is between 7 and 8 mm. in diameter. It is evident therefore that the strictures were dilated to approximately the normal caliber of the esophagus for a child of six. An interesting feature of this case was the marked dilatation of the esophagus above the stricture. This large pouch made the search for the very small lumen of the stricture a very long and tedious one. Jackson says: "Very often this [the lumen of the stricture] will be of almost pin-hole size seen in the flat wall against which the tube mouth is gently pressed. Often prolonged exploration of a diverticulum, or a number of diverticula, will be necessary before the strictural opening is discovered." The previous swallowing by the patient of a silk thread, a well-known device connected with older methods of treatment of esophageal strictures, will obviate any prolonged exploration, the white thread forming a beautiful guide to the operator and saving much valuable time.

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* Read before the meeting of the Eastern Section of the American Laryngological, Rhinological and Otological Society, Boston, Jan. 4, 1908.

[1] Chevalier Jackson: Tracheo-Bronchoscopy, Esophagoscopy and Gastroscopy. St. Louis, Mo., 1907.

The reason for the inability in this case to pass flexible bougies even after the strictures had been considerably dilated, seemed to be the relation of the lumen of the stricture to the dilatation of the esophagus, the latter acting like a diverticulum in which the bougie stopped without being able to enter the stricture. This dilatation will doubtless slowly contract now that the condition of the esophagus below has become more normal.

A CASE WITH GRAVE GASTRIC SYMPTOMS OF REFLEX ORIGIN.

BY RICHARD F. CHASE, M.D., BOSTON,
AND
JOHN T. BOTTOMLEY, M.D., BOSTON.

On account of the conditions which led to an incorrect diagnosis and the unexpected findings at operation, the following case seems worthy of report:

Women's Medical Clinic, Boston Dispensary, Jan. 21, 1907.

Mrs. M. M., forty-three, does own housework and works out. She has had no illness within the past ten years to confine her to bed. No specific, nor tubercular history could be obtained. No history of trauma to abdomen. Average weight 128 lb., present weight 127¼. Color good. Has always had a "weak stomach," but for past sixteen months it has caused more than the usual trouble, while the past six weeks it has been so bad she has been obliged to stop work. The appetite is diminished, thirst normal. Pain in mid-epigastrium, sharp, not radiating, occurs about one hour after eating and lasts about two hours; coarse foods seem to excite it most, soda relieves it. Eructation of gas is excessive and occurs at any time. "Water brash" causes much annoyance. Nausea occurs at time of pain, but she cannot vomit. Hematemesis, none. Bowels constipated for years, and there is excessive intestinal flatulence. Since coarse foods have excited so much pain and discomfort, the patient has restricted her diet to liquids and soft foods. The tongue is clean, teeth fairly good, breath bad at times. She drinks three cups of tea a day, no coffee nor alcoholic liquors.

Physical examination, heart and lungs negative. Both kidneys are prolapsed to 1°. A tumor the size of a filbert is felt at one inch to the right of and below navel; pressure on it excites a sharp pain which is referred to the cardiac end of stomach; tumor is supposed to be at the pylorus. Albumin, 0. Sugar, 0. The symptoms seem to point only to a gastric condition. The patient was given a provisional diet list, antacid tablets, A. S. & B. pills.

Jan. 24, third day. Weight 125¼, 2 pounds loss. Test breakfast. Amount = 100 + cc., some free blood. Free HCl = 27. Total acidity = 54. Percussion of the empty stomach, without inflation, showed the greater curvature to be about 1½ inches below the navel. The stomach was douched.

Jan. 29, eighth day. Weight 123¼, total loss, 4 lb. The symptoms are but slightly relieved, the patient feels weaker. Fasting contents for fourteen hours are 100 cc., ¼ food, ¾ liquid, some blood; HCl = +. The bowels are well regulated by the A. S. & B. pills. Stomach douched.

Feb. 1, eleventh day. Weight 122¼, total loss, 5 lb. Patient but little relieved and feeling much weaker. The tumor is palpated as at first visit, slightly movable, but not with respiration. The stomach contents, five hours after the ingestion of 1½ slices toast, 1 soft egg, and 1 cup tea, amounts to 120 cc., ¾ food, no visible blood.

The patient was shown to students at this time as a case of probable cancer of the pylorus, and on account of the good physical condition it seemed that a radical operation might be done. She was sent to the Carney Hospital with this diagnosis.

The operation was done by Dr. Bottomley, Feb. 4, 1907. Through a median incision in the epigastric region the stomach, gall bladder, gall ducts and pancreas were examined. With the exception of a very moderate ptosis of the stomach nothing abnormal was found. The stomach was opened, but neither by touch nor by sight could an ulceration be demonstrated. The pylorus was normally patent. The kidneys offered nothing abnormal nor did the spleen. Several hard nodules were felt in right iliac region. To obtain better access to these, the incision in the epigastric region was closed and a second incision made in the right iliac region. The nodules were found to be enlarged, calcareous and cheesy glands in the mesentery of the lower ileum. They varied in size, ranging from that of a bean to that of an English walnut. They were removed. The operative recovery was uneventful.

The case is of interest because it illustrates the now well-recognized fact that pyloric spasm, to which, I believe, the epigastric pain experienced by the patient may be attributed, may be caused by irritation of any part of the intestinal tract, embryologically derived from the mid-gut and drawing its chief nerve supply from the sympathetic system.

After the operation the questions arose, Could the findings have caused the gastric symptoms and would the removal of the calcareous glands relieve the symptoms? The fact that there has been no recurrence of symptoms for one year since the operation seems to furnish a sufficiently definite answer in the affirmative.

While the medical diagnosis was erroneous the course pursued with the case, *i.e.*, the advice of operation, proved highly justifiable. During the eleven days' observation, the patient was but little relieved of symptoms and was evidently losing ground rapidly.

The array of symptoms, the history, age, loss of weight, tumor, moderate stasis of gastric contents and blood, was sufficient to lead most any one to a strong suspicion of gastric cancer, and in the vast majority of cases with such symptoms a cancer will be found.

This case was one of the exceptions.

Clinical Department.

A PROLONGED CONJUNCTIVITIS FOLLOWING CALMETTE'S OPHTHALMO-REACTION.

BY MALCOLM MACKAY, B.A., M.D., C M., WINDSOR MILLS, QUEBEC, CANADA.

Former Clinical Assistant in Neurology, Royal Victoria Hospital, and Demonstrator in Pathology, McGill University, Montreal.

There having been a great many reports upon Calmette's ocular reaction to tuberculin as an aid to the diagnosis of tuberculosis, and as the harmlessness of the procedure has been emphasized in the vast majority of cases, I think it well to report the results of the instillation of one drop of a one-per-cent solution of Calmette's original tuberculin into the conjunctiva of a young woman, now under my care.

The patient came to me on Nov. 23, 1907, complaining of " rheumatism " of the left knee. She stated that for a year and a half she had been troubled with a good deal of pain upon walking, although active and passive movements while sitting down were practically painless. At night she was often kept awake by aching in the joint, and at times she would waken with a start out of a sound sleep on account of the pain. Examination showed a very moderate diffuse swelling in and about the joint, which was held slightly flexed for preference, although it could be straightened with ease. There was no redness or heat, and the patella was not floating, although lateral movements produced a soft crepitus.

There was marked tenderness at the head of the tibia on the external tuberosity (condylus lateralis), about an inch and a half from the middle line and about three quarters of an inch below the articular surface. Further questioning elicited the fact that she had coughed more or less for nearly two years and that she had a bad tubercular family history. An examination revealed a pulmonary lesion as well as evidence of old spinal disease at the lower dorsal and upper lumbar region. Subsequently I found a few tubercle bacilli in the sputum.

After a short period of treatment by rest, diet and fresh air, the parents wished the diagnosis of tuberculosis to be confirmed by an expert, and the patient was sent to a neighboring city on Dec. 14, where one drop of Calmette's one-per-cent solution of tuberculin was placed in the right eye. The reaction appeared promptly and was very decided; photophobia, lacrymation and gumming of the eyelids being exceedingly troublesome. A solution of boric acid was used as an eye-wash and the condition improved slightly, remaining about the same for ten days, when the more severe symptoms subsided.

The redness of the conjunctiva was still present and the palpebral fissure kept partly closed by Jan. 20, when there was a recrudescence of the trouble. By Jan. 25, it was severe, the bulbar and palpebral conjunctiva both being involved with well marked chemosis and gumming of the lids.

The following drops were prescribed:

Acid boric, grs. v.
Zinci sulph., grs. ii.
Tinct. opii, ʒi.
Ad. distill., ad ℥j.

Sig.: One drop in eye morning and evening;

and a boric acid ointment was applied to the lids upon which developed a row of small pustules. This time the eye remained sore for about two weeks, only to return to its old condition when the treatment was suspended. Smears from the conjunctiva and pustules showed nothing but a few staphylococci.

At the present time, Feb. 26, more than ten weeks after the instillation, there is a little redness of the conjunctiva with slight photophobia resulting in some narrowing of the palpebral fissure. Treatment has been discontinued for a week without increase of the symptoms.

It may be stated that the patient has never had any trouble with her eyes, that the conjunctivitis was confined to the eye into which the tuberculin was put, and that no undue strain or exposure followed the test.

This may seem to be a very slight trouble when compared to the keratitis and ulceration reported by M. N. Barbier (*Bulletins et mémoires de la société médicale des hopiteaux de Paris*, Dec. 12), but it caused very great annoyance to the patient and is, I think, a warning against the indiscriminate use of the method by the general practitioner, and possibly by the specialist.

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Reports of Societies.

NEW YORK PSYCHIATRICAL SOCIETY.

Stated Meeting, Jan. 8, 1908.

August Hoch, M.D., President, in the chair.

Dr. August Hoch, of Bloomingdale Hospital, White Plains, read a paper on

PSYCHOGENESIS IN DEMENTIA PRECOX.

Building upon the work of Freud, Jung, Bleuler and Adolf Meyer, he tried to show by an analysis of two cases, fully reported, how conflicts or longings, which had existed for a long time, gradually grew until they became dominant. By an analysis of the patient's life certain traits were demonstrated as well as certain external conditions which accounted for this gradual growth. It was shown how similar conditions existed in simple paranoiac states, but that in dementia precox the situation is different, for the reason that the mental trends represented by the conflicts or longings are of such a nature that there is a strong aversion on the part of the personality to allow them to become fully conscious. For that reason they are suppressed and only manifest themselves through substitutions, or through the appearance in the minds of portions of the disturbing trends, or peculiar incomprehensible reactions. Such manifestations of undercurrents are then logically disconnected, the thoughts, delusions, hallucinations and acts which thus arise have no conscious motivation and the natural harmony between effect and ideation is disturbed, etc. If this becomes fixed the mental mechanism no longer dovetails with life and reality, the interest vanishes and a certain form of dementia develops. It was, of course, not claimed that this was the only explanation of the deterioration, but probably an important factor in some cases. (Dementia precox has not only one underlying principle!) In other words, it was shown in the two cases that the clinical picture was explained by the conflicts and the reactions to it, that the conflicts had existed long before and were of gradual growth, while the latter could be accounted for by the absence of sufficient balancing factors. Of interest is also the fact that case 2, which presented a very perplexing clinical picture, was, by careful psycho-analysis, reduced to a comparatively simple situation, and that it was possible to use this knowledge in the treatment with very gratifying results, the improvement being always so clearly related, in time, to the therapeutic talks, that an accidental coincidence seemed hardly probable.

The paper will be published in full.

DISCUSSION.

Dr. Adolf Meyer emphasized the necessity of studying the psychogenetic data in well studied concrete cases. The records of Dr. Hoch, just as they are, speak more convincingly than any comments. The aversion of most physicians comes from their judging on ground of poorly taken histories. The patients often prefer the method of ignoring the sore points; but these cases present totally different figures concerning relapses than those who are able to enter squarely upon a psycho-analysis. The choice of a helper is often difficult. In one of Dr. Meyer's cases the mother had a very good grasp on the factors which led to the disorder, but now as little talent in correcting them as she had had in preventing the breakdown. Physicians are slow about seeing that many things they demand from families and patients on the ground of "common sense" are really good illustrations of beginnings in the management of psychogenic factors. One of the most direct acknowledgments of the principle that came to my notice lately is a statement of Dr. H. S. Noble, of the Connecticut State Hospital, at Middletown, in which he says: "The constant personal attention of a congenial, sensible companion can do more toward the restoration of curable forms of mental disease than any other agency with which we are at present acquainted." How the simple instructive method can be improved upon by a knowledge of the facts could hardly be shown more convincingly than by Dr. Hoch's cases.

Dr. William L. Russell, of Poughkeepsie, N. Y., was confident that there must be considerable value in such analyses of cases as Dr. Hoch had been able to make,— analyses which could hardly be hoped for except under the most favorable conditions,— and while the method might not explain the nature of the disease, it certainly gave promise toward enabling one to point out preventive and therapeutic measures. Dr. Russell asked Dr. Hoch to explain his views as to how the "longings" operated in bringing about the final breakdown.

Dr. Smith Ely Jelliffe said he had had the pleasure a year ago of listening to Dr. Hoch's initial paper, with which he was in entire accord, and at that time he had expressed the belief that if one is able to appreciate the character of these conditions early enough, by methods so ably outlined by Dr. Hoch, — methods in which there is not the slightest doubt that the right track is to be found, — the results pointed out in the second case would follow. He was glad the therapeutic method so amply verified the hypothesis laid down by Dr. Hoch. He agreed with Dr. Meyer concerning the desirability of getting at the environment from an inside point of view. Many dementia paranoides cases were made so largely by the stupidity of the family. In this connection he mentioned a family which had come under his observation, in which there were six children, every one of whom exhibited the general trend of this type of cases. One particularly showed the paranoid character. This youngest child exhibited the exact equivalents of the second case of Dr. Hoch's paper. He had been unable to explain the genesis of the condition in these children until he met the mother, when, after four hours' talk with her, it became evident that her maladjustment to life, her strained interpretations of the situations which came up in the children's lives and in her own life, rendered her the most important factor in the genesis of the condition, and yet she was the most intelligent and best able of all those involved to rectify the maladjustment in the lives of the children. Regarding the general features of which Dr. Hoch had spoken he believed there was no occasion for a discordant note.

Dr. Pearce Bailey asked Dr. Hoch whether the memory of the sexual trauma in the second case had been obliterated from the consciousness and also what method he employed to elicit the history thereof. It was absurd, of course, for one who had not seen the cases to criticise the diagnosis, and yet the question might arise as to the second case not having been one of dementia precox. It had many points in common with cases of an hysterical character with a history of sexual trauma. The sudden change for the better after a single explanatory talk was contrary to the ideas he had had of dementia precox. If a cure could be effected so rapidly, it would seem that some of the accepted classifications would have to be materially changed. Throughout the whole range of psychiatry, both in the actually insane and in the unstable, the importance of a single emotional event in the life of the individual is commanding more and more attention. A powerful emotion of a suggestive character may spur on to immediate action in the unstable. An emotional event also may make its deep impression on personality, lie dormant for years and then spring forth again, giving a dominant note to a psychosis. He cited the case of a man who, when age and ill health came on, reverted to an incident which had made a deep impression on him as a boy, and which had been forgotten all through the years of health and prosperity. As the study of psychiatry proceeds, the speaker thought, the effect of emotional events upon different classes of individuals would possibly form a better method of classification than the cruder one of grouping by diseases. In conclusion, he asked Dr. Hoch if it were not easier to get at and benefit the disturbances resulting from emotional complexes if the patient were not fully aware of them.

Dr. Maurice C. Ashley, of Middletown, N. Y., said that alienists were coming more and more to realize that each case of insanity is a law unto itself, demanding a most careful analysis if one's full duty is to be done by it. They must not be content when they obtain sufficient facts for a diagnosis, but they must go further; they must learn of every factor which has had to do with the mental and physical health of the individual, in order that they may know whether or not any of these factors have had to do with the developing psychosis and whether they can be eliminated. The tendency in the past had been to look only for sufficient facts for diagnosis and classification, rather than to study the individual in an endeavor to get at the bottom of *his* particular difficulties, as Dr. Hoch had done. The general practitioner and specialist, who see these cases before the psychosis has fully developed, had an excellent opportunity to study and treat such patients successfully. When they came to the state hospitals the psychosis had usually advanced so far that it was much more difficult for the physician to get at the bottom of the psychosis and for the patient to get right with himself, than it would have been at an earlier stage.

Dr. A. R. Diefendorf, of Middletown, Conn., said the development of this new field in psychiatry had been aided by an appreciation of the fact that one's duty in a hospital must not be scattered over the whole multitude, but must be centered on the few who can derive benefit from one's labors. He cited the case of a girl who exhibited the same features presented by Dr. Hoch's second case. The true significance of the sexual trauma was brought to light by the sensations which the patient experienced while under the influence of gas for the extraction of two teeth. It was difficult to know just how to deal with these cases, just when to attack the ideas and just when to leave them alone and to be sure that one would do good and not harm. Success depended somewhat upon the intuition of the operator. He had noted that it was difficult to make progress with men and boys who did not seem to have the same experiences as women and girls. He cited the case of a young man with whom he felt sure there were hidden psychogenic influences, but he could not get at them. Nevertheless, intelligent companionship and life in the open for three months had seemed to effect a cure.

Dr. L. Pierce Clark said in searching for the causative agent in his new eye syndrome in dementia precox he was impressed that the psychosis had principally a somatic cause. To determine this as well as the psychogenetic factors he believed an extra asylum study of the disorder was absolutely necessary. The burden of the solution of the problem rested with the physician in private practice. In order to run to earth these causative factors he had instituted a method of careful mental and physical analysis of all cases of neurasthenic habits in adolescents applying at the nerve department of the Vanderbilt Clinic. An analysis of the cases is made independent of the question whether the symptoms point directly to a precox psychosis or not. The final outcome of a number of such cases will prove of great value whether they deteriorate into the dementia precox or not. He had been urged to do this, furthermore, as there seemed to be a pressing public need of a study and consideration of normal and pathological habits of adolescents. He hoped the future might produce specialists in adolescents, as Stanley Hall had also suggested.

Dr. G. H. Kirby had met few cases in which the analysis could be pushed to such completeness as Dr. Hoch had so skillfully carried it in the cases reported. The unravelling of the psychogenic elements entering into a case certainly throws an important light on the symptomatic picture and explains many reactions that would otherwise have to pass merely as peculiar, erratic, senseless, or not understandable features that are usually referred to as characteristic for dementia precox. A review of the cases exhibiting the dementia precox form of reaction seems to show that the *deteriorating* cases have nearly always given warnings of rather grave constitutional anomalies, such as lack of natural instincts and perversion of normal interests or various defects in character and judgment. On the other hand, cases showing a dementia precox-like outburst, but terminating in *recovery*, have, as a rule, shown none of the serious defects just mentioned. So, after all, one must be guided largely in the prognosis by the previous standard and efficiency of the individual.

Dr. James J. Putnam, of Boston, said that his own belief for a long time had been thoroughly in accord with the conclusions of Dr. Hoch, namely, that the environment of the patient and the reaction to the environment might be the controlling influences in a given case. He was glad to hear Dr. Hoch emphasize this point. The doubt raised by Dr. Bailey as to the diagnosis of the second case could only be solved by determining what dementia precox is, and that was impossible. In Jung's book reference was made to "fixed mental reactions." This recalls the fact that Von Basch and others have spoken of the tendency to "arterial spasm" as being the first thing which in some way leads to "arteriosclerosis," a functional condition leading to a structural condition, but perhaps not always to an equally unfavorable structural condition. We should like to believe and may fairly hope that the best sorts of influences, applied sufficiently early, might change the whole trend of subsequent events. In the Massachusetts Hospital Out-Patient Department several trained women were employed to do the very sort of thing Dr. Clark is having done at the Vanderbilt Clinic. It is their duty to learn as much as possible about the family and the home life of such patients. An effort is also being made to study the children of psychopathic families. If dementia precox is to be arrested the attempt must be begun early and by aid outside the family.

Dr. Hoch, in closing the discussion, said: Dr. Bailey and Dr. Putnam have raised the question of the differential diagnosis between dementia precox and hysteria, and Dr. Bailey more especially has expressed some doubts as to the diagnosis of case 2. Of course the differential diagnosis is sometimes difficult, all the more since we do not, as yet, understand the relationship of dementia precox and hysteria. We must not forget that there are cases which begin like hysteria and terminate like dementia precox. On the other hand, I have now under observation, a case in which the disease began as a typical dementia precox, with a long history of wholly uncorrelated delusions and hallucinations, followed by a catatonic stupor of about a year's duration, but who now has lost practically all dementia precox symptoms and manifests only something like an astasia-abasia. In our case 2, however, I feel sure that a doubt would not have arisen if the patient had not recovered. After all, a condition with such diffuse ideas of reference and such marked autochthonous ideas cannot be regarded as hysteria, and the case began with a gradual loss of interest and ability to work in such a typical dementia precox manner that I doubt whether any one would have hesitated to give an unfavorable prognosis.

In regard to the transition from functional to organic changes, we have certain analogies in general medicine. I take it that it is something of this sort to which Dr. Meyer refers in his paper on dementia precox, when he says that misapplication of instincts and faulty habits are bound to undermine, not only the functional mechanism, but the organ itself.

Dr. Bailey is mistaken if he thinks that the case was cured in a night. The process of improvement was gradual, extending over several weeks. The long analysis of the case was followed by a therapeutic talk. This gave rise to a striking improvement, which, however, was not lasting. Symptoms reappeared, and renewed treatment was required; this again had the same result, etc., and it was necessary to repeat these treatments for a number of weeks.

Questions have been asked about the method of psycho-analysis. This varies according to circumstances. I first thought that association experiments were necessary in each case, but this is evidently not so. Very often the symptoms of the disease, the delusions, hallucinations, or peculiar acts, or perhaps an accidental remark of the patient, gives a sufficient lead as to the direction in which it is necessary to probe. The matter is always tedious and has to be taken up again and again, and one sometimes finds the way blocked entirely, and has to leave the analysis for the time being. Sometimes, as suggested, the question arises whether one has a right to proceed with the analysis. I am inclined to think that the dangers of talking about personal matters is, on the whole, overrated. Nevertheless, it is a matter which needs a good deal of consideration and which the skill, tact and experience of the observer have to decide in each case. Certainly it is often unnecessary to go into details of subjects which are unpleasant, if these details are not absolutely essential, no matter how much our desire for accuracy and completeness would tempt us to proceed.

I am glad to know that Dr. Clark is carrying on, at the Vanderbilt Clinic, the investigations of which he spoke, and particularly that these investigations are being made from a broad point of view in which the traditional schematism of diagnosis plays a small rôle. It does not matter what we call a case, so long as we have ascertained the why, how and what of the case, *i.e.*, the etiology, the mode of development and present situation.

Dr. Russell's question, as to what the longings do and how they act, is somewhat difficult to answer, and I am not sure whether I fully understand the question. In both the cases cited there existed longings for a considerable time, which were neither satisfied nor gotten square with in any other way and which finally broke through because they were not counterbalanced.

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Book Reviews.

Mortmain. By Arthur Train. New York: D. Appleton & Co. 1907.

This volume is made up of a number of short stories, most of which have been previously published in various magazines. The author is a member of the New York bar and, we believe, was the assistant district attorney of New York. The book takes its name from the first and longest story which is based upon the solution by an English surgeon of the problem of limb-grafting. The surgeon finds an opportunity to apply his method of operating in a concrete case, and both medicine and law are subsequently called upon to deal with many intricate and delicate situations thus created. This story will have some interest for medical men and even more for the laity at large.

Mental and Moral Heredity in Royalty: A Statistical Study in History and Psychology. By Frederick Adams Woods, M.D. 8vo. Pp. viii, 312, with 104 portraits. New York: Henry Holt & Co. 1906.

The "primary object of this research is to determine the proportionate share taken by heredity in the formation of mental and moral life." For this purpose the author has made an elaborarate study of 832 individuals belonging to the different royal families of Europe, with reference to their mental and moral qualities. He has grouped these individuals into ten classes, with reference to each of these qualities. As a result of this study he finds that there is a distinct correlation between mental and moral qualities in the great majority of cases, those high in the scale of mental attainments being as a rule high also in the moral scale, and *vice versa.* He believes also that "heredity is almost the entire cause for the mental achievements of these men and women, and that environment or free-will must consequently play very minor rôles." The doctrine that the possession of great power leads to moral degeneracy finds no support from his studies, nor does he find evidence that aristocratic families necessarily degenerate. The houses of Saxe-Coburg, Nassau and Hohenzollern prove the contrary. The degeneracy of the Bourbons, the Spanish Hapsburgs and the Romanoffs are striking examples of degeneracy due not to power or to high position, but to the existence of a definite neuropathic taint. That such a study, if properly made, involves a very great amount of research is self-evident, and the work shows that this research has been performed with much care and thoroughness. The classification of the individuals studied according to their mental and moral qualities has been conscientious and judicious, in spite of the very great difficulty of attaining definite conclusions in such matters. To all students of heredity the book will prove a valuable guide. It is open, however, to the criticism which must arise in regard to all studies of heredity based on the collection of large numbers of cases, namely, that much is attributed to heredity which is really due to conditions arising in the life-time of the individual, to accidental and acquired factors, and not to conditions due to actual heredity.

Modern Medicine. Its Theory and Practice. In original contributions by American and foreign authors. Edited by William Osler, M.D., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore, etc., assisted by Thomas McCrae, M.D., Associate Professor of Medicine and Clinical Therapeutics in the Johns Hopkins University, Baltimore. Volume III. Illustrated. Philadelphia and New York: Lea Brothers & Co. 1907.

This third volume of "Modern Medicine" covers those infectious diseases not considered in volume two, together with diseases of the respiratory tract. The most important diseases considered under the infectious processes are tuberculosis, written by Drs. Edward R. Baldwin, W. G. MacCallum and Lawrason Brown; and syphilis, by Drs. William Osler and John W. Churchman. Two hundred and twenty-four pages are devoted to tuberculosis, and this may be looked upon as an excellent epitome of our present knowledge of the great group of infections included under this general heading. The second part of the volume discusses diseases of the respiratory tract, including the nasopharynx, pharynx and tonsils. Dr. H. S. Birkett writes on diseases of the larynx, Dr. Hobart Amory Hare, on diseases of the lungs. Dr. Frederick T. Lord on diseases of the pleura, and Dr. Henry A. Christian on diseases of the mediastinum. This volume amply maintains the standard set by its predecessors. It is furthermore commendable that the volumes have succeeded each other rapidly, and it is to be hoped that not too long an interval may intervene before the remaining four volumes are published.

Human Anatomy including Structure and Development and Practical Considerations. By various authors. Edited by GEORGE A. PIERSOL. Illustrated. Pp. 2088. Philadelphia and London: J. B. Lippincott Co. 1907.

The following persons have contributed to this latest significant addition to anatomical textbooks: Dr. Thomas Dwight, Parkman Professor of Anatomy in Harvard University; Dr. Carl A. Hamann, Professor of Anatomy in Western Reserve University; J. Playfair McMurrich, Ph.D., Professor of Anatomy in the University of Michigan; Dr. George A. Piersol, Professor of Anatomy in the University of Pennsylvania; and Dr. J. William White, John Rhea Barton Professor of Surgery in the University of Pennsylvania. Dr. Dwight has contributed the description of the skeleton, including joints, also articles on the gastro-pulmonary system and on the accessory organs of nutrition. Dr. Hamann writes on the cerebrospinal and sympathetic nerves; Dr. McMurrich, on the muscular system and the blood and lymph systems. Dr. Piersol contributes the introductory histological and embryological discussions throughout, as well as the description of the central nervous system, deep relations of the cranial nerves, organs of special sense, carotid, coccygeal and aortic bodies, together with the uro-genital system. Practitioners especially will welcome that part of the work contributed by Dr. J. William White, whose aim it has been to point out the practical relations of anatomical parts. In this aim operative surgery has naturally not been covered, but such brief descriptions of technic are supplied as render the purely anatomical discussions significant from the practical standpoint. We cannot too cordially commend this portion of the book. A common error in the teaching of anatomy, as well as in the writing of textbooks, is the failure to realize that mere statements of fact have small significance apart from their practical bearings. Descriptive anatomy would lose nothing of its scientific value if this were more generally recognized, and certainly anatomical textbooks would derive an interest which is now often wholly lacking. The editor has shown a keen sense of present day needs in laying stress upon this aspect of human anatomy.

In view of the recognized attainments of the writers who contribute to this volume, it is hardly necessary to say that their work has been done in most painstaking and satisfactory fashion. Apart from the descriptive text, a modern medical treatise on whatsoever subject, but especially on descriptive anatomy, demands much from the illustrator. This part of the work has been largely done by Dr. John C. Heisler, Professor of Anatomy in the Medico-Chirurgical College of Philadelphia, for the most part from original dissections. There are in all 1,734 illustrations, of which 1,522 are reproduced for the first time. Extended comment is unnecessary. They are almost without exception admirable, many in colors, of a character not to offend the eye or esthetic sense. The color used in representing muscles is particularly happy. Considering the somewhat free use of colors in other parts of the book, we regret that representations of the peripheral nerves do not receive the same consideration. The illustrations showing their distribution, of which there are many, would have been more instructive and useful had the usual yellow been used. Apart from this very minor suggestion, there is little to criticise in the illustrations. We miss, however, in the central nervous system diagrams illustrating the segmental distribution of spinal nerves as contrasted with individual distributions, a matter of the greatest importance in neurological diagnosis, and one which anatomical textbooks in general are prone to ignore. More diagrams, also, of the course of nerve fibers in the central nervous system would be useful, since herein lies the essential significance of this part of the nervous system from an anatomical as well as from a practical standpoint.

The matter of nomenclature has become a problem with the production of each new anatomical book. The editor has seen fit not to adopt the BNA nomenclature as the primary terminology. He leans rather toward the use of terms employed by English speaking anatomists, simplifying such terms as far as possible. To meet the rather insistent demand now everywhere being made for a uniform terminology, the BNA synonyms have been included, appearing in special type reserved for that purpose. We have no desire to express a definite opinion upon the wisdom of this course. It may, however, be said that, if the Basle nomenclature is to be finally adopted, it should be generally used in authoritative textbooks from this time on. We have, however, always been skeptical of the advisability, or in fact of the possibility, of such universal adoption, and are, therefore, inclined to commend the independence of those having the production of this book in charge in adhering to generally accepted terms.

The single volume in which this work is published is too cumbersome, numbering 2,088 pages. It is to be hoped, following the example of others, that a division into two or three volumes may in the future be made, or at least that certain copies may be bound in this multiple form. Such a division of the subject matter would certainly enhance the usefulness and practicability of the book for students, who could hardly be expected to carry about so ponderous a volume as this. The work of the publishers is admirable.

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THE PROLONGATION OF HUMAN LIFE.

Buffon computed that any creature's natural duration of life is six or seven times that of its period of growth. A man's growth is generally attained at his adolescence, in his fourteenth year; whence he estimated that our span of life should be rather five score than three score and ten. Others have reached the same conclusion, though not in the same way. Haller, for instance, computed that human development is attained by the twentieth year; and that life for us should endure five times that period. Buffon also believed that longevity does not depend on habits of life nor on modes of living; but that it is inherent in the individual. There is much in this view, when we reflect upon those we know of who have lived to great age, despite the most villainous habits. Our colleagues who do autopsy work are oftentimes puzzled by the extensive organic changes found in subjects who have died in advanced years and who must, according to postmortem evidence, have suffered at various times in their lives grave diseases, living on, nevertheless, despite the ravages of the latter. Dr. Meltzer's important paper on "Factors of Safety in the Animal Economy"[1] does much to substantiate the belief which Buffon held; we are amazed to be reminded how our organs are fortified, both as to function and structure, to the evident purpose that the individual may live out his rounded existence, notwithstanding the stress of many diseases and traumatisms.

Metchnikoff, however, is not in accord with Buffon. And he submits in his recent — and most charming — book on the "Prolongation of Life,"[2] which is a sequel to his "Nature of Man," that it is possible for the average human life to be very greatly lengthened. In establishing his thesis, he investigates not only the animal, but also the vegetable, kingdom — life, indeed, wherever it is manifested; and he adduces many facts to show that existence, in some of its manifestations at least, has been prolonged to an apparently indefinite extent. The lower forms of plant life, such as the unicellular infusoria, have a continuous existence, which is apparently terminated only by accidental causes. A parent body lives through an indefinite series of divisions, by which it is multiplied beyond our power of estimation; it seems never itself to suffer natural death. This is so also of some of the higher plants, some of which attain to gigantic size. For example, the famous dragon tree, which Humboldt discovered, and which was overthrown in a storm in 1868, was examined by Metchnikoff, who calculated that it must have lived several thousand years. Adanson, the French naturalist, places the age of the baobab, a tree of Cape Verde, at five thousand one hundred and fifty years. In the animal kingdom there are fishes, birds and reptiles which live well into the centuries. The age of the pair of tortoises, now in the Bronx Park in New York City, has been placed at three centuries. As a general rule Metchnikoff finds the duration of life decreases as the complexity of the organization increases; the finer and nobler organism must be the shorter lived. This reminds one of Pushkin's fable of the eagle and the vulture: "How is it," asked the eagle, "that you live three hundred years, whilst I must die at thirty?" "Come with me," said the vulture, "and I will show you how to live as long as I." And they went together to a place where carrion abounded. Whereat the eagle concluded he had rather live but thirty years upon rich red meat, than three hundred, if to that end he had to eat carrion. The lower vertebrates live longer than the mammals.

Centenarians are not so rare as may generally be supposed. For many years the Journal has been in the habit of noting their deaths, and we believe the number of such recorded yearly is increasing. Metchnikoff reminds us that in France nearly one hundred and fifty people die every year, after having lived a century or more. In some other countries, particularly in Eastern Europe, the number of centenarians is still greater; in Greece there are nine times as many as in France. We are thus invited to consider that the idea of prolonging human life is not a chimera; and Metchnikoff believes the chief reason why most human beings do not attain greater longevity to be that, because of certain necessities incident to the human struggle for existence, there has been developed a complex intestinal arrangement which, although useful in some respects, forms, nevertheless, a breeding place for bacteria inimical to the organism.[3] The colon, he holds, is the chief enemy of long life. It is the toxins evolved by putrefactive bacteria in this "culture-tube," which cause the diseases from which springs the debility of old age, with its consequent termination in unnaturally premature death. Metchnikoff, then, would have us eat only cooked food; and drink only liquids that have previously been boiled. Thus should we be able to kill most, though not all, harmful germs. With his specific against these maleficent agencies, which induce disease, precocious senility and premature death, we are all now familiar. It is lactic acid, his conclusions concerning which have been made from observation of races that live chiefly on soured milk, and among whom great age is common. Metchnikoff instructs us that, as it is undesirable to ingest much fatty matter, curdled milk should be prepared for the purpose in view from skimmed milk. After the latter has been boiled and rapidly cooled, pure cultures of lactic bacteria are sown in it in sufficient quantities to prevent the germination of the spores already in the milk, and which have not been destroyed in the boiling. Fermentation continues through a number of hours, varying according to the temperature; the result is a sour curdled milk, pleasant to the taste and active in preventing intestinal putrefaction. From 500 to 300 cubic centimeters of this product taken daily should control the action of the intestine, benefit digestion generally and stimulate the kidneys favorably, according to Metchnikoff.

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[1] The Harvey Society Lectures, Lippincott's.
[2] G. P. Putnam's Sons.

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PROTECTION OF SCHOOL CHILDREN.

Appalling as was the recent fire at a school in Collinwood, Ohio, resulting in the death of upwards of one hundred and fifty children, the sacrifice will not have been wholly in vain provided it arouses public opinion to safeguard the lives of school children by every possible means. That such a result is likely to follow is sufficiently demonstrated by the investigation going on in various parts of the country with regard to fire drill, methods of escape from burning buildings and appliances for meeting the various emergencies which may arise. The Illinois State Board of Health has prescribed certain definite provisions with which those having charge of the schools must comply. It will hereafter be required that doors to schools open outward, and that non-combustible fire escapes, and fire alarm systems be provided. Schools not having these safeguards must be closed until they are provided.

It is gratifying to learn that the authorities of the New York Education and Fire Departments are of the positive opinion that such a disaster as that at Collinwood could not have occurred in any of the public schools of that city, and there is every reason to believe that this opinion is well founded and that conditions of school fire prevention and escape in New York are as nearly perfect as human care can devise. Only a few days ago a fire broke out in a schoolhouse on Thirteenth Street, which filled its rooms and corridors with smoke; but, accustomed to the fire-drill, by constant and regular practice, each of the eleven or twelve hundred pupils took his place in line and marched, over fireproofed floors and through broad passages, equipped with emergency devices even beyond the standard set by the Building Department, to his designated exit. As a result, the burning building was emptied within two minutes and without disorder. It is probable, however, that there are many schoolhouses throughout the state which are not safeguarded as they should be, and an inquiry might with propriety be instituted similar to that in Illinois, where Secretary Egan, of the State Board of Health, has ordered the closing of all schools with inadequate fire escapes or with doors which open inward until such time as these faulty conditions shall have been remedied.

Since the above was written a fire has occurred in another New York public school, a large grammar school on 109th Street, near Broadway, and, in consequence of the fire discipline which had become a matter of habit, in less than a minute and a half after the alarm was sounded all the occupants, numbering nearly twenty-five hundred, had left the building. The fire occurred on the fourth floor, and the pupils from the rooms on this and the floor above marched through the thick smoke singing and in perfect order. Dr. David Gaddis, principal of the school, gave high praise to the courage and presence of mind of both teachers and scholars. "It was an inspiring thing," he said, "there was no disorder, no alarm; the utmost coolness prevailed." The saving of about half the time, although there was double the number of children to care for, as compared with the fire in the Thirteenth Street School, represents the difference in construction in the two buildings. The one was one of the older schoolhouses, while the other was a newly erected structure, planned in accordance with the most approved modern requirements. On March 6 it was announced from Albany that Commissioner Draper, of the State Department of Education, had directed boards of education in all the school districts in the state to make an immediate examination of the school buildings under their supervision, and to take steps at once to put in proper condition any buildings which do not conform to the requirements of the law, should such be found.

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[3] See Paris Letter, Jan. 23, and London Letter, Feb. 20, 1908.

Public opinion will undoubtedly demand that schools supported by the public purse must be so constructed as to render escape in the absence of panic possible. In this connection it is perhaps worthy of comment that many private schools in our large cities are less well equipped for the emergency of fire than are the public schools. The growth of private schools in the residence part of cities and the frequent adaptation of ordinary dwelling houses to meet the demands of school work has led, we are convinced, to a certain carelessness in this very matter of protection from fire. It has been said, and we believe with reason, that our public school buildings are in many respects more hygienic than many of those in which a large tuition must be paid. The lesson of the Collinwood fire should, therefore, extend beyond the public school system and should be made to apply to all schools, whether public or private, where children gather in large numbers.

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MEDICAL NOTES.

Hospitality to Women Physicians Visiting at the Chicago American Medical Association Meeting. — The Women Alumnæ Committee, The Women's Medical Society of the State of Illinois, and the Medical Women's Club, each wish to entertain the women physicians visiting Chicago at the meeting of the American Medical Association next June.

As the session of the American Medical Association is so short and the time so entirely filled, these three organizations have combined efforts, and hereby extend to all the women physicians who will be in Chicago at that time a most cordial invitation to a banquet and entertainment, to be given on June 2, which is the evening that has been reserved for the special entertainment of the visiting alumnæ.

At this banquet a special feature will be made of the reunions of the alumnæ of the different colleges. The College Club in the Fine Arts Building, 203 Michigan Avenue, will be exclusively at the disposal of the medical women during the meeting of the American Medical Association, and will afford a place for all to meet, lunch and visit together.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, March 4, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 55, scarlatina 71, typhoid fever 5, measles 167, tuberculosis 30, smallpox 0.

The death-rate of the reported deaths for the week ending March 4, 1908, was 19.25.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, March 7, 1908, was 220, against 262 the corresponding week of last year, showing a decrease of 42 deaths and making the death-rate for the week 18.83. Of this number 114 were males and 106 were females; 215 were white and 5 colored; 136 were born in the United States, 81 in foreign countries and 3 unknown; 57 were of American parentage, 130 of foreign parentage and 33 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 76 cases and 3 deaths; scarlatina, 87 cases and 1 death; typhoid fever, 3 cases and 0 deaths; measles, 173 cases and 1 death; tuberculosis, 51 cases and 27 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 0, heart disease 25, bronchitis 4 and marasmus 9. There were 5 deaths from violent causes. The number of children who died under one year was 34; the number under five years 46. The number of persons who died over sixty years of age was 61. The deaths in public institutions were 73.

There were 1 case and 1 death reported from cerebrospinal meningitis, during the week.

Bequests. — By the will of the late Johanna L. Crowley, of Lowell, Mass., St. Peter's Orphan Asylum and St. John's Hospital of that city are beneficiaries in small amounts.

Dr. John B. Blake, Trustee. — Dr. John Bapst Blake, of Boston, has been appointed by Governor Guild a trustee of the Massachusetts

Hospital for Epileptics, in place of Dr. Charles Clough, deceased. Dr. Blake is an instructor in surgery in the Harvard Medical School, and one of the surgeons at the Boston City Hospital.

A COMMITTEE ON REORGANIZATION OF THE BOSTON BOARD OF HEALTH. — A committee of experts has been appointed, and has already held several meetings, to take into consideration and report upon the best form of reorganization for the Boston Board of Health. Their report will eventually be made to the Advisory Finance Commission. The committee consists of Dr. Charles Harrington, chairman, Dr. John W. Bartol, Mr. X. H. Goodnough, the engineer connected with the State Board of Health, and Mr. John Koren, statistician to the pauper institutions of the city of Boston.

NEW YORK.

A WATERSHED POLICE FORCE. — The Board of Water Supply, in beginning the organization of the new watershed police force, has appointed Capt. Rhinelandar Waldo, formerly First Deputy Police Commissioner of New York, as its chief. The policemen, half of whom will be mounted, are to patrol both the Croton and Catskill watersheds, in order to guard against pollution of the streams, and their services will also be required to preserve order among the thousands of laborers employed in the construction of the new aqueduct and reservoirs.

PRIZE FOR BEST DEVICE FOR HUMANE SLAUGHTERING. — Henry Bergh, nephew of the founder of the American Society for the Prevention of Cruelty to Animals, has announced the offer of a prize of $500 for the best device for the humane slaughtering of animals for food. It is stipulated that such device must be applicable to the killing of cattle under the Jewish laws, as well as to the slaughtering in general.

BEQUESTS. — Public bequests of more than $50,000 are contained in the will of the late Bishop George Worthington, of Nebraska, who, in consequence of cardiac disease which precluded a permanent residence in his diocese, had made his home in New York for a number of years past. Among the bequests is $5,000 to the Clarkson Memorial Hospital at Omaha.

CORPORAL PUNISHMENT IN PUBLIC SCHOOLS. — By a vote of twenty-one to seventeen the members of the Board of Education, at the meeting of the board on March 4, defeated the proposal to introduce corporal punishment in the public schools of the city. It will be remembered that a short time ago the special committee appointed to consider the subject, after receiving the opinions of educators and others likely to be interested in the matter, in all parts of the country, reported in favor of such correction in certain aggravated cases, with careful restrictions as to the administration of the punishment. Superintendent Maxwell was strongly opposed to the revival of whipping.

DEATH-RATE FOR 1907. — The official figures of the City Health Department show that the death-rate for 1907 was 18.48. The highest death-rate was in the Borough of Richmond (Staten Island), 21.31; the next highest in the Bronx (increased by the number of large institutions in this district), 20.69; the next, in Manhattan, 18.51; the next, in Brooklyn, 17.98; and the lowest in the borough of Queens, 17.47. During the year 71,895 cases of contagious disease were reported in the city, of which 15,276 were diphtheria and croup; 16,622, measles; 15,788, scarlet fever; 4,426, typhoid fever; and 19,725 tuberculosis. In addition, 1,111 cases were reported from quarantine, of which 983 were measles; 90, scarlet fever; 32, diphtheria and croup; and 6 smallpox. The total number of deaths reported was 79,205 (of which 2,319 were in negroes and 80 in Chinese), and the total number of births, 120,722. Three thousand nine hundred and nineteen deaths were due to accidents, 284 were homicides and 711 suicides.

MORTALITY IN FEBRUARY. — The weekly reports of the Health Department show that during the month of February the mortality in the city represented an annual death-rate of 18.67, as against 17.85 in January and 20.46 in February, 1907. The corrected death-rate, excluding nonresidents and infants under one week old, was 17.61. The slight increase in the death-rate over January is doubtless to be attributed to the more inclement weather of the month. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from measles increased from 24.25 to 28.5; the weekly average from scarlet fever, from 36 to 46.75; from pulmonary tuberculosis, from 181.75 to 209.5; from pneumonia, from 139.25 to 144.5; from broncho-pneumonia, from 126.75 to 130.25; from cancer, from 59.25 to 60.75; from apoplexy, congestion and softening of the brain, from 48.75 to 52; and from Bright's disease and acute nephritis, from 102.25 to 116. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from typhoid fever decreased from 6.25 to 5.25; from diphtheria and croup, from 48.5 to 47.5; from influenza, from 32 to 21.75; from acute bronchitis, from 23.75 to 20.25; from diarrheal diseases, from 40.75 to 38; from diarrheals under five years of age, from 35 to 33.25; from organic heart diseases, from 166.75 to 164; and from cirrhosis of the liver, from 28.75 to 16.

Water Supply. — In view of the fact that in certain quarters it has been recently urged that the project of increasing the city's water supply from the Catskill region involves an unnecessary expenditure, and that its needs can be more cheaply and effectively met by a further development of the Croton system, it is worthy of note that Chief Engineer Smith of the Board of Water Supply, in a report made public on Feb. 24, expresses his conviction that the husbanding of the Croton supply in additional reservoirs not only would be more expensive proportionately than the Catskill scheme, but would be quite inadequate to solve the water problem. He estimates that to make use of the Croton's average flow for eighteen years an additional storage capacity of 50,000,000 gallons would have to be provided. It would take seven years to build the required reservoirs, and while the cost of this would be but $15,000,000, an increase in the daily supply of only 9,000,000 gallons would thus be furnished. To utilize the average flow of the river for forty years, with a daily supply increased by 46,000,000 gallons, would involve an expenditure of $145,000,000 for the additional storage capacity; whereas $162,000 spent on the Catskill project would add 500,000,000 gallons daily to the supply. The report goes on to show that the suggested Croton plan is really not practicable, and the point of the whole argument in it is that from the Catskill streams a much larger supply of water for the money, as well as better water, can be obtained than from any other source.

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Obituaries.

D. B. ST. JOHN ROOSA, M.D.

Dr. Daniel Bennett St. John Roosa, one of the best known physicians of New York, died suddenly on March 8. As in the case of Dr. Robert W. Taylor, recently, his death was due to cardiac complication in chronic Bright's disease. Dr. Roosa, in addition to being one of the leading authorities on diseases of the eye and ear in the United States, had the distinction of originating systematic post-graduate medical instruction in this country. He was descended from distinguished Colonial and Revolutionary stock, and was born in Bethel, Sullivan County, N. Y., on April 4, 1838. His early education was completed at the academies at Monticello, N. Y., and Honesdale, Penn., and he entered Yale in 1856. Obliged to leave college in a few months on account of ill health, he continued his studies under a private tutor, and later studied at the medical department of the University of the City of New York, from which he was graduated in 1860. In connection with his work at the University, he took special courses in the laboratory of Dr. John C. Draper, professor of chemistry. After his graduation he became an interne at the New York Hospital, but on the outbreak of the Civil War volunteered, and was appointed assistant surgeon of the Fifth Regiment, National Guard of New York. In 1862, he went to Europe, and spent a year of study in the ophthalmic and aural clinics of Vienna and Berlin. On his return, in May, 1863, he again entered the Army Medical Service, receiving the appointment of surgeon of the Twelfth New York Regiment. He was at the Battle of Gettysburg, and remained with the regiment until the close of the war. He then began private practice in New York, and soon won distinction as an eye and ear specialist. He was appointed aural surgeon to the New York Eye and Ear Infirmary, and professor of Diseases of the Eye and Ear in the University of the City of New York, as well as in the University of Vermont. He was one of the founders, in 1869, of the Manhattan Eye and Ear Hospital, and for a number of years was on its visiting staff. Twenty-five years ago, he was mainly instrumental in organizing the New York Post-Graduate Medical School and Hospital. He was made professor of Diseases of the Eye and Ear, president of the Corporation and of the Faculty, and attending ophthalmic and aural surgeon to the hospital. All these positions he retained throughout the remainder of his life, and it was largely due to his energetic and continued efforts that the institution met with the marked success which it has, and received the financial support necessary for its development and maintenance. At the time of his death, he was also consulting surgeon to the Brooklyn Eye and Ear Hospital.

Among Dr. Roosa's contributions to medical literature, was "A Treatise on the Ear," which was republished in London and translated into German. Other works of his were, "Clinical Manual of Diseases of the Eye," "Vest Pocket Medical Lexicon," "On the Necessity of Wearing Glasses," "A Doctor's Suggestions," "The Old Hospital and Other Papers," and translations of Stellwag and Troitsh on the eye (the latter in collaboration with Dr. Charles Stedman Bull and Charles E. Hackley), besides numerous valuable papers in the medical journals. In 1876 he was president of the International Otological Society, in 1879 president of the Medical Society of the State of New York, in 1893–94 president of the New York Academy of Medicine, and in 1894 president of the American Otological Society and honorary vice-president of the International

Ophthalmological Society. He also served as president of the New York Ophthalmological and Otological societies. He received the degree of M.A. from Yale in 1872, and of LL.D. from the University of Vermont in 1880. Dr. Roosa always took an active interest in public affairs. He was one of the early members of the Union League Club, and for many years was active as a member of its committee on political reform. He was president of the Holland Society in 1896. He was twice married and is survived by his second wife, but leaves no children.

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OSCAR BURBANK, M.D.

Dr. Oscar Burbank died at Des Moines, Iowa, Feb. 7, last, at the age of eighty-eight years, having been born in York County, Maine, in September, 1819. He had moved to Des Moines some weeks before with the purpose of attending medical lectures, and putting himself abreast of the most recent advances in modern medical science. He had practiced medicine for fifty-four years in Iowa at Waverly, and was Iowa's oldest Harvard graduate, having taken his degree in medicine in 1848. It is said that Dr. Burbank was present at the Massachusetts Hospital at the first surgical operation performed under ether.

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Current Literature.

Medical Record.

Jan. 25, 1908.

1. Pottinger, F. M. *Upon What does the Cure of Tuberculosis Depend?*
2. Guilfoy, W. H. *The Death-Rate of the City of New York as Affected by the Cosmopolitan Character of Its Population.*
3. *Roussel, A. E. *Report of a Case of Acute Gastrectasis Following Typhoid Fever and Premature Birth.*
4. *Morton, H. H. *Chancroidal Bubo and Its Treatment.*
5. Newman, E. D. *Syphilitic Fever, with Report of a Case.*
6. Dannreuther, W. T. *The Surgical Value of Iodine.*
7. *Levin, I. *Carbolic Gangrene.*
8. Dukeman, W. H. *A Case of Ectopic Gestation. Diagnosis and Operation before Rupture.*

3. Roussel reports a case of acute gastrectasis. He gives a detailed account of the symptoms and the treatment of his case, and also a short discussion of the differential diagnosis, and the etiological factors underlying the condition. He also gives many references to the literature on the subject.

4. Morton reports his treatment for chancroidal bubo as follows: when the bubo first appears all attempts should be made to keep it from suppurating by putting the patient to bed with warm applications, or gauze wet with 95% alcohol, covered with cotton wadding and perforated gutta-percha, to prevent too rapid absorption. The alcohol should be renewed twice a day. Or a solution of acetate of ammonia, used warm and frequently renewed, may be tried. When suppuration has begun, hot applications should be applied. After the bubo has thoroughly broken down, a small incision is made with a double-edged knife and the pus evacuated. A 10% solution of iodoform glycerin emulsion is then injected into the wound. Three injections are made at the first sitting, allowing the third injection to remain in. A fomentation of acetate of ammonia is then applied. Injections are repeated next day as before, and then the wound is bandaged and left for five or six days. In most cases this is all the treatment required, as the wound is healed at the end of this time.

7. Levin reports several cases of carbolic gangrene of the fingers. He states the different theories on the subject, and comments on the mistaken idea of the use of local antiseptics. The article is a plea for the restriction of the use of carbolic acid as a local antiseptic. [W. B. R.]

Feb. 1, 1908.

1. McGrath, J. J. *Classification of Cases of Appendicitis.*
2. Wainwright, J. W. *A Psychological Study of Hamlet.*
3. *Butler, W. J. *Cutaneous Tuberculin Vaccination in the Diagnosis of Tuberculosis.*
4. *Landis, R. M. *The After-Care of Tuberculosis with Reference to Employment.*
5. Henry, A. G. *Treatment of Cancer.*
6. Mulot, O. L. *The Teaching of Physical Diagnosis.*
7. Thompson, E. S. *Congenital Irideremia with Cataract.*

3. Butler gives a general discussion and explanation of Pirquet's cutaneous reaction in tuberculosis, and emphasizes its advantages over the hypodermic use of tuberculin, especially in children. He also refers to Calmette's ophthalmo-reaction.

4. Landis emphasizes the importance of the question of the employment of the arrested cases of tuberculosis. He points out the need of some organization which shall have as its object the securing of suitable employment for patients discharged from sanatoria and dispensaries, and suggests the working of the After-Care Committee of the Kelling Open-air Sanatorium in England as a model. He considers Pratt's tuberculosis class system as the best practical method of treating tuberculosis in the home. [W. B. R.]

New York Medical Journal.

Feb. 8, 1908.

1. Taylor, J. M. *The Hand as a Therapeutic Agent.*
2. Sill, E. M. *Is Sterilized Milk a Safe Food for Infants?*
3. Emerson, H. *Therapeutic Use of Soured Milk.*
4. Smith, E. E. *Uric Acid: The Formation, Elimination and Effect on the General System.*
5. McCaskey, G. W. *Internal Medicine: Some of Its Present Aspects and Achievements.*
6. Barbour, M. *Indications for Water in Childhood.*
7. Polak, J. O. *Contracted Pelvis as a Cause of Dystocia.*
8. Dunton, W. R. *The Nervous and Mental Manifestations Incident to School Life.*

The Journal of the American Medical Association.

Feb. 8, 1908.

1. *Crandall, F. M. *Enforcement of Medical Practice Laws by County Societies.*
2. Holden, G. R. *The Indications for Operation in Elective Surgery.*
3. Cheney, W. F. *Early and Late Cases of Gastric Ulcer.*
4. Hertzler, A. E. *The Etiology of Epithelioma.*
5. Abbott, E. G., and Pingree, H. A. *The Ambulatory Treatment of Hip-Joint Disease.*
6. Pfahler, G. A. *The Rœntgen Rays in Oral Surgery.*
7. Mettler, H. *Sensory Dissociation as a Symptom, with Report of a Case of Syringomyelia.*
8. Dench, E. B. *The Major Operative Treatment of Middle-Ear Suppuration and Its Indications.*
9. Welty, C. F. *Indications for Operative Interference in Cerebral Complications Due to Chronic Suppuration of the Middle Ear.*

1. Crandall recounts some of the legal work done by the Medical Society of the County of New York during the past seven years. This work includes enforcement of the Medical Practice Laws, and protection of the public against illegal and criminal practitioners. The Medical Society has its legal department and its own counsel. The society has been very successful in establishing a valuable series of legal precedents. It has secured a decision by the highest court of the state defining the practice of medicine. This decision secured, conviction of irregular practitioners is relatively simple. New legislation has been secured; a very important provision is the power of revocation of the license to practice medicine. [R. I. L.]

Annals of Surgery.

March, 1908.

1. *Jackson, C. *Tracheo-Bronchoscopy.*
2. *Babler, E. A. *Trichinous Infection of a Carcinoma of the Lip.*
3. Thomas, T. T. *Ludwig's Angina.* (Part II.)
4. *Dawbarn, R. H. M. *Studies in Technic of Cancer of the Breast Operation.*
5. *LeConte, R. G. *Rupture of the Lung without Costal Injury.*
6. *Laffer, W. B. *Acute Dilatation of the Stomach and Arterio-Mesenteric Ileus.*
7. *Haynes, I. S. *Unilateral Renal Hematuria Due to Pyelitis Cystica.*

1. Jackson reports excellent results from tracheobronchoscopy for foreign bodies under chloroform or local (10%) cocain anesthesia. Seventeen successful cases, without a single subsequent pneumonia, seem to show the preferability of these anesthetics to ether in such conditions.

2. Babler presents the second case ever recorded in which the trichina spiralis was found in an epithelioma of the lip, but does not suggest an opinion as to whether the parasites reached the tumor tissue directly from without, or represented one localization of an old systemic infection.

4. Dawbarn notes several points of importance in the technic of operation for cancer of the breast. Most novel is his practice of suturing a small anterior slip of the deltoid forward to the stump of the resected pectoralis major, to increase subsequent power of flexion and adduction of the arm. Early use of the arm, he believes, is further facilitated by fixing it for a week after operation on a triangular splint, so that the elbow is flexed and the palm of the hand rests under the back of the neck.

5. This description and discussion of a case of acute traumatic pneumothorax without costal fracture emphasize the frequent difficulties of diagnosis after violent or contusive injuries to the trunk, in which the symptoms are masked by severe shock or attributed to that alone, and the consequent importance of always considering in such cases the possibility of hemorrhage or visceral rupture in the thoracic, as well as in the abdominal, cavity. Differential diagnosis between rupture of the lung and rupture of the diaphragm with hernia of stomach or intestine may be made by the persistence of vomiting in the latter condition, as a sign of strangulation, and by the fact that the tympany of the displaced viscera is limited in extent, whereas that of pneumothorax may typically reach to the apex of the pleura.

6. Laffer reviews the literature of gastro-mesenteric ileus, and reports four cases from his own experience. He discusses the mechanics of its production, which he believes due to a primary atonic dilatation of the stomach of central origin: the dilated stomach forces the small intestines down into the pelvis and holds them there, causing traction on their mesentery and obstruction at the point where it crosses the duodenum. This duodenal obstruction is attended by circulatory disturbances, wherefore he prefers to term the condition arterio-mesenteric ileus.

7. Haynes reports a case of persistent unilateral renal hematuria, apparently due to chronic pyelitis, and suggests that this condition may be the cause of some of the cases formerly grouped under the name of essential or idiopathic renal hematuria. He gives also a copious bibliography of the subject. [R. M. G.]

The Lancet.

Feb. 15, 1908.

1. Shattock, S. G. *Erasmus Wilson Lecture on Ovarian Teratomata.*
2. *Raw, N. *Lecture on the Treatment of Tuberculosis by Different Kinds of Tuberculin.*
3. *Pasteur, W., Foulerton, A. G. R., and MacCormac, H. *A Case of Acute Poliomyelitis Associated with a Diplococcal Infection of the Spinal Sac.*
4. Hort, E. C. *The Therapeutic Uses of Normal Serum.*
5. West, S. *Plastic Bronchitis in a Girl aged Eleven Years, the Seventh Attack in Four Years, the First Occurring at the Age of Seven Years; Extreme Displacement of the Heart and Mediastinum Produced by Collapse of the Lung, Disappearing with Expectoration of the Cast, but Recurring as Each Fresh Cast Formed.*
6. Hewitt, F. W. *An Artificial "Air-way" for Use during Anesthetization.*
7. Southam, E. A. *The "Early" Operation in Acute Appendicitis, the Indications for Its Performance and Its Advantages.*

2. Raw presents a paper on the treatment of tuberculosis of different kinds by the different varieties of tuberculin. His treatment is based on these two theories: (1) that tubercle bacilli of the human type produce pulmonary tuberculosis, ulceration of the intestines and tuberculous laryngitis; (2) that tubercle bacilli of the bovine type produce peritonitis, tuberculosis of the lymphatic glands, joints, meninges and skin. He believes that these two varieties of bacilli are antagonistic to each other. Koch's tuberculin R. he has found to have little or no healing effect on pulmonary consumption, and in consequence for the treatment of lung cases he uses a special tuberculin prepared from a culture of bovine bacilli. The cases of surgical or glandular tuberculosis he treats with tuberculin R., which is prepared from a human organism. In the lung cases he believes tuberculin should only be used in early stages, and if possible in conjunction with open-air and sanatorium treatment. With this tuberculin, which has been prepared for him by Calmette, he starts with a dose of 1-10,000 of a milligram, and increases very slowly according to Deny's procedure. He gives the results of his cases. Sixteen cases of pulmonary tuberculosis under treatment by injection of bovine tuberculin have all done very well indeed. He believes that if, with the aid of pure air, good food, blood tonics, etc., it is impossible to improve the resisting power of the patient, tuberculin itself will not prove to be of much value. Also, if there is extensive lung involvement, or if there are cavities and general constitutional infection, tuberculin has little or no lasting effect; and lastly, that the younger the patients the more readily do they respond to tuberculin. He reports 23 cases of tuberculous glands, 24 cases of lupus, 27 of tuberculous joints and 8 cases of tuberculous peritonitis, all of which have done remarkably well, and in every case of this series he believes that tuberculin has had an almost specific effect. He strongly advocates the use of tuberculin in the home treatment of such conditions.

3. The writers isolated a micrococcus from the spinal fluid of a case of acute poliomyelitis. They injected this organism into the spinal canal of rabbits, and produced in this way an ascending paralysis. [J. B. H.]

British Medical Journal.

Feb. 1, 1908.

1. Barr, J. *Address on Some of the Medical Aspects of Life Insurance.*
2. *Barker, A. E. *Second Report on Clinical Experiences with Spinal Analgesia, with a Second Series of 100 Cases.*
3. Lucas, R. C. *Address on Inherited Syphilis.*
4. Clouston, T. S. *The Medical Inspector of Schools as a Psychiatrist.*
5. Atkins, W. R. G. *The Critical Solution Point of Urine; a New Physico-Chemical Method of Examination.*

2. Barker presents a second report of his experiences with spinal analgesia. He claims for this method freedom from risk, certainty and uniformity of effect and diminution in the frequency of such passing sequelæ as headache and vomiting. He believes that the part played by gravity in the injection of the fluid is very important, and that the limitation of the action of the drug as far as possible to particular areas of the spinal canal and its exclusion entirely from the intracranial sac is responsible for the improvement in his results in his last series of cases. He presents arguments to show that the views of Dönitz, who has come out with the statement that gravity plays no part in the action of the fluid, are wrong, and gives his reasons for thinking so. By means of different postures, depending upon the part of the body which he wishes to render anesthetic, he has been able to confine the effects

of this drug to almost any area which he wishes. For analgesia of the perineal region the fluid is injected into the spinal cord with the patient sitting up. For operations higher up than this the patient lies down with the head and pelvis both raised. He has not found it necessary to elevate into the Trendelenburg position with the head low, and he believes it unnecessary, if not actually dangerous. He has found the best results as to high analgesias and absence of after-effects where the level of the body has not been altered after injection, and consequently the cerebrospinal fluid has been kept in a state of rest. By means of various pictures and diagrams he gives the technic of the injection. In 200 cases he has required a general anesthetic twenty times; 95 of these cases were abdominal operations; 44 for hernia; 13 each for acute appendicitis and chronic appendicitis; there were 7 strangulated herniæ and 3 cases of gastro-enterostomy. He believes that this method of anesthesia is one that at least deserves a very close study, and that those who employ it without this incur a grave responsibility. It is not a mere question of injecting a drug at a given point and awaiting a general effect. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. NO. 2.

JAN. 9, 1908.

1. *VON WINCKEL, F. *The Management of the Third Stage of Labor.*
2. SCHENCK, E. *The Diagnostic Value of the Ophthalmo-Tuberculin Reaction.*
3. STRASBURGER, J. *Measurement of the Diastolic Blood Pressure in Man.* (Continued article.)
4. *KROMAYER. *Treatment of Pruritus, Especially Pruritus Ani.*
5. *VON ALDOR, L. *The Functional Diagnosis of Intestinal Diseases and the Dietetic Treatment of Chronic Intestinal Catarrh.*
6. GRAUL, G. *Vasomotor Dermatoses with Achylia Gastrica as Manifestations of Congenital Asthenia.*

1. Von Winckel's statistics from Munich show that the placenta is expelled spontaneously in 96.3% of the cases by the end of the second hour. Therefore he advises expectant treatment until after that time. In the 3.7% remaining, operation is necessary. He urges that too much attention has been placed on operative measures, and that students do not rely enough on nature.

4. Kromayer says that formerly the treatment of pruritus was symptomatic, and that many patients were entirely unaffected by it. He has successfully treated 160 patients, by washing the part with a 15% solution of caustic potash, which cauterizes the small vesicles in the epidermis which cause the itching. He has treated 40 patients by the Rœntgen rays, which are especially effective for pruritus ani. He does not shrink from a dermatitis of the first degree. He claims by these two methods of treatment, alone or in combination, to cure nearly all the cases of pruritus which come to his clinic.

5. Von Aldor thinks that the best treatment for chronic intestinal catarrh in obstinate cases is high injections of hot Carlsbad water. In order to prescribe a proper diet, the underlying functional disorder must be sought for, especially with reference to the stomach. He says achylia gastrica seldom causes symptoms referable to the stomach, and the resultant diarrhea is vainly treated with bismuth, etc., and the diet improperly regulated. In such cases hydrochloric acid and abundance of albuminoid foods will stimulate the pancreatic digestion, and cure the intestinal trouble. Systematic examination of the stools after Schmidt's test diet is very important. The repeated findings of particles of muscle fiber in the stools points to trouble in the small intestine, while putrefaction of proteids with gas formation and fermentation with an alkaline reaction points to a diffuse involvement of the whole digestive tract. According to the results of the examination of the stools, the diet is regulated, taking away the meat when muscle fibers are found, and decreasing the proteids or carbohydrates when fermentation is present. An acid reaction with gas formation points to carbohydrate fermentation. When the proteids are to be restricted he finds gelatin an ideal substitute. Made from calve's feet, and flavored with lemon or hydrochloric acid, it can be taken by anybody. It may also be taken dissolved in bouillon. [L. G. M.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. NO. 2.

JAN. 14, 1908.

1. *PRYM, O. *The Emptying of the Stomach and the Separation of Fluids and Solids in the Stomach.*
2. BLUM, L. *The Value of the Ophthalmo-Tuberculin Reaction in Diagnosis.*
3. SCHRÖDER, G., AND KAUFMANN, K. *The Value of the Conjunctival Tuberculin Reaction in Diagnosis.*
4. WOLFF-EISNER. *Critical Remarks on the Work of Mainini, Wiens, Geinther, Klernbüger und Feer with the Ophthalmo-Reaction.*
5. TREUPEL, G. *A Short Communication on the Ophthalmo-Reaction.*
6. SCHMIDT. *Researches on the Ophthalmo-Tuberculin Reaction.*
7. PLANT, F., HENCK, W., AND ROSSI. *Is there a Specific Precipitin Reaction in Lues?*
8. KRONE. *The Relation of Muscle Work to Blood Pressure.*
9. GEISSLER. *The Influence of Electrical Irritation on the Distribution of the Blood Stream.*
10. SCHMINKE, R. *The Influence of Mud Baths on the Organs of Circulation.*
11. GROTH, A. *Statistics on Infant Mortality with Regard to the Manner of Feeding.*
12. DOERFLER, H. *Report on the First Year of the Bureau for the Care of Infants in Weissenburg.* (Continued article.)
13. NETER, E. *The Pathogenesis of Fluor Albus.*
14. SALZER. *The Physician as Mirrored in Poetry, Ancient and Modern.* (Concluded.)

1. Prym has performed numerous experiments on dogs, first feeding them with colored liquids and solids, and then at different times during digestion killing them and freezing their stomachs *in situ*. The results of his observations are based on sections of the frozen gastric contents. The author finds that fluids are passed first through the pylorus, and that the stomach wall seems to have a selective action, keeping back the solid particles until they are thoroughly mixed with gastric juice and ready for further digestion in the intestine. The pylorus, the author thinks, is chiefly concerned with passing on the fluids, whereas the solid food is left in the central portion of the stomach, where the peristaltic waves are at first too small to push them to the pylorus, but sufficiently strong to bring the fluid into the antrum pylori. [R. D.]

BERLINER KLINISCHE WOCHENSCHRIFT. NO. 2.

JAN. 13, 1908.

1. *EWALD AND WITTE, J. *Acute Chorea Appearing as a Complication of Severe Gastro-Intestinal Disease; an Hitherto Unrecognized Condition.*
2. FALTA, W. *Proteid Metabolism in Diabetes Mellitus.*
3. *PERITZ, G. *The Excretion of Lecithin in Syphilis Tabes and Paresis, and the Action of Injections of Lecithin in these Diseases.*
4. FÜRSTENBERG, A. *The Production of Specific Precipitins after Injections of Human Feces.*
5. GIERKE, E. *What the Experimental Study of Mouse Cancer has Taught Us.*
6. PAPPENHEIM, A. *Peculiar Cell-Enclosures in Leucemia.*
7. BRAUN, W. *Perforating Wounds of the Gastro-Intestinal Tract.*
8. *WOLFF-EISNER, A., AND TEICHMANN, F. *The Prognostic Value of the Conjunctival and Cutaneous Tuberculin Reaction.*

1. The authors report the case of a girl, twenty years old, who, as the result of a previous gastric ulcer, had a marked stenosis of the pylorus. Some time after signs of stasis appeared, a series of choreic symptoms, at first confined to the upper extremities, then spreading to the lower, were noted. The movements were typically choreic and were much lessened by gastric lavage, but did not disappear under this treatment. The stomach contained at different times 250 ccm. to 300 ccm. of extremely foul-smelling greenish-brown contents without blood. A posterior gastro-enterostomy was performed, with coincident disappearance of symptoms. The remarkable thing about this case of chorea, in which no trace of hysteria nor tetany

could be seen, is the sudden development of symptoms and their short duration. That these symptoms depended for origin on the stasis and absorption of fermentation products seems highly probable, as lavage and operation were followed by disappearance of the symptoms.

3. Peritz has made a number of observations of the metabolism of syphilitics, and of patients with tabes and general paralysis. He has found an increase of lecithin in the stools of these patients. After injections of lecithin into the muscles of syphilitics a marked reduction in the lecithin excretion was noted. Also a lessening of Wasserman's reaction was noted after these injections. These facts, along with Wassermann's observation that there is in the test tube a combination between lecithin and syphilis "antitoxin," seem to indicate that lecithin combines in a like manner in the body with these antisyphilitic products.

8. The observations of Wolff-Eisner and Teichmann seem to show that both the conjunctival and skin reactions in tuberculosis follow a regular course of development, dependent on the course and severity of the pathological process. A strong reaction is seen in the majority of cases of incipient tuberculosis and in those in the first and second stages which take a slow and favorable course. A slight reaction occurs in the far-advanced cases, and in cases of the early or middle stage, which will have a rapid and fatal course. Extremely severe eye reactions, therefore, indicate that the individual has a great deal of fignting power and should overcome the disease. The so-called late and continued reactions are indications of a latent focus somewhere in the body, of no great clinical importance. [R. D.]

Deutsche Zeitschrift für Chirurgie. Bd. 91. Heft 3 and 4.

1. *Kocher, T. *The Clinical Recognition of Malignant Tumors of the Thyroid Gland.*
2. Schümann, E. *Actinomycosis of the Intestine.*
3. Schlatter, C. *Subcutaneous Rupture of the Tendons of the Fingers.*
4. Meerwein, H. *Intratracheal Goiter.*
5. Esau, P. *The Radical Operation for Umbilical Hernia.*
6. Kostlivy, S. *A Contribution to the Etiology of Cysts of the Mesentery.*
7. *Axhausen. *Histological Investigations on the Transplantation of Bone in the Human.*
8. Haedke, M. *Volar Dislocation of the Ulnar at its Distal Joint.*

1. Kocher lays great stress on the fact that it is much more important that the examining physician should be able to make a diagnosis of malignant goiter in its early stages, than that he should be able to make a differential diagnosis between all the various forms of tumors. It is only by early recognition of malignancy that progress in treatment can be made. The two most suggestive signs of malignancy are increase in the size of the tumor, especially if steadily progressing, and increase in its consistency. The demonstration of a dense, compact, circumscribed area in the thyroid is very suggestive of malignancy. Sometimes the patient notices himself that the tumor has recently become harder. Further signs of malignancy are irregular surface and lessened mobility of the tumor. But it is especially important to recognize the fact that these latter two signs are not necessarily present in the early stages of growth, so that though their presence means much, their absence does not exclude the possibility of malignancy. Lessened mobility should be sought by attempting to move the tumor from above downward, and without asking the patient to swallow. The benign goiter is usually not tender on pressure, while the malignant one is often found to be so. Pain on presture, however, is not of as much significance as are spontaneous, lancinating pains. Dilated veins, air hunger and difficult swallowing are of importance, but are usually later manifestations of malignant growth. It should be possible to make a diagnosis of malignancy on the above enumerated signs and symptoms, at a sufficiently early period for operative treatment to be of avail. When we add to the above such signs as complete immobility of the tumor, swelling of the veins in the neck, in the upper part of the chest and arms, dullness over the anterior mediastinum, enlarged glands, palpable venous thrombosis in the neck, often reaching to the arms; metastases in the lungs, or in the sternum or skull; a reddened, infiltrated and adherent skin; signs of perforation of the trachea or esophagus, with coughing up of blood and marked difficulty in swallowing; then, indeed, is the diagnosis easy, but at such a time it has no longer any practical value. Tentative treatment of these cases with iodides is a fatal waste of time in the majority of instances.

7. The work of Axhausen on the transplantation of bone leads him to conclude that, although the bone itself dies, its periosteum lives and is able to produce new bone. Defects in the long bones should therefore be filled by freshly removed bone, which carries with it its periosteum. [W. C. Q.]

Miscellany.

THE SUPPRESSION OF UNNECESSARY NOISE.

The New York Society for the Suppression of Unnecessary Noise held its first annual meeting on Feb. 26, when Mrs. Isaac L. Rice, its founder and president, reported the progress which had been made since the society was formed. She stated that a considerable time ago she made an endeavor to do something towards abating the noise from the steam whistles of tugs and from other sources in the neighborhood of the hospitals along the East River. Having applied to various municipal boards and then to the authorities at Albany and Washington, she found that no one had any authority in the matter. Later the bill was passed which placed the power of controlling indiscriminate and unnecessary whistling in the hands of the supervising inspectors of steamboats. The society was organized about a year ago, and now has a large membership, while on its board of management are many of the most prominent men in the city. A few months since there were representatives of 18 hospitals, containing 8,500 beds, in its directorate, but at the present time no less than 59 hospitals with 18,018 beds are so represented. Since the notices indicating "quiet zones" had been posted around the hospitals, these institutions had reported that the noises in their vicinity had been very noticeably abated. Mrs. Rice also stated that, in consequence of the strict orders issued by Police Commissioner Bingham, the thousands of sick in the hospitals had had the quietest Fourth of July known in New York for many years. One of the most recent undertakings of the society is the organization, with the consent and coöperation of the Board of Education, of a Children's Hospital Branch, composed of children pledged to make as little noise as possible in the neighborhood of hospitals. Mark Twain was asked to become the president of this auxiliary and in a graceful note to Mrs. Rice accepted the position. Although this new development has only just been started, in a single one of the public schools, 1,540 pupils have already been enrolled in the membership. Children who take the anti-noise pledge receive buttons inscribed with the word "Humanity," which are designed to jog the memory of the wearers and impress upon them the responsibility of the pledge. Others who made addresses on this occasion were

Health Commissioner Darlington and Dr. William H. Thomson, and both spoke enthusiastically of the good work which had been accomplished by the society. Dr. Thomson told how closely connected the heart is with the ear, and emphasized the importance of quiet, particularly in diseases of the nervous system. The public could not appreciate, he said, how many lives had been sacrificed because of unnecessary noise.

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PRIZES OFFERED BY THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

The Central Committee of the International Congress on Tuberculosis has announced the offer of the following prizes:

1. A prize of $1,000 is offered for the best evidence of effective work in the prevention or relief of tuberculosis by any voluntary association since the last International Congress in 1905. In addition to the prize of $1,000, two gold medals and three silver medals will be awarded. The prize and medals will be accompanied by diplomas or certificates of award.

Evidence is to include all forms of printed matter, educational leaflets, etc.; report showing increase of membership, organization, classes reached — such as labor unions, schools, churches, etc.; lectures given; influence in stimulating local boards of health, schools, dispensaries, hospitals for the care of tuberculosis; newspaper clippings of meetings held; methods of raising money; method of keeping accounts.

Each competitor must present a brief or report in printed form. No formal announcement of intention to compete is required.

2. A prize of $1,000 is offered for the best exhibit of an existing sanatorium for the treatment of curable cases of tuberculosis among the working classes. In addition to the prize of $1,000, two gold medals and three silver medals will be awarded. The prize and medals will be accompanied by diplomas or certificates of award.

The exhibit must show, in detail, construction, equipment, management, and results obtained. Each competitor must present a brief or report in printed form.

3. A prize of $1,000 is offered for the best exhibit of a furnished house for a family or group of families of the working class, designed in the interest of the crusade against tuberculosis. In addition to the prize of $1,000, two gold medals and three silver medals will be awarded. The prize and medals will be accompanied by diplomas or certificates of award. This prize is designed to stimulate efforts towards securing a maximum of sunlight, ventilation, proper heating and general sanitary arrangement for an inexpensive home. A model of house and furnishing is required. Each competitor must present a brief with drawings, specifications, estimates, etc., with an explanation of points of special excellence. Entry may be made under competitor's own name.

4. A prize of $1,000 is offered for the best exhibit of a dispensary or kindred institution for the treatment of the tuberculous poor. In addition to the prize of $1,000, two gold medals and three silver medals will be awarded. The prize and medals will be accompanied by diplomas or certificates of award.

The exhibit must show, in detail, construction, equipment, management, and results obtained. Each competitor must present a brief or report in printed form.

5. A prize of $1,000 is offered for the best exhibit of a hospital for the treatment of advanced pulmonary tuberculosis. In addition to the prize of $1,000, two gold medals and three silver medals will be awarded. The prize and medals will be accompanied by diplomas or certificates of award.

The exhibit must show, in detail, construction, equipment, management, and results obtained. Each competitor must present a brief or report in printed form.

6. The Hodgkins Fund Prize of $1,500 is offered by the Smithsonian Institution for the best treatise that may be submitted on "The Relation of Atmospheric Air to Tuberculosis." [1]

7. Prizes for educational leaflets:

A prize of $100 is offered for the best educational leaflet submitted in each of the seven classes defined below. In addition to the prize of $100, a gold medal and two silver medals will be awarded in each class. Each prize and medal will be accompanied by a diploma or certificate of award.

Competitors must be entered under assumed names.

A. For adults generally (not to exceed one thousand words).

B. For teachers (not to exceed two thousand words).

C. For mothers (not to exceed one thousand words).

D. For in-door workers (not to exceed one thousand words).

E. For dairy farmers (not to exceed one thousand words).

F. For school children in grammar school grades (not to exceed five hundred words).

In classes *A*, *B*, *C*, *D*, *E* and *F*, brevity of statement without sacrifice of clearness will be of weight in awarding. All leaflets entered must be printed in the form they are designed to take.

G. Pictorial booklet for school children in primary grades and for the nursery.

Class *G* is designed to produce an artistic picture-book for children, extolling the value of fresh air, sunlight, cleanliness, etc., and showing contrasted conditions. "Slovenly Peter" has been suggested as a possible type. Entry may be made in the form of original designs without printing.

8. A gold medal and two silver medals are offered for the best exhibits sent in by any state of the United States, illustrating effective organization for the restriction of tuberculosis. Each medal will be accompanied by a diploma or certificate of award.

9. A gold medal and two silver medals are

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[1] See Journal, Feb. 20, p. 273.

offered for the best exhibits sent in by any state or country (the United States excluded), illustrating effective organization for the restriction of tuberculosis. Each medal will be accompanied by a diploma or certificate of award.

10. A gold medal and two silver medals are offered for each of the following exhibits; each medal will be accompanied by a diploma or certificate of award; wherever possible each competitor is required to file a brief or printed report:

A. For the best contribution to the pathological exhibit.

B. For the best exhibit of laws and ordinances in force June 1, 1908, for the prevention of tuberculosis by any state of the United States. Brief required.

C. For the best exhibit of laws and ordinances in force June 1, 1908, for the prevention of tuberculosis by any state or country (the United States excluded). Brief required.

D. For the best exhibit of laws and ordinances in force June 1, 1908, for the prevention of tuberculosis by any municipality in the world. Brief required.

E. For the society engaged in the crusade against tuberculosis having the largest membership in relation to population. Brief required.

F. For the plans which have been proven best for raising money for the crusade against tuberculosis. Brief required.

G. For the best exhibit of a passenger railway car in the interest of the crusade against tuberculosis. Brief required.

H. For the best plans for employment for arrested cases of tuberculosis. Brief required.

11. Prizes of two gold medals and three silver medals will be awarded for the best exhibit of a workshop or factory in the interest of the crusade against tuberculosis. These medals will be accompanied by diplomas or certificates of award.

The exhibit must show, in detail, construction, equipment, management, and results obtained. Each competitor must present a brief or report in printed form.

The following constitute the committee on prizes:

Dr. Charles J. Hatfield, Philadelphia, chairman; Dr. Thomas G. Ashton, Philadelphia, secretary; Dr. Edward R. Baldwin, Saranac Lake; Dr. Sherman G. Bonney, Denver; Dr. John L. Dawson, Charleston, S. C.; Dr. H. B. Favill, Chicago; Dr. John B. Hawes, 2d, Boston; Dr. H. D. Holton, Brattleboro; Dr. E. C. Levy, Richmond, Va.; Dr. Charles L. Minor, Asheville, N. C.; Dr. Estes Nichols, Augusta, Me.; Dr. M. J. Rosenau, Washington; Dr. J. Madison Taylor, Philadelphia; Dr. William S. Thayer, Baltimore; Dr. Louis M. Warfield, St. Louis.

Correspondence.

WORK FOR BOARD OF HEALTH.

Men and Women Should Use Handkerchiefs.

The following is a copy of a letter received not long since by a board of health which shall be nameless, but which is already a busy body:

Gentlemen: I saw an small article in a paper in regard to spitting on the sidewalks and I think it is a good thing for the City to keep the streets clean as possible. I wish you could pay a visit to the "Dream Land stablishments" and order them to be cleansed every day, they are very dirty, the air is full of dust and the floor coverted with sweepings. That is not healthy for those who frecuente such places, and the owners make pleanty money to pay a man or boy to sweep the floor every day before the doors are open. If you could visit also the Boarding houses in all the city you will have an opportunity to do good in regard to sanitary conditions. I lived in Charles St. sometime ago and was compeld to move. The house and my room were very dirty, my mattress roten, smealing bad, the furniture old and dirty, and I became sick, physically sick and have to move. But how hard is to find a Boarding house clean is hard to tell you. It is shameful that with such a Board of Health we shall be obliged to live in such dirty houses. An other thing I should like for you to luck at is to the men who blow their noses with their fingers. Even ladies too do the same. I think it is not decent and clean to do it. Please make a law to have a city clean and a decent people. Men ought to learn to use handkerchifs and housekeepers to keep the houses clean.

Hoping you will do something in regard to health conditions, I remain

Yours very respectfully,

X.

IMPORTANCE OF EXAMINING DIPHTHERIA OUTFITS.

Health Department, Bacteriological Laboratory,
Boston, March 7, 1908.

Mr. Editor: In the March 5 issue a communication from Dr. W. P. Coues calls attention to the importance of examining diphtheria outfits before taking a culture, in order to guard against the possibility of using an outfit previously used.

We desire to express our hearty approval of this suggestion and to state that on the face of each culture box is the request that the contents of the box be examined before leaving the culture station in order to see that it is in the best of condition. Physicians are again urged to examine diphtheria outfits while at the station.

This request, however, does not excuse a culture station from using the utmost precaution in handling our outfits. The stations have been repeatedly instructed as to the care of the outfits and have been warned to keep their fresh and their used cultures in distinctly separate places, in order to avoid the possibility of error. Inspections are made from time to time, in order to see that these instructions are carried out.

In the case mentioned the culture station was distinctly at fault, but being situated in an important district, where a station of the proper character is hard to secure, it has in this case been allowed to continue, with a strong reprimand. A mistake of this nature hereafter by any station will result in the immediate withdrawal of the culture station privilege.

Physicians will confer a favor if they will report any instance of poor service on the part of the stations, directly to the laboratory. The practitioner can also aid in avoiding possible errors by handing or instructing their messenger to hand used outfits directly to one of the clerks at the culture station instead of leaving them on the counter. The latter practice has been in several cases the primary cause of delay and, except for watchfulness on the part of the station, might easily result in confusion of specimens.

Unused diphtheria outfits should not be kept by the physician longer than one month, as the best results cannot be expected from serum older than this. Such outfits should not be thrown away, but should be returned to the culture station or laboratory and a fresh outfit obtained.

Very truly yours,
Burt R. Rickards,
Director, Bacteriological Laboratory,
Boston Board of Health.

RECORD OF MORTALITY

For the Week ending Saturday, Feb. 29, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	—	—
Chicago	—	—	Waltham	5	—
Philadelphia	—	—	Pittsfield	8	2
St. Louis	—	—	Gloucester	9	2
Baltimore	208	48	Brookline	8	1
Cleveland	—	—	North Adams	4	1
Buffalo	—	—	Chicopee	8	3
Pittsburg	—	—	Northampton	9	2
Cincinnati	—	—	Medford	4	1
Milwaukee	—	—	Beverly	6	—
Washington	—	—	Leominster	2	—
Providence	98	25	Hyde Park	7	5
Boston	237	69	Melrose	8	1
Worcester	50	8	Newburyport	—	—
Fall River	59	28	Woburn	2	0
Cambridge	24	5	Westfield	8	2
Lowell	43	14	Marlboro	6	2
Lynn	31	13	Revere	1	1
New Bedford	47	22	Attleboro	3	0
Springfield	28	7	Peabody	—	—
Lawrence	30	14	Adams	2	1
Somerville	20	4	Clinton	1	—
Brockton	20	4	Gardner	5	1
Holyoke	18	6	Milford	2	—
Malden	10	2	Watertown	8	3
Chelsea	8	4	Plymouth	—	—
Newton	9	2	Weymouth	4	0
Salem	14	1	Framingham	1	—
Haverhill	7	—	Southbridge	4	4
Fitchburg	12	3	Wakefield	—	—
Everett	3	1	Webster	—	—
Taunton	22	2	Arlington	2	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED FEB. 26, 1908.

Roberts, Norman, assistant surgeon. Granted leave of absence for three days from Feb. 24, 1908, under paragraph 191, Service Regulations.

Roberts, Norman, assistant surgeon. Granted leave of absence for twenty-three days from Feb. 27, 1908. Feb. 26, 1908.

Delgado, J. M., acting assistant surgeon. Granted two days' leave of absence, on account of sickness, from Feb. 7, 1908. Feb. 19, 1908.

Hallett, E. B., acting assistant surgeon. Granted leave of absence for thirty days, on account of sickness, from Jan. 8, 1908, and seven days' leave of absence from Feb. 7, 1908. Feb. 24, 1908.

Keatley, H. W., acting assistant surgeon. Granted leave of absence for seven days from Feb. 11, 1908, under paragraph 210, Service Regulations.

Simonson, G. T., acting assistant surgeon. Granted leave of absence for one day, Feb. 21, 1908. Feb. 20, 1908.

Walker, T. D., acting assistant surgeon. Granted leave of absence for two days from Feb. 25, 1908. Feb. 20, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MARCH 7, 1908.

H. F. Hull, passed assistant surgeon. Commissioned passed assistant surgeon from April 12, 1907.

L. H. Wheeler, passed assistant surgeon. Commissioned passed assistant surgeon from April 22, 1908.

R. F. S. Puck, pharmacist. Appointed pharmacist from Feb. 21, 1908.

J. E. Gardner, medical inspector. Ordered to the Marine Recruiting Station, Boston, Mass.

J. C. Thompson, surgeon. Ordered to report at Washington, D. C., to the Secretary of War, for special duty.

W. N. McDonell, passed assistant surgeon. Detached from the Naval Recruiting Station, Chicago, Ill., and ordered to the "Hancock."

SOCIETY NOTICES.

Annual Meeting of the American Gastro-Enterological Association. — The Eleventh Annual Meeting of this association will be held at Chicago, June 1 and 2, 1908.

Clinical Section of the Suffolk District Medical Society in Conjunction with the Boston Medical Library. — Meeting, Wednesday, March 18, 1908. "Diagnostic and Therapeutic Use of Tuberculin," Dr. Lawrason Brown, Saranac Lake, N. Y. Discussion: Professors F. C. Shattuck and Theobald Smith, and Drs. John B. Hawes, 2d, and Cleaveland Floyd.

Edwin A. Locke, M.D., *Secretary*. Richard C. Cabot, M.D., *Chairman*.

New England Electro-Therapeutic Association. — The monthly meeting will be held Friday evening, March 13, 1908, at 7.45 o'clock, in Lecture Hall (third floor), Edison Building, 39 Boylston St., Boston, Mass. The following papers will be read and discussed: "Electrical Treatment of Some Functional Neuroses," by Frank B. Granger, M.D., and "The Removal of Superfluous Hair by the X-Ray," by Frederick Bardwell, M.D. The profession is invited.

Samuel J. Harris, M.D., *Secretary*.

Boston Society for Medical Improvement. — The regular meeting of the Society will be held in Sprague Hall, Medical Library Building, on Monday, March 23, 1908, at 8.15 p.m. Program: "The Newer Ferments and their Participation in the Vital Processes." A. E. Austin, M.D. (by invitation). "The Clinical Value of the Estimation of Ammonia in Diabetes." Harry W. Goodall, M.D., and Elliott P. Joslin, M.D.

Daniel Fiske Jones, M.D., *Secretary*.

RECENT DEATH.

Dr. Oliver John Davis Hughes, of New Rochelle, Westchester County, N. Y., died from acute nephritis on March 5, at the age of fifty-five years. He was descended from Revolutionary ancestry and was born in Buenos Ayres, where his father, John H. Hughes, was representing the United States Government as resident Minister. While a young man he served in the German Army Medical Corps during the Franco-Prussian War, being decorated by Emperor William I, and also receiving the Grand Ducal Badish Medical Cross. Later he was in the U. S. Consular Service, and in 1875 received the degree of M.D. from the Long Island College Hospital, Brooklyn. For a time he practiced at Meriden, Conn.

BOOKS AND PAMPHLETS RECEIVED.

The Nervous Manifestations of Arteriosclerosis. By Alfred Stengel, M.D. Reprint.

Diseases of the Breast with Special Reference to Cancer. By William L. Rodman, M.D., LL.D. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1908.

The Riddle of Personality. By H. Addington Bruce. New York: Moffat, Yard & Co. 1908.

Healthy Boyhood. By Arthur Trewby, M.A. With an introduction by Sir Dyce Duckworth, M.D., LL.D., and a foreword by Field Marshal Earl Roberts, K.G., K.P., V.C., O.M., P.C., G.C.B., G.C.S.I., G.C.I.E., D.C.L., LL.D. New York: Longmans, Green & Co. 1907.

Practice of Medicine for Nurses. By George Howard Hoxie, A.M., M.D. With a chapter on the Technic of Nursing by Pearl L. Laptad. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

Report of the Commissioner of Education for the Year ending June 30, 1906. Vol. II. Washington. 1908.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the Fiscal Year 1907. Washington. 1908.

Seventh Annual Report of the New York State Hospital for the Care of Crippled and Deformed Children for the Year ending Sept. 30, 1907. Hospital located at West Haverstraw, N. Y.

Text-Book of Otology for Physicians and Students. By Fr. Bezold, M.D., and Fr. Siebenmann, M.D. Translated by J. Holinger, M.D. Illustrated. Chicago: E. H. Colegrove Co. 1908.

A Text-Book of Physiological Chemistry. By Olof Hammarsten. Authorized translation from the author's enlarged and revised sixth German edition by John A. Mandel, Sc.D. Fifth edition. London: Chapman & Hall, Limited. New York: John Wiley & Sons. 1908.

Sixth Annual Report of the Work of the Cancer Laboratory of the New York State Department of Health conducted at the Gratwick Research Laboratory, University of Buffalo, for the year 1904–5.

The Diagnosis and Medical Treatment of Graves' Disease and Hyperthyroidism. By Alfred Stengel, M.D. Reprint.

Address.

OPENING ADDRESS OF THE PRESIDENT BEFORE THE NEW ENGLAND PEDIATRIC SOCIETY.

BY THOMAS MORGAN ROTCH, M.D. BOSTON.

In the city of Richmond, in 1880, following the example of the Ninth International Medical Congress, the American Medical Association introduced into the number of its sections one on Pediatrics. This section was organized under the presidency of Dr. Abraham Jacobi, and I had the honor to act as his secretary. It may, perhaps, be wondered at that, with all the advances which had been made in clinical medicine during the first three quarters of the last century, such a vitally important subject as the clinical medicine of early life should have been practically unheard of and, indeed, neglected. The reason, however, for this blank space in the otherwise well-studied questions relating to disease in later life, was evidently the ignorance of the medical community, and a strange lack of observation regarding evident truths. The physician of the past supposed that an understanding of the normal anatomy, pathology and clinical symptoms of disease in fully developed human beings was sufficient to treat the same diseases in the infant and child. He, therefore chose to study and investigate diseases in adults, because it was the easiest method to reach his goal. The intelligent physicians of the present day recognize that there is great reason for the especial study of early life, and that on this study depends the full understanding of a later and perfected stage of development. They also appreciate that the best results in filling up the gaps in our knowledge is obtained by a concentration of forces; they feel that it is necessary for a number to come together and, by mutual discussion, to arrive at more correct results. These combinations are especially necessary for the isolated physician who otherwise would gradually learn to feel that the cases which he lost should necessarily be lost, and that those that recovered proved that the treatment carried out in such recovery was the best.

It is, however, very necessary also for those who live in large cities not only to meet among themselves and to report the results of their investigations on special subjects, but likewise to confer with the physicians from the smaller towns and country districts who bring with them problems to solve, often of the utmost significance for the advancement of our medical knowledge.

In 1860, Dr. Jacobi failed to form a pediatric section in the New York Academy of Medicine. Examples of the difficulty to bring the medical professon at large to appreciate the necessity of a special study of children were at that time met with all over the world. The Children's Section of the American Medical Association proved to be such a success that it was deemed advisable, in 1889, to form the American Pediatric Society, with Dr. Jacobi as its first president. Since that time, year by year, a greater appreciation has grown, of the value and importance of special study in all that relates to children; and the American Pediatric Society has become not only respected all over the world, but numerous local societies in the various cities have grown and flourished. Especially might be mentioned the Children's Section of the New York Academy of Medicine and, most successful of all, the Pediatric Society of Philadelphia. Numerous journals devoted to pediatrics and books written on pedriatics are now prominent in the field of literature. It would, therefore, seem that the physicians of New England should have their own recognized and authoritative organization to represent, and to give to the world especial knowledge of their studies in early life,—a knowledge which has been so prominent in the study of the later periods of life.

The objects of this society are to bring together as many as possible of our New England physicians. In the case of a number of other societies devoted to children, it has become exceedingly difficult to obtain the rights of membership, and this, indeed, may, in a certain way, accomplish what is called "raising the standard of the membership." There is, however, another side to this question, and I believe that the members of our council who originated the idea of establishing this society judged wisely in their endeavor to have here in New England a society whose members may come to learn as well as to teach. We believe that this New England Pediatric Society has its own especial province in this respect; we believe that more sound pediatric medicine and literature will emanate from this society, simply because it does not shut its doors to any registered physician, no matter what his especial ability or his special school; we believe that, starting on this broad basis, the people at large throughout New England will receive much greater benefit than if a chosen few should come together to debate the finer points of pediatrics. We would, therefore, welcome all those who truly wish to benefit by meeting together three or four times a year, and although always ready to receive the society in Boston, we wish to have it understood that we are glad, at any time, to meet anywhere throughout New England, if a reasonable number of physicians living in a certain locality wish the society to meet occasionally out of Boston. This society should be, in a sense, a clearing house for general information and practical everyday utility, and we would ask you all to take up the work by encouraging your colleagues from all parts of New England to join with us.

To intelligently understand the full development of the adult in health and disease, it seems self-evident that the anatomy and physiology, not only of the final stage of growth, should be studied, but also that the various stages of development from embryo to infant, and infant to child, and child to adult, should successively be dealt with. In the past, however, this has been but little done. On the contrary, the very opposite method has been adopted, the most careful attention being paid to adult anatomy, physiology and clinical investigation, and then deductions made backward from adult to child. This is a retrograde means of acquiring knowledge which has proved eminently unsuccessful. In the Old World, as well as in the New. these false methods have been pursued. What little has, by more rational methods of study, been accomplished in the investigation of infants and children has as large a place in America as in Europe. Here, then, is our opportunity for original research, for we have a branch of medicine which is universally new; we have the same advantages in clinical material, in well equipped laboratories, in especial hospitals, and in the intelligence which is bred and born in our New England climate throughout all of our six New England States, as is to be found anywhere. Let us endeavor to give as much, if not more, to the *savants* of Europe as we receive from them. It is not an exaggeration to state that a large number of sick infants and young children throughout the land are suffering from the vigorous treatment of their over-zealous medical attendants rather than from the disease with which they started. This should be stopped.

I ask you to carefully consider this vital question. I ask you to attack it with iconoclasm and original thought, for I assure you it will repay you by opening up vast fields of intensely interesting brain work. It is not difficult to pick out instance after instance of the truth of what I have just said. The therapeutics of infancy and childhood, as understood by thousands of practitioners in Germany and France, in England and in America, is a wonderful exhibition of what vagaries the human mind, sound on other subjects, can be induced to indulge in.

A total disregard of natural processes, an over-exaggeration of symptoms, which in the adult mean danger and require active treatment, hold too great prominence in the mind of the general practitioner of medicine, since in the child they are but simple and harmless manifestations of an over-stimulated nervous system. Such is the "*ignis fatuus*" so misleading, not only to those who have not especially studied the early stages of life, but also to those who have seen much of it, but with eyes blinded by traditions of the past.

It would seem as though in this age of rapid discovery and quick change and interchange of ideas, — in an age when the precision of our investigations in all branches of research has almost placed the much-abused profession of medicine on a level with the exact sciences, — that we who are endeavoring to place our especial branch of study on firm ground should consider, with unusual care, the opinions which we express to the profession at large and to the laity. What we say in this society should be founded on principles as accurate as the science of the day can make them.

There is one especial subject which I hope may be brought before this society during the course of the coming year, and that is, the endeavor to reform the nomenclature of the pediatric medicine of to-day. Some effort should be made to first determine upon the classification of certain important subjects, such as diseases of the mouth and of the gastro-enteric tract, and then, as the exponent of some accepted classification, we should endeavor, through our influence as a society, to bring the various large teaching centers of our country to join with us in introducing and adopting such classification. Much of the present medical nomenclature is unintelligent and misleading. Many old terms, such as dysentery, phthisis, summer diarrhea, and many others should be dropped as mere relics of past ignorance.

What we need, and what the Pediatric Department of Harvard University has proved to be the best classification for practical purposes, especially in diseases of the gastro-enteric tract, is to place our classification of these diseases on an etiological basis. This we find can be done, and this we believe will enable physicians in different parts of the world to understand which particular disease their colleagues at a distance are talking and writing about. At present, many names are used for one disease, and again, many diseases are at times classified under one name.

This is only one of many subjects which we should investigate and promulgate in the future, and I trust that you will enter into work of this kind with enthusiasm, for I assure you it will not only aid you to appreciate the sick children who come under your care, but will help to place this especial branch of clinical medicine on a more intelligent basis. Let us all work shoulder to shoulder to advance the subject of the clinical medicine of early life which has grown so rapidly in the last twenty-five years, and which we can but feel will continue to have its horizon expand, until it equals that of any of the useful sciences in the world.

I welcome you, gentlemen, to the first regular meeting of the New England Pediatric Society.

Original Articles.

THE SERUM TREATMENT OF EPIDEMIC CEREBROSPINAL MENINGITIS.*

BY CHARLES HUNTER DUNN, M.D., BOSTON.

At the present day it is coming to be generally recognized by the medical world that in the study of the problem of immunity lies the key to further advance in the knowledge of the infectious diseases. To this study we must look for the results which are to be of the greatest future practical benefit to humanity. The complexity of the problem is so much greater than can possibly be realized by one not actually engaged in its study, that the progress of scientific research is necessarily slow, and the practitioner, while eagerly awaiting disclosures which shall be of value to him in his practice, has no time to follow each successive step, each little addition to our knowledge, which the unceasing patient efforts of investigators are reaching. He has difficulty, too, in choosing, from the complex mass of the results of scientific research, those which may be of practical value, and waits, perhaps too long, for proof of such value before contributing his part to the progress of knowledge. I believe the practitioner should play a greater part in this progress. The investigator on his side has neither the time nor the opportunity to prove the practical value of the results following his conclusions. He can only point the way. It is only by the earnest co-operation of the man engaged in the actual treatment of the disease, that valuable resources can be proved or disproved and that theoretical resources can be made practical and brought without excessive loss of time to the aid of the community.

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* Read before the first meeting of the New England Pediatric Society, Feb. 15, 1908.

I am presenting this paper at this time, not because the value of the serum treatment of epidemic cerebrospinal meningitis is proved, but because it is not proved. The number of cases in which it has been used is still too small to permit the drawing of final conclusions as to its value. My object is to enlist the co-operation of as many as possible of those engaged in actual practice, in the testing, confirming, or rejecting of its value, by showing how great, even at this early stage of the testing, is the hope of practical benefit held out by serum therapy in this disease, a disease occurring principally in childhood, and one of the most fatal.

During the last few years, several methods of using specific therapy in epidemic cerebrospinal meningitis have been suggested and applied in practice. In the winter and spring of 1906 the prevalence of this disease in various parts of the country attracted unusual attention, and a number of publications appeared, reporting favorable results from the use of diphtheria antitoxin in meningitis. In this case the practitioner outran the course of scientific research, for the use of diphtheria antitoxin was not based on any proper scientific foundation, no evidence being offered of its containing any antibody specific toward meningitis, but was based either upon pure empiricism or the vague hope that among its antibodies might be one of efficacy against the meningococcus. This treatment was thoroughly tested by Dr. Rotch at the Children's Hospital, with no further result than the showing that the giving of frequently repeated large doses of diphtheria antitoxin to cases of meningitis is harmless. And the final verdict from other localities also is that no specific benefit is to be derived from its use.

In 1907, great interest had been awakened by the ingenious theory of the opsonin as brought forward by Wright, which attracted especial attention to the aspect of a primary artificial immunity and to the possibility of treating infections by means of vaccines. During this year Dr. Rotch treated his cases of meningitis with vaccines prepared from the meningococcus, given according to the indications shown by the determination of the opsonic index, as suggested by Wright. While the results showed some evidence of favorable action, they were totally inconclusive, too inconclusive to afford much basis for hope that this would be the solution of the practical problem.

In the meanwhile investigators have been working upon the production of an antiserum specific toward the meningococcus. The recent work of Flexner, at the Rockefeller Institute for Medical Research, has brought such an antiserum into the domain of practical realization, and it now remains to confirm the value of this antiserum in actual practice.

The Flexner serum is prepared from horses inoculated with the meningococcus in a similar way to diphtheria antitoxin, and, like diphtheria antitoxin, contains specific immune bodies. It differs from diphtheria antitoxin in that it does not, as in diphtheria, neutralize the poison formed by the specific organism, but hastens disintegration of specific organism, and prepares it for phagocytosis. It is bactericidal rather than antitoxic in its nature, wherefore it should not be called meningitis antitoxin, but meningitis antiserum.

The antiserum was proved by Flexner's experiments to have protective power in laboratory animals, monkeys being used. During the past year it has been tested upon human beings in several series of cases of epidemic cerebrospinal meningitis. The report of these cases has just been published by Flexner and Jobling in the *Journal of Experimental Medicine* in January, 1908. The results reported are so favorable that they hold out the greatest possible hope for practical benefit, though the number of cases is still too few for the drawing of final conclusions.

The method of using the serum recommended by Flexner is to inject it directly into the spinal canal. This is done by means of lumbar puncture and just as much fluid as will run freely is allowed to escape and then a syringe filled with the antiserum is connected with the needle through which the fluid has escaped and the serum is injected through this same needle The questions of the dose and the frequency of the injections, are, of course, still to be determined. Flexner suggests 30 ccm. as the maximum dose, to be repeated daily for three or four days, and that at least as much cerebrospinal fluid as this should be first withdrawn, in order to avoid the risk of an undue increase of cerebral pressure.

Since last November, I have used Flexner's antiserum in 15 cases of epidemic cerebrospinal meningitis, in all but one of which the diagnosis was confirmed by the finding of the diplococcus intracellularis in the cerebrospinal fluid. Of these cases, 8 have resulted in complete recovery, 2 have resulted in death and 5 are still pending. The 8 cases which recovered are all perfectly well, having been left with no sequelæ of any kind, an unusually favorable result in this disease. The 2 fatal cases were both chronic cases, in which the disease had run considerable time before coming under my observation. Of the 5 cases which are still pending, 4 are now convalescent and will undoubtedly recover; the other is a chronic case, in which the outcome is dubious.

Every one of the 8 cases to which I have given the serum in the first week of the disease has resulted in complete recovery, and of the pending cases, two in which the antiserum was given early, are convalescent.

Case.	Day of disease.	No. of doses.	Amount of dose,	Total serum given.	Immediate effect.	Duration of fever.	Duration of symptoms.	Result.
1	2	6	5–30 ccm.	105 ccm.	Temporary fall in temperature.	23 days. 99–105	20 days	Complete recovery
2	8	8	15–30 ccm.	200 ccm.	Temporary fall in temperature.	16 days 99–103	16 days	Complete recovery
3	14	2	15 ccm.	30 ccm.	None.			Death
4	3	4	30 ccm.	120 ccm.	Marked relief of symptoms.	6 days 99–103.6	3 days	Complete recovery
5	21	8	25–40 ccm.	325 ccm.	Permanent fall in temperature.	1 day 101–102		Death
6	2	3	30 ccm.	90 ccm.	Critical fall in temperature to normal. Relief of symptoms.	5 days 98–101	2 days	Complete recovery
7	1	1	30 ccm.	30 ccm.	Permanent fall in temperature to 99.	1 day 98.4–99.6	4 days	Complete recovery
8	4	4	15–30 ccm.	100 ccm.	Marked relief of symptoms.	5 days 98–100	1 day	Complete recovery
9	1	2	30 ccm.	60 ccm.	Fall in temperature to normal. Marked relief of severe symptoms.	12 days. 99–100	2 days.	Complete recovery
10	2	1	30 ccm.	30 ccm.	Fall in temperature to normal. Complete relief of symptoms.	12 hours	1 day	Complete recovery
11	21	4	45 ccm.	180 ccm.	Slight fall in temperature. No relief of symptoms.	2 days		Unfavorable chronic case
12	5 (?)	3	15–30 ccm.	75 ccm.	Fall in temperature.	15 days 98–100	2 days	Convalescent.
13	8	2	30 ccm.	60 ccm.	None.	4 days 99–102	4 days	Convalescent.
14	5	4	30 ccm.	120 ccm.	Fall in temperature. Marked relief of symptoms.	6 days 99–103	6 days	Convalescent.
15	5	4	25–45 ccm.	125 ccm.	Fall in temperature. Marked relief of symptoms.	——— 99–101	5 days	Convalescent. Deaf.

The two fatal cases were in children who had had the disease for several weeks and were already in the chronic stage when first seen. Both were unconscious, with normal temperatures, although in both there were a few organisms to be found in the cerebrospinal fluid.

The other unfavorable case was an adult in which the disease had existed for three weeks. There was some fever and the organisms were still present in the fluid, which was obtained in unusually large quantity. Forty-five cubic centimeters of antiserum were given on Jan. 23, 24, 28 and Feb. 3. The temperature came down to normal after the first dose and has been normal since but there has been no improvement in the general condition. No organisms were found in the fluid after the first puncture. I believe the continuance of symptoms in this case was due to the organic lesions in the brain, possibly an internal hydrocephalus resulting from the infectious process, which itself has ceased, leaving extensive damage behind. The patient is still alive, but is daily growing weaker.

Two cases, which ended in complete recovery, showed no immediate effect from the giving of the serum. In both a temporary fall of temperature followed the giving of the first dose, but both ran a prolonged course of fever, with gradual but steady improvement of the symptoms. One of these was an early case, and was the only early case which did not show a marked immediate improvement after the giving of the antiserum. The doses given early in this case were exceptionally small, 5 ccm. to 15 ccm., as very little fluid could be obtained by lumbar puncture and the failure of immediate improvement may be due to this fact.

Two cases, neither very early, showed no immediate effect after receiving the antiserum, but recovery was rapid, both as to the reaching of a permanent normal temperature and the disappearance of symptoms.

Eight cases, in which the serum was given early in the disease, showed a very marked, even startling, improvement immediately following the giving of the serum. In four of these cases there was an immediate and permanent fall of temperature, exactly resembling the crisis of a pneumonia, which was accompanied by a complete and permanent return of the mental condition to normal, complete and permanent disappearance of headache, and followed by rapid disappearance of rigidity of the neck and all other signs. Two of these cases, in twelve hours after the first dose, returned from a condition of complete unconsciousness to one of absolutely normal mental condition. In the other four cases, the temperature fell to the normal by a fairly rapid lysis, accompanied by rapid improvement in the mental condition and disappearance of symptoms and signs. In two of these, there was a rapid change from a condition of active, almost violent, delirium to one of normal mentality.

It is difficult to convey a full impression of the remarkable behavior of these cases by mere statistics. Actual contact with them impressed upon me the contrast between their course and the course of similar cases of cerebrospinal meningitis untreated by the Flexner antiserum.

This series of cases is too small to afford a statistical basis for drawing any definite conclusions as to the final value of the Flexner antiserum in cerebrospinal meningitis. Much remains to be proven, and it is possible that my series included cases of exceptional character. I believe, however, that I am justified in urging a widespread trial of this treatment.

In the first place, I think we can conclude that the use of the antiserum does no harm. I understand from Dr. Flexner that I have used it in larger doses than any of his other investigators. In no case was there any sign of bad effect, and in two cases I injected it into the spinal canal without the previous withdrawal of fluid without any sign of bad result from increased intradural pressure. I would not recommend the use of this procedure without great caution.

While the percentage of recoveries in cerebrospinal meningitis is very variable, in my experience of this disease recovery almost invariably occurs after a more or less prolonged period of illness, often running into actual chronicity. A very large proportion of cases which do not die at an early stage pass into a chronic stage, the final outcome of which is doubtful. I have never seen nor even heard of a case proved by lumbar puncture to be true epidemic meningitis, which aborted, or terminated by sudden crisis at an early stage. The recovery by crisis and the rapid improvement followed by recovery immediately following the giving of the antiserum, in so large a proportion of this series of cases, is, I believe, strong evidence of the favorable specific effect of this treatment.

The completeness of the recovery of the cases in this series is another very important feature. It is well known how frequently permanent sequelæ occur in those cases of epidemic cerebrospinal meningitis which survive. Permanent deafness, blindness, paralysis, mental impairment and idiocy are common enough to make the prognosis dubious in all cases which survive the initial storm of the disease. In the 13 cases in this series now alive, 8 are now and have been for many weeks absolutely well, and 3 are fully convalescent without evidence of any unfavorable sequelæ. In one case now convalescent, there is marked deafness, the other being the chronic case in which there is probably hydrocephalus. I believe this number of complete recoveries is significantly large.

The most important point suggested by the results of the use of the Flexner serum, in this series of cases of epidemic cerebrospinal meningitis, is the advantage to be gained by giving it early in the course of the disease. Not only did all the cases in which it was given early recover, but all those cases in which its use was followed by a marked immediate improvement were cases in which it was given within the first few days of the disease; and in two of these earlier cases, the disease was apparently completely aborted by one dose of the antiserum. I believe that the importance of early diagnosis and treatment cannot be overestimated.

I think the results of the Flexner antiserum in these cases are sufficiently good to afford a very strong basis of hope that this treatment will prove of great value in the treatment of cerebrospinal meningitis, a value commensurate with that of antitoxin in diphtheria. I believe, even though it requires further testing, the hope of good result is so strong that the antiserum should be used in every case of this very dangerous and fatal disease and as early as possible. In every case of suspected meningitis or even of possible meningitis, lumbar puncture should be made as soon as the disease is suspected and the physician should be prepared to give the antiserum at once. If the fluid obtained by the lumbar puncture is notably cloudy, the antiserum should be injected at once through the same needle, without incurring the loss of time caused by waiting for the result of the bacteriological examination of the fluid. The great majority of all cases with distinctly cloudy fluid, especially in children, are caused by the meningococcus; and in those rare cases in which cloudy fluid is found in tubercular meningitis, or in occasional cases of penumococcus meningitis, no harm will be done. If, after one dose, the temperature falls to the normal and the symptoms show rapid and progressive improvement no further dose of antiserum may be necessary, but the physician should be ready at any time to repeat the treatment, if the temperature begins to rise or if the symptoms show a tendency to recur. Relapses do occur and should be treated exactly as the original attack.

If the temperature does not come down to the normal, or if the symptoms do not show progressive improvement, the treatment by lumbar puncture and [the injection of antiserum should be repeated daily for three days, making four doses in all. After this time further injections may be made, as indicated by increase at any time of fever or symptoms.

In those rare cases in which no fluid can be withdrawn by lumbar puncture, it is questionable how safe it is to inject antiserum into the canal. I have done it without bad result. It would be worth while in these cases to try subcutaneous injections.

Late cases afford a prospect of benefit, if there is still fever and evidences of an active infectious process or if there are still organisms to be found in the cerebrospinal fluid. The effect is less immediately noticeable and recovery much more prolonged.

Cases which have passed into the chronic stage without fever and with no organisms to be found in the fluid are not influenced by the antiserum.

Case I. Charles Clausen, two years ten months. Admitted Nov. 6, 1907.

F. H. — Negative.

P. H. — Osteomyelitis at eighteen months.

P. I. — On Nov. 5, one day previously, patient began to vomit and vomited everything taken. Since, has been sleepy and feverish all the time.

P. E. — Well developed and nourished. Child is unconscious; eyes are closed; restless and tossing about at times; slight rigidity of neck; bending head forward causes cry and restlessness. Pupils equal and react normally. Strabismus at times; knee jerks normal; no Kernig. Babinski's sign doubtful. Temperature, 100° to 103°. Lumbar puncture, 25 ccm. turbid fluid withdrawn. Examination of fluid, — many polynuclear leucocytes; many Gram-decolorizing diplococci, both within and without the cells. Thirty cubic centimeters antiserum given.

Nov. 7. Restless night; fall in temperature this morning. Stiffness of neck more marked; Kernig's sign present. White count, 49,200. Lumbar puncture, 5 ccm. turbid fluid obtained. Examination same. Culture positive. Ten cubic centimeters antiserum given.

Nov. 8. Child is now conscious and much improved; not restless. Kernig and stiff neck still present. Pupils unequal at times. Lumbar puncture, no fluid obtained. Five cubic centimeters antiserum given.

Nov. 9. Condition about the same. Vomits at times. Lumbar puncture, no fluid obtained. Ten cubic centimeters antiserum given.

Nov. 10–25. Temperature has been elevated. Kernig and rigidity have persisted; but general condition has been good and no nervous symptoms; no vomiting or headache.

Nov. 25. Lumbar puncture, 50 ccm. fluid obtained. Very slightly cloudy. Examination: Centrifugalized fluid showed polynuclear leucocytes and few Gram-decolorizing diplococci, both within and without the cells. Culture positive for meningococcus. Thirty cubic centimeters antiserum given.

Nov. 26. Tenderness and rigidity of neck have disappeared. Lumbar puncture, 20 ccm. Very slightly cloudy fluid obtained. Examination showed polynuclear leucocytes and few Gram-decolorizing diplococci, both extra- and intra-cellular. Culture: no growth. Thirty cubic centimeters antiserum given.

Nov. 27. Temperature coming down. Lumbar puncture, 50 ccm. fluid obtained. Centrifugalized fluid showed a few leucocytes, but no micro-organisms. Culture: no growth.

Nov. 28. Lumbar puncture, 20 ccm. clear fluid obtained. Examination as on Nov. 27.

Nov. 29. Temperature reached the normal. Child is quiet; shows no symptoms except persistent Kernig's sign.

Nov. 30 to Dec. 4. No symptoms except occasional attack of vomiting. Child perfectly normal mentally, playing with playthings; Kernig has disappeared.

Dec. 4–31. Temperature normal except for two brief rises, which were unaccompanied by depression or symptoms of any kind. Nothing found to account for them. Child bright; talks and plays.

Jan. 1, 1907. Patient discharged to Convalescent Home.

Case II. Bessie Koplin, three and one-half years. Admitted Nov. 13, 1904.

F. H. — Negative.

P. H. — Measles at one and a half years.

P. I. — Seven days ago, on Nov. 6, the child had a pain in the stomach and went to bed feeling dull and appearing quite sick. On the same day had several convulsions, vomiting and fever. The fever has persisted. The child has been in bed; is very dull, but recognizes parents.

P. E. — Poorly developed and nourished. Child lies with eyes closed and head markedly retracted. When disturbed, it cries and resists with arms. Head retracted; neck rigid. Attempt to move the head seems to cause great pain. Knees held drawn up. Pupils slightly unequal at times; react to light. Knee jerks lively. Double Kernig's sign present. Babinski's sign absent. Temperature 103°. White count, 26,000.

Nov. 14. Condition the same. Temperature 104°. Lumbar puncture, 50 ccm. slightly turbid fluid obtained. Examination of fluid: sediment consists chiefly of polynuclear leucocytes; few Gram-decolorizing diplococci, both intra- and extra-cellular. Culture positive for meningococci. Thirty cubic centimeters antiserum given.

Nov. 15. Fall in temperature. Condition otherwise the same. Lumbar puncture, 50 ccm. slightly turbid fluid obtained. Examination of fluid, as on Nov. 14. Culture positive. Thirty cubic centimeters antiserum given.

Nov. 16. Temperature 101°. Condition unchanged. Lumbar puncture, 50 ccm. of slightly cloudy fluid obtained. Examination of fluid showed fewer leucocytes; very few diplococci and none found outside the cells. Culture negative for meningococci. Thirty cubic centimeters antiserum given.

Nov. 17. Child seems somewhat brighter. Notices surroundings, but lies quiet. Kernig's sign present. Retraction of head and rigidity of neck persist. Lumbar puncture, 15 ccm. of very slightly cloudy fluid obtained. Examination of fluid: few leucocytes; no diplococci found. Culture negative for meningococci. Fifteen cubic centimeters antiserum given.

Nov. 18–24. Temperature 100° to 102°. General condition good. Child quiet; conscious; restless when disturbed. Retraction of head has gradually disappeared. Rigidity of neck and Kernig's sign persist.

Nov. 25. Lumbar puncture. No fluid obtained. Fifteen cubic centimeters antiserum given.

Nov. 26. Lumbar puncture. No fluid obtained. Twenty cubic centimeters antiserum given.

Nov. 27. Lumbar puncture, 50 ccm. clear fluid obtained. Centrifugalized sediment showed occasional polynuclear leucocytes and lymphocytes in about equal proportions. No micro-organisms. Culture: no growth. Thirty cubic centimeters antiserum given.

Nov. 28. Lumbar puncture, 30 ccm. fluid obtained. Examination of fluid as on Nov. 27. Thirty cubic centimeters antiserum given.

Nov. 29 to Dec. 1. Temperature fell to the normal. No change in general condition. Child has no symptoms except slight rigidity of neck and double Kernig's sign.

Dec. 2. Temperature went up again, without any attendant symptoms.

Dec. 3–21. Constant irregular temperature occurs, varying between occasional remissions to the normal and 105°. Rigidity of neck disappeared about Dec. 4. Kernig's sign persists. During this time the child has had a constant succession of furuncles.

Dec. 21–28. No meningeal symptoms except the Kernig's sign, which disappeared about Dec. 27. Temperature normal. The child lies quietly, smiles occasionally, and talks volubly in Jewish tongue to parents.

Jan. 4. Discharged well to Convalescent Home.

Case III. Jeffrey Morrison, sixteen months. Admitted Nov. 16, 1907.

F. H. — Negative.

P. H. — Negative.

P. I. — On Nov. 6, fever was present and child refused food; constipation; vomiting after feeding since onset. History unsatisfactory.

P. E. — Child very dull. Seems quite ill, but no definite signs found. No rigidity of neck, tenderness, nor retraction of head. Reflexes normal. No Kernig.

Nov. 18. Photophobia has become marked. This morning the left pupil is dilated and does not react to light. Vomiting has persisted, the child having been supported on nutrient enemata.

This case was *diagnosed* as *probable* TUBERCULAR MENINGITIS and was not reported to me. I happened to see it on Nov. 20, and suggested lumbar puncture.

Nov. 20. Lumbar puncture, 50 ccm. slightly cloudy fluid obtained. Fibrinous clot found on standing. The cells were polynuclear and mononuclear in about equal proportions. A few extra-cellular Gram-decolorizing diplococci were seen, morphologically resembling the meningococcus. Culture gave no growth. Thirty cubic centimeters antiserum given.

Nov. 21. Child has gradually become completely unconscious, with closed eyes and unequal pupils. No other signs. Lumbar puncture, 20 ccm. fluid obtained. Examination of fluid as on Nov. 20. Thirty cubic centimeters antiserum given.

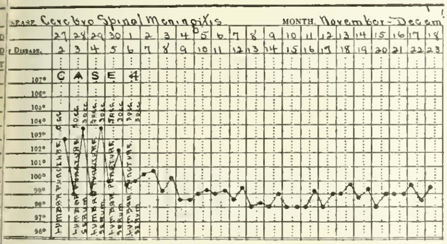
Nov. 22. Died.

CASE IV. Joseph Hazelton, six and one-half years. Admitted Nov. 27, 1907.

F. H. — Negative.

P. H. — Negative.

P. I. — Yesterday, Nov. 26, in the afternoon, the child came in from his play with headache. Ate his supper, but vomited right afterwards. Had a comfortable night and seemed fairly well this morning; he was about the house until 1 P.M., when he suddenly became unconscious, and could not be aroused. Was brought at once to the hospital.



P. E. — Child unconscious; face flushed; head retracted; neck rigid; eyes closed, opening at times. Pupils are dilated; react to light. Signs of pain on extending lower extremities. Knee jerks lively. Double Kernig's sign present. Babinski's sign absent. Temperature 103°. Lumbar puncture, 15 ccm. very turbid fluid obtained. Examination of fluid showed sediment to consist chiefly of polynuclear leucocytes; many Gram-decolorizing diplococci, both extra- and intra-cellular. The sediment presents very much the same appearance as that from a fresh case of gonorrhea. Culture positive for the meningococcus. No antiserum given, as supply had not arrived.

Nov. 28. Temperature came down to normal during the night, but in the afternoon it went up to 104°. No change in signs. Lumbar puncture, 50 ccm. turbid fluid obtained. Examination of fluid as on Nov. 27. Thirty cubic centimeters antiserum given.

Nov. 29. Temperature again fell to normal during the night. Child returned completely to consciousness, complaining only of headache. Lumbar puncture, 30 ccm. fluid obtained; much less turbid. Examination as on Nov. 28. Culture positive for meningococcus. Thirty cubic centimeters antiserum given.

Nov. 30. General condition continues to improve. Moderate retraction of head and stiffness of neck. Pupils moderately dilated. Boy says his headache is almost gone. Double Kernig persists. Lumbar puncture, 30 ccm. fluid obtained. Examination of fluid showed fewer leucocytes and very few diplococci. None extra-cellular. Culture negative for meningococcus. Thirty cubic centimeters antiserum given.

Dec. 1. Very slight headache; slight retraction of head and stiffness of neck. Child is bright and takes an active interest in his surroundings. Temperature, 100°. Lumbar puncture, 30 ccm. fluid obtained; very slightly cloudy; no diplococci found. Culture gave no growth. Thirty cubic centimeters antiserum given.

Dec. 2–4. Temperature, 99° to 100°. Rigidity, retraction and Kernig's sign have all disappeared. No headache. Child seems perfectly bright and well.

Dec. 4–18. Temperature normal. There were no further rise and no further symptoms. Convalescence was very rapid, it being difficult to keep the boy quiet.

Dec. 18. Discharged well to Convalescent Home.

Jan. 1. Boy is perfectly well and very active.

CASE V. Emily Smith, one year. Admitted Dec. 10, 1907.

F. H. — Negative.

P. H. — Nine weeks ago had bronchitis followed by pneumonia, lasting four weeks. Cough has persisted.

P. I. — For three weeks the child has been vomiting two or three times a day and has wanted to sleep most of the time. Has taken food well. History very unsatisfactory.

P. E. — Emaciated; eyes sunken, with dusky rings under them. Head retracted; neck rigid; child is unconscious. Pupils dilated, equal, react to light. Anterior fontanelle is bulging. No Kernig's sign. Reflexes normal. Temperature, 102°. Lumbar puncture, 30 ccm. of turbid fluid with a thick fibrinous clot. Examination showed numerous polynuclear leucocytes and frequent Gram-decolorizing diplococci, both intra- and extra-cellular. Culture gave no growth. Twenty-five cubic centimeters antiserum given.

Dec. 11. After the giving of the serum, the temperature fell to normal.

Dec. 12 to Jan. 1. The temperature has been normal; the general condition has grown steadily worse. The child has gradually fallen into the condition of post-meningeal idiocy frequently seen. Vomiting has been constant and nutrient enemata have not been well retained. The record of lumbar punctures and antiserum is as follows:

	Fluid obtained.	Antiserum given.	Diplococci.
Dec. 10,	30 ccm.	25 ccm.	+
,, 11,	40 ,,	30 ,,	+
,, 12,	50 ,,	30 ,,	0
,, 13,	30 ,,	30 ,,	0
,, 18,	70 ,,	45 ,,	0
,, 19,	60 ,,	45 ,,	0
,, 20,	60 ,,	45 ,,	0
,, 21,	30 ,,	45 ,,	0

Jan. 5. Died.

CASE VI. Albert Munroe, six years. Seen in consultation with Dr. F. W. Rice, Dec. 17, 1907.

F. H. — Negative.

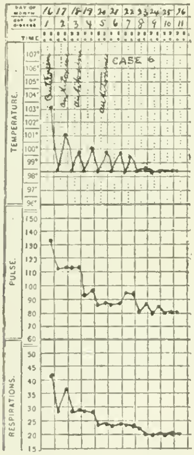
P. H. — On Dec. 10, the little niece of the maid who took care of the patient had cerebrospinal meningitis and died on the fourth day. On Dec. 14, the maid was taken with the same disease. Albert Munroe had slept with this maid, but not after Dec.

10. He was, however, in more or less intimate contact with her up to the day she was taken ill.

Raymond Abbott, a playmate of Albert's living across the street, was taken with cerebrospinal meningitis on Dec. 21.

P. I. — The first symptoms began on Dec. 16. The boy was well and went to school in the morning, but in the afternoon had a chill. After the chill the temperature was 103° axilla and the boy complained of severe headache and was very apathetic. He vomited everything given. During the night the temperature fell and was normal at 8 A.M. This fall in temperature was accompanied by signs of collapse. The boy became pulseless, with cyanosis and cold extremities. He reacted to stimulation. After the collapse the patient was seen in consultation by Dr. John Lovett Morse, who advised the use of antiserum. I saw him at 3.30 P.M. He was still retaining nothing by mouth and was being given nutrient enemata.

P. E. — Well developed and nourished. Face pale; mucous membranes and finger tips slightly cyanotic. Expression dull and suggests pain. Mental condition very apathetic. Noticeable tenderness and rigidity at the back of the neck. Pupils equal and react to light; not dilated. Knee jerks somewhat exaggerated. Babinski's sign present on the right. Otherwise, nothing abnormal. Temperature, 101° axilla. Lumbar puncture was done and about 90 ccm. of fluid withdrawn, not under pressure. The fluid was very cloudy, a thick layer of pus settling on standing. Examination of fluid: Numerous polynuclear leucocytes; frequent Gram-negative biscuit-shaped diplococci, both within and without the leucocytes. Culture gave a positive culture of a Gram-decolorizing diplococcus. Thirty cubic centimeters of meningococcus antiserum were injected into the spinal canal.



Dec. 18. Within a few hours after the injection of the antiserum, the boy's general condition began to improve. Vomiting ceased at once. The temperature fell to the normal. When seen, at 3.30 P.M., the change in the general condition was very marked. Temperature, 99°; pulse, 110 and of good quality; respiration, 28. Color good. Pallor and cyanosis have disappeared. Mental condition much brighter. Complains only of slight headache. Tenderness and rigidity of the neck have disappeared. Kernig present, but not marked. Plantar reflexes normal. Lumbar puncture, about 20 ccm. of cloudy fluid obtained. Fluid was slightly less cloudy than on the previous day. Examination of the fluid showed fewer organisms. Culture positive. Twenty-five cubic centimeters antiserum injected into the canal.

Dec. 19. Improvement has been steady. There is a slight afternoon rise of temperature, it being normal in the morning. Boy was found playing with a Teddy bear. No headache; no Kernig; knee jerks and plantar reflexes normal. No lumbar puncture.

Dec. 20. Improvement continues. Boy seems thoroughly convalescent though there is still a slight rise of afternoon temperature. Lumbar puncture, 100 ccm. of clear fluid obtained. On examination a few leucocytes were found, but no micro-organisms. Culture sterile. Thirty cubic centimeters of antiserum injected into canal.

Dec. 22. No symptoms. Temperature, 99° at 4 P.M.

Dec. 26. No rise of temperature for 2 days. Boy seems perfectly well. Discharged well.

Case VII. Raymond Abbott, seven years. Seen in consultation with Dr. F. W. Rice, Dec. 22, 1907.

F. H. — Negative.

P. H. — This boy was the chum of Albert Munroe (see case 6) who came down with cerebrospinal meningitis on Dec. 16. He played with him until that time.

P. I. — This morning, about 3 A.M., the boy became very feverish, restless and complained of headache. He vomited several times during the morning. Headache is referred to the back of the head. Temperature, 102°. Pulse, 100. Respiration, 28.

P. E. — Well developed, but thin. Good color. Expression dull and apathetic and boy is conscious. Slight tenderness and rigidity of the back of the neck. No retraction. Slight Kernig. Knee jerks lively. Plantar reflexes normal. An eruption on the chest and abdomen, somewhat resembling typhoid rose spots, but darker in color, although not petechial. Lumbar puncture, about 90 ccm. of fluid obtained. Fluid runs almost perfectly clear, a very faint cloud being detected. No clot found on standing. Examination showed very few leucocytes; a few red blood corpuscles and frequent Gram-negative biscuit-shaped diplococci, none being found in cells. Culture was positive for the meningococcus. Thirty cubic centimeters antiserum injected into the spinal canal.

Dec. 23. Temperature fell at once to normal after the injection. No more vomiting. Boy complains only of slight headache. Slight retraction of head. Tenderness and rigidity slightly more marked. Kernig's sign more marked. Knee jerks somewhat exaggerated. Plantar reflexes normal. No antiserum given.

Dec. 24. Dr. Rice telephones that boy is about the same as on the preceding day.

Dec. 25. In the afternoon Dr. Rice telephones that the patient is not so well. Had two or three attacks of vomiting during the day. He complains slightly of headache; seems more listless and the Kernig and rigidity of the neck have increased slightly. No rise of temperature with these symptoms.

Dec. 26. Seen at Brighton. Boy is better. Headache only on sitting up. Still somewhat listless as if tired. Vomiting has ceased. No tenderness or rigidity of neck and no Kernig. Reflexes normal. The symptoms of the previous day were probably due to the over-excitement of Christmas.

Dec. 27. Dr. Rice telephones that the boy is much better, with normal temperature. Much brighter.

Jan. 1. Discharged well.

Case VIII. Adelaide Walker, ten years. Negress. Admitted Dec. 27, 1907.

P. H. — Well until present illness.

P. I. — On the night of Dec. 23, child came home bent over and complaining of abdominal pain. During the night she had a chill, followed by high fever and headache. Vomited the next day. Has been very feverish and restless, sleeping only a few minutes at a time, crying with pain in the back of the head.

P. E. — Well developed and nourished. Conscious; lies with eyes closed; expression of pain and constant cry. Head retracted; neck rigid, the slightest movement causing pain. Knees drawn up. Pupils equal, moderately dilated, react to light. Knee jerks lively. Double Kernig's sign present. Temperature, 100°. Lumbar puncture on admission gave 20 ccm. cloudy fluid. Examination of fluid showed sediment to consist chiefly of polynuclear leucocytes; few diplococci, Gram-decolorizing; intra- and extra-cellular. Culture positive for meningococcus. Thirty cubic centimeters antiserum given.

Dec. 28. Child is much better and is brighter in every way, showing complete change in general condition. Notices surroundings. Complains only occasionally of headache. Head is not retracted so much; neck less rigid. Lumbar puncture, 30 ccm. very slightly cloudy fluid. Few leucocytes; no micro-organisms found. Culture, no growth. Thirty cubic centimeters antiserum given.

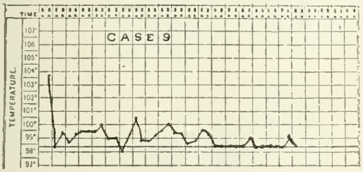
Dec. 29. Improvement continues. Child got hold of a storybook this morning and read a story through. Temperature, 99° to 100°. No headache. Lumbar puncture, 15 ccm. clear fluid obtained. Few leucocytes; no micro-organisms; culture, no growth. Fifteen cubic centimeters antiserum given.

Dec. 30. Patient sang a song this morning and talks and plays a good deal. No headache. Slight stiffness of neck. No retraction; Kernig persists. Temperature normal.

Jan. 1. Temperature up to 100°. Patient seems perfectly well. Kernig and all signs have disappeared. Urine shows signs of pyelitis. Rapid, uneventful convalescence.

Case IX. W. W. Weeden, Jr., six years. Seen with Dr. Walker, of Providence, at 2 a.m., Jan. 6, 1908.

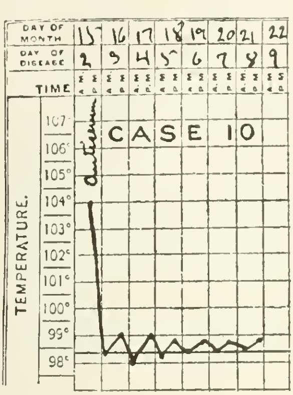
Onset at 2 a.m., Jan. 5, with fever and slight headache. Was better during the morning, but in the afternoon became delirious, with high fever and convulsive twitchings. In the evening a complete collapse occurred, the child becoming unconscious, with subnormal temperature, cold extremities and no pulse at the wrist. He reacted a little to stimulation. When I saw him at 2 a.m., the temperature was 106°, the child was unconscious with no radial pulse and widely dilated pupils reacting very little to light. There was slight retraction and rigidity of the neck, normal plantar reflexes, double Kernig, no knee jerks, and a fine petechial rash on the chest and back. Lumbar puncture gave 50 ccm. very turbid fluid. Examination of the fluid showed frequent Gram-negative diplococci, mainly intracellular. Culture was positive for the meningococcus, but they died out on the first transplantation. Thirty cubic centimeters antiserum given.



At 9 a.m., the patient was conscious and rational, with normal temperature and no headache. At 12 m., the boy was sleepy but rational with good pulse, normal temperature and no symptoms except the Kernig, retraction and rigidity. Lumbar puncture gave 30 ccm. of fluid. Examination of the fluid as before. Thirty cubic centimeters antiserum given. From this time on there were no symptoms except slight fever, about 100°, which persisted about 10 days. Convalescence was rapid, the boy being now perfectly well.

Case X. Abraham Rush, four years. Seen Jan. 15, 1908.

Onset yesterday at noon, with sudden fever, headache, vomiting and delirium. When seen at 3 p.m., patient was semi-conscious, responding slightly when spoken to. Neck very rigid and head drawn far back. Pupils dilated, reacting to light. All the limbs were very rigid. The knee jerks were absent and the plantar reflexes were normal. Temperature was 104°.



Lumbar puncture gave 25 ccm. of cloudy fluid, examination of which showed many Gram-negative diplococci, both intra- and extra-cellular. I could not get a growth in culture. Thirty cubic centimeters antiserum given.

Jan. 16. The temperature began to fall soon after the giving of the antiserum and became normal this morning. The child was conscious and rational and did not complain of headache. Rigidity and retraction of the neck were still present, but the rigidity of the limbs had disappeared. I intended to give more antiserum when the temperature should begin to go up again, but from this time on the temperature never rose above 99° and there were no more symptoms. The rigidity and retraction disappeared in the course of a few days and the child made a rapid recovery.

Case XI. The complete record of this case has not yet been received. Patient was an adult, who had been sick for three weeks when seen on Jan. 23, 1908.

At that time patient was semi-conscious with muttering delirium and picking at the bedclothes. Pupils were dilated and somewhat irregular. There was marked rigidity and tenderness of the neck and some retraction. Kernig's sign present on both sides. Knee jerks not obtained. Plantar reflexes normal. Temperature was about 101°. Lumbar puncture gave 90 ccm. of turbid fluid. Few Gram-negative diplococci were found, both intra- and extra-cellular. Culture gave no growth. Forty-five cubic centimeters antiserum given.

Jan. 24. There was no notable change in patient's condition except a somewhat lower temperature. Lumbar puncture gave 60 ccm. of slightly turbid fluid. Few organisms were found in the fluid only in the cells. Culture gave no growth. Forty-five cubic centimeters antiserum given.

Jan. 28. Temperature has come down to normal, but there is no notable improvement in the patient's general condition. Lumbar puncture gave about 60 ccm. very slightly turbid fluid, in which no organisms were found. Forty-five cubic centimeters antiserum given.

Feb. 3. Temperature has remained normal, but the patient's condition has remained unchanged. I suspect a condition of internal hydrocephalus has developed. Lumbar puncture gave 40 ccm. of clear fluid. Forty-five cubic centimeters antiserum given. Since this time there has been no further change in patient's condition.

CASE XII. Esther Dickerman, age fourteen weeks. Admitted to the Infants' Hospital, Jan. 27, 1908.

The history was unsatisfactory, but the baby is said to have been sick one week. On admission the temperature was 102°, the sensorium was notably clouded, the fontanelle was bulging and tense, there were slight retraction and marked rigidity of the neck and Kernig's sign was present on both sides. Lumbar puncture gave only one or two fibrinous clots, examination of which showed Gram-negative diplococci, both intra- and extra-cellular. No antiserum was injected into the spinal canal, but 15 ccm. were given subcutaneously.

Jan. 28. There was no notable change in the patient's condition. Lumbar puncture gave no fluid. Fifteen cubic centimeters antiserum were injected into the spinal canal.

Jan. 29. The child seemed generally better and the temperature was somewhat lower. Lumbar puncture gave 15 ccm. turbid fluid. Gram-negative diplococci were found, both intra- and extra-cellular. Fifteen cubic centimeters antiserum given.

Feb. 2. The temperature has been normal until to-day, when there is a slight rise. Lumbar puncture gave 10 ccm. of slightly cloudy fluid which showed very rare intracellular diplococci. Culture gave no growth. Fifteen cubic centimeters antiserum given. Since Feb. 2, the temperature has been normal and there have been no symptoms.

CASE XIII. Adult, twenty-nine years old. Seen at the Newburyport Hospital, Feb. 6, 1908.

P. I. — One week ago patient began to have very severe headache and fever, which have persisted. Has never been unconscious and there have been no other symptoms. Well developed and nourished. Mind perfectly clear. Marked tenderness and rigidity of the neck with some retraction. Pupils normal. Kernig's sign marked on both sides. Knee jerks not obtained. Plantar reflexes normal. Temperature, 102°. Lumbar puncture was made in several different places. The needle apparently entered the canal, but no fluid was obtained. Thirty cubic centimeters antiserum were injected into the canal.

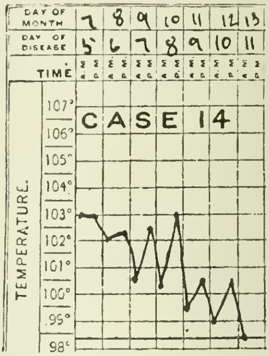
Feb. 7. There has been no change in condition. Patient was etherized and repeated attempts were made to obtain fluid with lumbar puncture, without success. Thirty cubic centimeters antiserum injected into the canal without unfavorable symptoms.

Feb. 8. Temperature has fallen to 99° and headache is less. There has been no further rise of temperature and the symptoms have gradually lessened and the patient is now reported convalescing.

CASE XIV. Girl, nine years old. Seen in consultation with Dr. Alexander at the New England Hospital for Women and Children, Feb. 7, 1908.

P. I. — Four days ago patient entered the hospital with fever and abdominal pain and was operated on for appendicitis. After recovery from ether, patient was noted to be feverish and still drowsy. To-day the patient was noted to have retraction and rigidity of the neck and lumbar puncture was made and Gram-negative diplococci were found in the cerebrospinal fluid.

P. E. — Temperature, 103°. Patient is conscious, but slightly delirious, complaining of headache. Skin and mucous membranes notably cyanotic. Respiration accelerated. Head somewhat retracted. Neck very rigid and tender to pressure. Kernig's sign marked on both sides. Lumbar puncture gave about 60 ccm. of purulent fluid in which Gram-negative diplococci were found, both intra- and extra-cellular. Thirty cubic centimeters antiserum given.



Feb. 8. Temperature began to fall immediately after the first injection and the general condition is much improved. Mind perfectly clear. Thirty cubic centimeters antiserum given.

Feb. 9–10. Improvement continued steadily. Thirty cubic centimeters antiserum given on each day.

Feb. 13. Child is practically convalescent. Temperature has come down by lysis. All symptoms have disappeared except a rigidity of the neck and the Kernig sign, which are slightly marked.

CASE XV. Jennie, eight years old. Admitted Jan. 13, 1908.

F. H. — Brother of patient two and one-half years old, was taken sick at the same time and died within twenty-four hours.

P. I. — Four days ago patient was taken with headache, vomiting and fever, with marked rigidity of neck. Lumbar puncture gave 50 ccm. of cloudy fluid, in which Gram-negative diplococci were found. Thirty cubic centimeters antiserum given. This was repeated on the three subsequent days, the fluid becoming rapidly clear and organisms disappearing from the fluid. The patient's mental condition became rapidly clearer and symptoms disappeared. She is now suffering from otitis media.

Since the reading of this paper patient has had a relapse.

DISCUSSION OF DR. DUNN'S PAPER.

DR. W. W. MCKIBBEN, Worcester, Mass.: I was called, on the evening of Feb. 6, to see a boy of four years. The parents said he had been sick three days with high fever, intense headache and irritability. He had had initial convulsions. I found a temperature of 105°, moderate opisthotonos and rigidity of the neck extreme; he objected to any noise or light in the room and to being handled. The next day he had the cephalic cry and internal strabismus; he also had stiffness of lower extremities and tache cerebral. I saw him four days during which time the temperature remained 103° to 105°. I then persuaded them to allow the boy to be sent to the hospital as they would not permit lumbar puncture at home.

On the evening of Feb. 10, with a temperature of 103°, 20 ccm. of Flexner's antiserum was injected by Dr. E. L. Hunt, Asst. Pathologist at Worcester City Hospital. The white count was 18,400. On the morning of Feb. 11, temperature was 105°. At noon another 20 ccm. were injected; temperature in afternoon was 104.5°. On the morning of Feb. 12, temperature dropped to 98.5° and all symptoms except slight irritability disappeared. White count 9,000. Convalescence uninterrupted since that time.

Dr. Wentworth called attention to a paper on the serum treatment of cerebrospinal meningitis by Levy which appeared in a January number of the *Deutsche Medizinische Wochenschrift*. The "Kolle-Wassermann" serum was used. In this paper Levy gives the results of treatment of 55 cases of cerebrospinal meningitis which occurred in the town of Essen from January to November, 1907. Of these 55 cases, 15 were treated outside of the hospital without serum and showed a mortality of 80%; 14 cases were treated in the hospital without serum and showed a mortality of 78+%; in 17 cases the "Kolle-Wassermann" serum was injected intra-spinally and the mortality was 11+%. Levy lays stress on the value of early treatment with serum and the necessity for its intra-spinal injection to obtain good results.

THE USE OF FAT-FREE MILK IN INFANT FEEDING.*

BY CHARLES W. TOWNSEND, M.D., BOSTON.

Any suggestion which simplifies infant feeding or renders the management of cases of indigestion and diarrhea in infancy easier, is certainly worthy of consideration, for it is a noteworthy fact that the general practitioner is prone to shirk the careful study which a thorough conception of scientific percentage feeding entails.

For a long time the proteids of cow's milk have absorbed much of the attention of specialists in infant feeding, and it has been thought that once these proteids were thoroughly understood and modified to resemble the proteids of mother's milk, the problem of infant feeding would be largely solved.

Curds in infant stools are generally regarded as evidence of faulty proteid digestion, for it is thought that the cheesy part of the milk, instead of being digested, is curdled and passed through the gastro-intestinal tract. Whenever these curds occur, efforts are made to modify the proteids which are considered to blame. In working out this problem, whey, which lacks the caseinogen so largely in excess in cow's milk, has been used, as well as the apparently more scientific but more complicated split proteids, where the same relative proportions of soluble lactalbumen and the caseinogen may be prescribed as in woman's milk.

While the proteids have been studied so carefully, the fat in the mixtures for infant feeding has, on the other hand, often received but scant attention. This, I believe, is due to the fact that the fat of cow's milk and of woman's milk both occur in about the same proportion to the total bulk, and no differences in the quality of the ingredients are recognized by the practitioner as is done in the case of the proteids. The quantity of the fat is borne in mind, but the quality is not considered, yet it has been shown, as by Stern,[1] "that the composition of the fat of cow's milk is greatly at variance with that of the fat of human milk, differing especially in its far greater contents of volatile fatty acids, among which butyric acid is the most important." He finds from six to eight times as much of these fatty acids as in normal woman's milk, a fact that easily explains some, at least, of the relative indigestibility of cow's milk.

Another interesting fact is the one discovered by Luzzatti and Biolchini, namely, that there is a more active fat-splitting ferment in woman's milk than in cow's milk.

Although the value of fat as a food is generally recognized by the practitioner, it is often regarded by him more in the light of a laxative, and, if the bowels are constipated, he is apt to increase the percentage of this ingredient without hesitation. That excess of fat is often a cause of constipation is rarely recognized. Such, however, is the case, and stools are passed that are hard, dry, large, and of a grayish white color, showing a greasy surface when rubbed smooth. In these stools there may or may not be found hard curdy masses like cheese which are often thought to be made up of proteids, but are in reality masses of fat. A diminution in the amount of fat in the food in these cases will often relieve the constipation, much to the surprise of the physician, whose only idea previously had been to increase the fat for its laxative action. Too little fat, it must be borne in mind, will also cause constipation, so that a happy mean for each case is desirable.

Excess of fat is often a cause of gastric disturbance as shown by vomiting, and of intestinal indigestion resulting in the fatty stools just described, and in a failure to gain properly in weight. The infant may even become atrophic. Infants fed with an excess of fat are often ravenous at their meals,—they are starving in the midst of plenty,—and the physician is tempted to increase the strength of the food, especially in fat, with increased trouble for the little patient. Grave general disturbances, as shown by eczema, rachitis, or even convulsions, may occur in infants thus overfed. It must always be borne in mind, however, that what is a proper amount of fat in the food in one case may be excessive and the cause of considerable disturbance in another. No cast-iron rule can be made for infant feeding.

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* Read before the Suffolk District Medical Society, Dec. 18, 1907.

[1] Archives of Pediatrics, June, 1905.

The quality of the fat of Jersey and Guernsey milk, aside from its quantity, is in some infants often a cause of digestive disturbance. I have many times seen babies gain but slowly and show fatty stools on Jersey milk modifications, even when the percentage of fat was low, while the same babies gained rapidly and digested well the modifications having the same amount of fat, made with the milk of Ayrshire, Holstein or common red cows. Another cause for the difficult digestion of fat is sometimes seen where centrifugal cream is used, and a simple change to gravity cream often obviates the difficulty.

While we must all admit that fat in the normal infant's food is a very desirable and a very necessary ingredient, another problem presents itself when the infant's gastro-intestinal tract is disturbed, and unable to properly dispose of the food. Here our object is to feed the infant in such a way that the stomach and bowel disturbance will subside as quickly as possible, so that the infant can digest a proper amount of food. A simple and satisfactory treatment is the substitution of barley water for milk, followed by the gradual resumption of this important fluid. In this resumption the proteids, especially, are at first given cautiously in small amounts, often in the form of whey or as split proteids, for the proteids are generally believed to be the most difficult part of the milk to digest,—the chief offenders, as it were. A number of recent writers have, however, come to the conclusion that the fats and not the proteids are the chief offenders, as I have already hinted, and Walls[2] in a recent paper goes so far as to make the following statements:

"There is no evidence that the proteid of cow's milk causes any digestive disturbance in the infant"; and "all experiments prove that cow's proteid is easy to digest and resists putrefaction."

Such extreme views are little short of revolutionary. In order to test them, however, I fed, with but few exceptions, all the babies suffering from gastro-intestinal troubles, in my recent service in the Boston Floating Hospital, on fat-free milk. I am greatly indebted to Dr. W. P. Lucas, my senior house officer, for his careful study and analysis of these cases. My service began early in August, and I found the wards, containing fifty beds, full of infants fed on various modifications of milk, milk and barley water, split proteids, buttermilk and condensed milk. The diet of these was changed more or less gradually to fat-free milk and barley water. New cases, entering with the usual symptoms of diarrhea with curdy and mucous stools, with or without vomiting, and with or without a septic temperature, were given calomel or castor oil to clear them out, and were put on barley water and fat-free milk. In about one third of the cases the proportion of fat-free milk to barley water was one in ten at the outset, and the strength was increased daily. The remaining two thirds of the cases were begun at once on equal parts of barley water and fat-free milk, or on fat-free milk alone without any diluent. Eighty-five cases in all were treated.

Much to my surprise I found that undiluted fat-free milk, that is to say, milk containing 4% of proteids and 4% of sugar, but practically no fat, was well digested even by very young infants, so that during the latter part of my service, instead of cautiously giving them much diluted fat-free milk, I began at once on whole fat-free milk. For example, James P., four weeks old, weighing 6 lb. 10 oz., entered the hospital Aug. 29. He had not been thriving on various milk mixtures, and for two days had had foul smelling, green and watery movements, and had vomited after every feeding. To put such an infant on 4% of proteids would seem to be most unwise, yet he was given nothing during his fifteen days of stay but undiluted fat-free milk, and he did well. He stopped vomiting at once, took the fat-free milk eagerly, his stools became normal fat-free milk stools, and he gained weight, a total of 13 oz. during his fifteen days in the hospital.

Another striking case, which, like the one just described, would seem to show that even young infants can easily digest the 4% proteids of cow's milk, provided they are not burdened with the fats, is that of a fourteen weeks' breast-fed infant. This child had had diarrhea for five weeks, and had vomited frequently. No improvement had occurred while he was under treatment as a day patient, and was taking the harbor trips. Admitted to the wards he was at once put on undiluted fat-free milk. The vomiting ceased and the character of the stools changed from green, curdy and slimy to the normal fat-free milk stools.

The appearance of the stools in infants fed on fat-free milk is very characteristic and easily recognized. The stools are yellowish brown. They lack the bright yellow color of normal milk stools, and the white color of stools in which there is an excess of fat. They have almost an opalescent appearance. Their consistency is their most striking feature, as it is smooth and salve-like, and free from lumps or curds. In other words the curds one would expect to find from the excess of proteids are conspicuous by their absence. The odor of these stools is very slight, certainly not offensive.

One day numerous small curds appeared in the stools of the infants fed on fat-free milk, and the infants all did badly. Under the microscope the white masses were found to be made up chiefly of bacteria, and on investigation it was discovered that the fat-free milk contained over a million bacteria per cubic centimeter. When the milk was sterilized the trouble ceased.

That fat-free milk appears to be as a rule bland and unirritating, even when a high temperature denotes septic absorption, the following cases show:

Gertrude W., six months old, entered on Sept. 5 with the history of diarrhea, vomiting, fretfulness and lack of appetite for five weeks. Dejections seven a day, green and watery. She was given castor oil and put at once on undiluted fat-free milk, notwithstanding the fever and gastro-intestinal symptoms. Her septic condition was shown by an irregular fever ranging from 99° to 103°. The temperature reached normal on the eighth day, and the following note was made by Dr. Lucas: "Is doing very well in every way; movements are improving slowly and the appetite is fairly good."

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[2] "The Digestion of the Proteids of Cow's Milk in Infancy." Frank X. Walls, M.D. Jour. Am. Med. Asso., April 27, 1907, p. 1389.

George M., seven months old, had had green, slimy or curdy stools for two weeks, and had been feverish. The child was given castor oil and put on undiluted fat-free milk. The stools became yellow and salve-like on the fourth day, but the temperature did not reach normal until the ninth day. There was, however, a complicating bronchitis.

The probable explanation for the curds that were found in the stools of these infants while they were taking a food containing fat, and their absence when they were taking a food free from fat, although high in proteids, seems to be that the curds are due to fat and not to proteids.

Milk that is practically fat-free can be obtained only by the centrifugal process. This contains less than one half of 1% of fat. In private practice, where this is not so easily procured, I have used with satisfaction milk from which all the cream was removed by mean of the Chapin dipper or by the siphon. This milk, however, contains 1% or more of fat, and is to that extent liable to occasion trouble in a susceptible case. In mild cases of gastro-intestinal disturbance I have found that a moderate diminution in the amount of fat is often all that is necessary. This can be obtained by using whole milk instead of cream in the mixture, or by using milk from which the top few ounces have been poured off.

The ease with which the proteids appear to be digested by even young infants is certainly interesting and suggestive.

An infant fed on too low proteids is at a disadvantage, as shown by anemia, slowness in gaining weight, fretfulness, a tendency to intestinal indigestion and to infection. Yet many infants are condemned to their low proteid diet on account of the difficulty they have of digesting, not the proteids, but the fats that go with them. The use of dilutions or modifications of weak creams instead of the strong creams, so commonly advised, and the earlier recourse to undiluted cow's milk would, in the light of these studies, appear to be a more rational procedure.

Exact imitation of the percentages in woman's milk is far from being the solution of infant feeding. We must take heed lest we worship the fetish of percentage feeding too blindly, for, no matter how cleverly we calculate the fractions, or how nicely we split the proteids, the resulting mixture is still cow's milk and not woman's milk.

In conclusion, as a result of these preliminary studies, it may be said:

1. That while fat is very necessary to the normal infant, it is more often given in excess than is generally supposed.
2. Excess of fat may cause one or more of a number of symptoms, as, for example, constipation, white and "curdy" stools, a ravenous appetite with atrophy, convulsions.
3. In gastro-intestinal disturbances it is desirable to exclude fat.
4. The proteids of undiluted fat-free milk appear to be remarkably well borne even by young infants, and there is an absence of so-called curds from the stools.

THE USE OF THE ROENTGEN RAY IN THE STUDY OF DISEASES IN CHILDREN.*

BY ARIAL W. GEORGE, M.D., BOSTON.

It is impossible in the few minutes given me to speak on this subject, to more than mention one or two points that may be of interest to you. Those of us who practice near the centers of medical work, where the laboratories are at hand, where the hospitals offer large clinics, and where the methods that are so practicable for us may not be available to others, can, perhaps, best appreciate the value of the Rœntgen method.

The criticism has been made that the Rœntgen ray is a laboratory method, and is not accessible for the use of the general practitioner; therefore, in the few conditions that I shall mention or show this evening, I have eliminated all of those that are not of practical importance for early diagnosis, prognosis and treatment. I do not intend, in talking about the uses of the Rœntgen method, particularly to general practitioners or perhaps to those who are mostly interested in the study of children, to confine myself strictly to their medical aspect. It has always been apparent to me that, while, on the one hand, the medical side of disease in children has been elaborately studied from every point of view, on the other hand, the surgical side has been much neglected except where such disease relating to orthopedics is concerned. This is also especially noticeable when we compare the carefully studied diseases of adults with those of children.

The severe criticism made of the Rœntgen ray is that the picture produced by the use of a Rœntgenographic plate is nothing more nor less than a shadow, or shadows. The Rœntgenogram is a record of densities of the different parts under examination, recorded on the Rœntgenographic plate according to the laws of projection. A true Rœntgenogram of any part of the body is ideal if it shows on the plate the densities and resulting radiabilities that exist between tissues and bones, according to their atomic weights. A thorough knowledge of the normal living anatomy is absolutely necessary, as are all its variations. It is upon this one point, namely, thorough knowledge of the normal living anatomy of children, from birth to puberty, that rests the whole subject of the study of diseases in children by the Rœntgen method. It is not that we are attempting to say that by the Rœntgenr ay we can show pulmonary tuberculosis, or that we can demonstrate periosteal sarcoma absolutely; but that we do attempt, by synthesis, rather than by analysis, to determine just how the different tissues vary from the normal:

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* Read at the meeting of the New England Pediatric Society, Feb. 15, 1908.

First. If it is a part of the body which is accessible we should study the plates as we clinically study the case itself. We should first outline the subcutaneous tissues, noting whether there is a variation from the normal.

Second. We should compare the part examined, if possible, with the corresponding part.

Third. We should note the outline of the bones; whether irregularity exists, or it in any way differs from the normal; the relation of the cortex of the bone to the medullary canal and the bone structure in general.

Lastly, and most important of all, we should note the development of the ossific centers of the bone.

We have, in this method of examination, the principle upon which scientific interpretation rests. Until I took up this method of teaching with the students, I was time and time again accused of using my imagination, but this method brings home to the student the fact that, in the majority of cases, he is ignorant of his normal anatomy from the standpoint of the Rœntgen method. Why is this? It is not different from what he has been taught, either by the actual specimen, or by frozen sections, or by the textbook; only he has seen the parts from a little different standpoint. If this method could be carried out by you, gentlemen, you would be surprised at your ability to interpret the abnormal changes that may be present in the plate. Up to this point, we have spoken only of the normal living anatomy with its variations. How can this knowledge be applied to the changes which are due to disease and diseased conditions brought about by trauma, or by infections, or by new growths?

First, come the anomalies, or the diseases of the newborn. In early life, particularly in very early life, it is not so important to know the changes that may have taken place, or how a particular part differs from the normal; but later, when surgical procedure seems to be called for, it is absolutely necessary that the surgeon should know in what mechanical way the function of the part is disturbed. In certain joints, or in cases of polydactylism, or similar conditions, it is necessary to know the actual arrangement of the extra bones. Here, too, we may consider under this class, the anomalies of the mouth which appeal more to the dental surgeon than to us, but which are obscure unless the Rœntgen ray is used. These conditions become of importance to the physician because they lead to malpositions of the teeth, which, as the child grows older, lead to deformities of the naso-pharynx, or palate.

The next class of cases that I shall mention is the tuberculous and non-tuberculous infections of the osseous system and tissues. Great harm has been done by the careless classification of diseases that attack the hip-joint. Classically speaking, I think the term "hip disease" is accepted to mean tuberculosis. We have, however, found in cases that have been carefully examined by the Rœntgen method a certain number of cases of so-called hip diseases to be nothing more or less than acute, sub-acute, or chronic osteomyelitis. The location of the disease in these cases is outside of the joint capsule, and yet it gives rise to symptoms which clinically are those of hip disease. These cases are frequently treated as tuberculosis of the hip, which you can see, from the surgical standpoint, is absolutely wrong. The Rœntgen ray will give more information in these cases than tuberculin, or any other methods of examination which we have for diagnosis. It gives, first of all, the location of the focus of disease, whether it is within the capsule or without, what parts are affected, and what the gross changes are from the normal. If it is found outside of the capsule, it is operable, even though it may be a tuberculous focus. In this instance, we have done the right thing to remove the disease, for I have never yet seen a case of tuberculosis in the shaft of the living bones, unless it has been bone that has no epiphysis, or ossific center developed, or in which the disease has extended from the epiphysis into the shaft. Consider, for a moment, the importance of the Rœntgen ray in the diseases of the lungs and pleuræ. I will admit that, with a few exceptions, it is not practical to examine these cases in their homes, but this is not due to the fact that the Rœntgen method will not demonstrate easily, but because the cost of the apparatus and its cumbersomeness make it impractical.

At the present time, pulmonary tuberculosis seems to occupy a prominent place in the minds of the profession. Very little attention has been directed to the study of tuberculosis in children, or an attempt made for the early recognition of this disease as compared with the adult cases, soon enough for the individual child to be removed from its environment, or for the proper treatment to be instituted.

The point that I wish to make in this class of cases is that, by physical diagnosis, it is difficult to state in babies or young children, that there exists in the lungs a tuberculous infection. The help that the Rœntgen ray has been in these cases is this: it will demonstrate, first of all, the amount of air contained in a particular lung, as compared with the other. We compare the quality produced on the plate by a particular lung with a series of normal cases. We attain, by seeing a large number of cases from this standpoint, the same information as does the clinician by percussion and auscultation; thus he is able to say that the lung in that particular part is slightly dull on percussion compared with a corresponding area on the other side, while we are able to say that the radiability of the two lungs differs. Now, I can doubt the clinician's diagnosis with more reason than the clinician can accuse the Rœntgen plate of error in the picture produced, for this reason, if for no other: the sense of sight is keener than the sense of hearing. We see in very early cases of tuberculosis very small shadows, sharply defined, being produced only by a substance of higher atomic weight than the ordinary tissues of the part would have, either in the apices, or when scattered throughout the lung substance. We interpret, as I have stated, by noting the change from the normal, what tissues are affected, how they are affected, or what new substance may be added to a part. We then endeavor to identify these changes by understanding the desired pathological conditions and by applying this knowledge to what we know of pathology.

I wish to say a few words about fractures in children because this brings out one of the most deplorable facts that one meets with in the Rœntgen study of children. The majority of men who are called upon to treat fractures have no conception, at the present time, though they may have had as students, of the underlying anatomy of the part injured. It all comes down to one necessity, namely, thorough knowledge of the development of the epiphyses of all the joints of the body from birth to puberty; then, and only then, are we able to understand why a joint that has been injured, such as the elbow joint in a child, will not perform its function. Then, again, only can we treat the condition intelligently after first finding out what injury has been done, to what part, and how this injury is going to be overcome.

In closing, I wish to state that under proper control, the Rœntgen ray will never do harm, and that it is ever tending, in cases to which it can be properly applied, to teach us more exactly the conditions present. The mistakes in the diagnosis by the Rœntgen method will not be the fault of the Rœntgen ray, but the fault of those who are ignorant, and who, from lack of proper training, are unable to interpret its findings.

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Reports of Societies.

CLINICAL SECTION OF THE SUFFOLK DISTRICT MEDICAL SOCIETY IN CONJUNCTION WITH THE BOSTON MEDICAL LIBRARY.

Meeting, Wednesday, Dec. 18, 1907.

Dr. Richard C. Cabot, Chairman.

The following papers were read:

OBSCURE FEVER IN INFANCY AND EARLY CHILDHOOD,

by Dr. John Lovett Morse.

THE USE OF FAT-FREE MILK IN INFANT FEEDING,

by Dr. Charles W. Townsend.[1]

DISCUSSION OF DR. TOWNSEND'S PAPER.

Dr. Thomas M. Rotch: This communication of Dr. Townsend's is of the greatest interest to me. Personally, I have not carried out as he has an investigation as to the value of the treatment of intestinal disorders with fat-free milk. If these observations of Dr. Townsend are substantiated, they are a very distinct contribution to infant feeding. I ought to say, however, but not in criticism of Dr. Townsend's paper, which I think is a most excellent one, that we should not decry percentage feeding. Every baby may not need exact percentages, but a large number of them do and especially in diseased conditions, and exact percentages can never do harm. This is all that is claimed for percentage feeding.

There is no doubt that the use of split proteids in infant feeding is a great gain. Many babies show an idiosyncrasy for fats, others for sugars, others for proteids. One set of cases shows an idiosyncrasy to whey proteids, other cases to other proteids, as caseinogen and there is no way to determine the exact idiosyncrasy except by the use of exact percentages. We should never give indefinite concoctions, such as barley water, but exact mixtures, stating what per cent of starch is desired as, for instance, .50%, .75% or 1%. It may be well also to think of the existence of an idiosyncrasy for certain kinds of fat.

One of the most important points for consideration in Dr. Townsend's paper is the use of large amounts of proteids by this method. Let me say one other thing. In the use of modified cow's milk, it is not our principle to copy human milk; the ideal would be to make artificial human milk, but this is at present impossible and we must do the next best thing. We can copy the percentages in human milk but not the quality, as, for instance, in dealing with the fats and proteids.

Dr. John Lovett Morse: It must be remembered in feeding babies that the food must contain a certain amount of proteid in order to provide for the nitrogenous metabolism and for growth. An excess of proteid may, however, throw too much work upon the eliminative organs and thus do harm. A certain amount of fat, while not as necessary, is of much importance because of its high caloric value.

The present epidemic of papers on the use of fat-free milk is an illustration of the way in which medical thought travels in waves. Some years ago all the difficulties in the digestion of cow's milk were attributed to the proteids; now they are all being attributed to the fats; we may soon expect them to be attributed to the sugars. The present wave regarding the fats is presumably due to the fact that physicians in this country are just becoming acquainted with the German methods, and, knowing that they come from Germany, think that they must be right. In Germany the American methods of percentage feeding are entirely disregarded and much attention is paid to the caloric value of foods. Whole milk or skim milk dilutions are generally used there instead of cream mixtures. Czerny and his followers have attributed many ills to the fats, and their views have been adopted by certain American authors. These authors, however, go much further than does Czerny. There can be no doubt that curds may be formed from the fats as well as from the proteids. Our present clinical methods of examination are, however, hardly satisfactory enough to justify too definite statements as to the composition of curds. When they are due to an excess of fat, however, it is almost always in the form of soaps and not of free fat. It is probable, moreover, that many curds are due to a combination of fats and proteids.

There can be no doubt that in the past so much has been thought of the dangers of an excess of proteids that those from an excess of fat have been forgotten. It seems to me, however, that at present the dangers from the fats are being unduly emphasized. The fats rarely cause trouble when they are given in reasonable and proper amounts. It is when they are given in excess that they do harm. Trouble seldom occurs if the proportion of fat does not run over 4%. Some babies, however, even when well, have a fat idiosyncrasy and cannot take this amount.

Experience has led me to believe that after the periods of starvation and starchy diet in the acute diarrheas, babies do better on some form of fat-free milk than on the ordinary modifications. I have, however, usually used whey and buttermilk instead of skim milk. It is a well-known fact that fat retards the secretion of the gastric juices and hence the digestion of the proteids. This influence is still greater when the digestive secretion is weakened by previous illness and depression. This is probably the reason why fat is so badly borne in these cases.

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[1] See page 379.

I am rather surprised at Dr. Townsend's attitude regarding percentage feeding. It seems to me that he has been using percentages in his feeding. I prefer myself to think in percentages of fat, sugar and proteids rather than in quantities of cream, whole milk or skim milk.

Dr. Henry I. Bowditch: I have been greatly interested in Dr. Townsend's paper, and simply wish to say it is a great privilege for me to watch these babies of which Dr. Townsend has spoken and to observe the wonderful results which he obtained. It was surprising to see the marked improvement which followed the use of this method. All cases apparently did well, among them some of the pronounced toxic gastric type. These children showed an almost immediate relief of symptoms and gain of weight and change in the character of stools. I believe almost as good results could be obtained by the use of this method in cases treated in their homes. I, however, agree with Drs. Rotch and Morse in what they have said of the use of the percentage method. In my own work, I am using a much smaller percentage of fat than previously.

Dr. Townsend, in closing the discussion, said that he agreed entirely with what Dr. Rotch and Dr. Morse had said about the importance of thinking in percentages, but he had learned not to think aloud, especially at a medical meeting, for he had noticed that any mention of calculations of percentages was apt to have a disheartening effect on the audience, for medical men as a rule are much afraid of mathematics. For this reason he had avoided speaking of percentages as much as possible in his paper. He was very glad to hear Dr. Rotch say that infant feeding was no longer a question of exact imitation of the percentages of human milk, for there was much more than percentages involved.

He had presented this paper merely as a preliminary study of the subject, and as such he had considered it very suggestive.

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THE SUFFOLK DISTRICT MEDICAL SOCIETY MEETING.

In Conjunction with the Boston Medical Library.

Clinical Section.

Held Feb. 19, 1908.

Dr. Richard C. Cabot, M.D., Chairman.

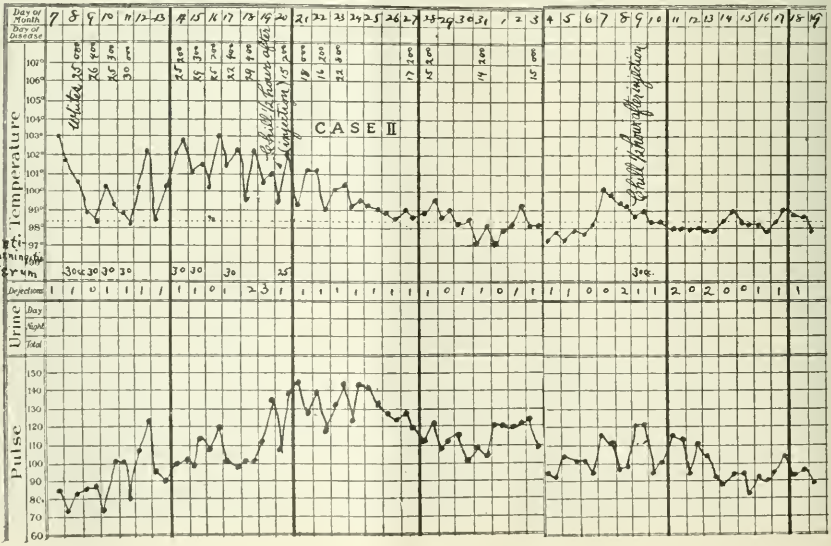
Simon Flexner, M.D., Director of the Rockefeller Institute for Medical Research, spoke on the

SERUM TREATMENT OF CEREBROSPINAL MENINGITIS.

Dr. Flexner described the organism of epidemic meningitis, the great variations in the virulence of different strains, his experiments with meningitis and encephalitis artificially produced in monkeys and with a protective serum obtained by immunizing a horse against the organism and introduced into the spinal canal of patients suffering from typical epidemic cerebrospinal meningitis.

He reported the results of serum treatment in 130 cases, of which 95, or 73%, recovered and 35, or 27%, died. He called attention to the fact that after the use of serum the recovery was by crisis in nearly one half of the cases, while spontaneous recovery is usually by lysis; also to the probability that an early injection of the serum renders recovery more likely. The rapid clearing of the turbid spinal fluid, the striking reduction in the number, appearances and vitality of the

Case II, page 385.



organisms after the injection of immune serum, were also described.

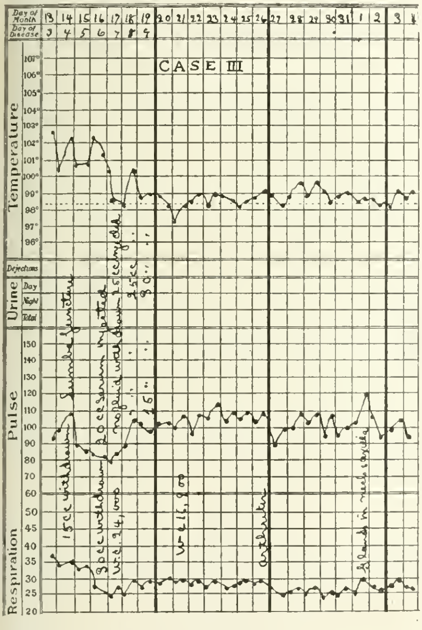
Relapses followed by recovery may occur after the first period of improvement under serum treatment has passed.

Dr. Flexner expressed the belief that the serum acts partly by neutralizing the meningitis toxin, partly by increasing phagocytosis and opsonizing the micro-organism.

The possibility of conveying other infections into the spinal canal owing to imperfect asepsis, and the dangers resulting from such an accident, were referred to.

DISCUSSION.

Dr. John L. Ames: At the Boston City Hospital six cases have been treated by the use of Dr. Flexner's serum. Two of these were on the service of Dr. George B. Shattuck and four were under my own observation. All of the cases presented well-marked symptoms of acute cerebrospinal meningitis; in four of them this diagnosis was confirmed by finding the meningococcus in the spinal fluid following lumbar puncture; in one no micro-organisms were found; and in one the pneumococcus was present. Of the four having the meningococcus present two died, one went home well and one is still in the hospital, convalescent. The one in which no micro-organisms were found on lumbar puncture was discharged well after two weeks. The case in which the pneumococcus was present died on the second day after entering the hospital.



Case I. (Service of Dr. George B. Shattuck.) Entered hospital Jan. 20, J. M., woman; age, forty-eight. Sudden onset of illness one week before; chills, vomiting and intense headache. Stiffness and pain in back of neck. In condition of stupor when brought to the hospital.

Physical examination: Pupils equal, slightly dilated, react to light and distance. Knee jerks equal and normal. No Kernig, Babinski or ankle clonus. Slight edema of legs. Lumbar puncture on day after entrance gave 30 ccm. clear colorless fluid under considerable pressure. No micro-organisms and no growth reported from fluid.

Jan. 25. Patient delirious. Head slightly retracted and rigid. Distinct Kernig present. Lumbar puncture shows meningococcus, intra- and extra-cellular. First injection of antiserum given, 25 ccm. Leucocytosis 14,000. Jan. 26, another injection of antiserum, 30 ccm. given. This patient had two more injections of 30 ccm. each, on Feb. 1 and Feb. 6, making a total of 115 ccm. antiserum given. She did not show much improvement, but continued in a semi-comatose condition, with rigidity of neck and Kernig persisting. Pneumonia developed and she died on the eighteenth day after entrance to the hospital. In this case it will be noted that the serum was given late in the course of the disease.

Case II. (Service of Dr. George B. Shattuck.) N. E., boy, fourteen years, entered hospital Jan. 7. Sudden onset of illness, with headache, chill and vomiting. Became unconscious after about eighteen hours.

Physical examination at entrance: Patient unconscious, neck rigid, slightly retracted. Knee jerks equal and exaggerated. Marked Kernig. No Babinski or cremasteric reflex. Lumbar puncture performed soon after entrance with removal of a few ccm. of turbid, straw-colored fluid in which were found diplococci, intra- and extra-cellular.

Day after entrance 30 ccm. antiserum injected and repeated on three following days and four times about a week later and once three weeks later, making in all nine injections and a total of 265 ccm. serum given. On two occasions a chill is recorded occurring one-half hour after the injection. The temperature and pulse continued high for three weeks, but since then there has been gradual improvement, and at present the boy's condition is satisfactory. He has no pain and no headache and there is scarcely any retraction or rigidity. Kernig is still present. Leucocytosis has dropped from 25,000 to 15,000. The prognosis at present seems favorable.

Case III. L. M., female, thirty-two years. Entered hospital Dec. 13, 1907. Present illness three days, pain, headache, vomiting and became unconscious.

Physical examination: Marked prostration. Pupils equal and react to light sluggishly. Neck absolutely rigid. Kernig's sign present. Temperature, 102.5°; pulse, 100; respiration, 36.

Dec. 14. Lumbar puncture with 15 ccm. cloudy fluid withdrawn, which shows the presence of meningococcus. Dec. 16, lumbar puncture, 30 ccm. fluid withdrawn and 20 ccm. Flexner's serum injected. Dec. 17, lumbar puncture, no fluid withdrawn; 25 ccm. serum injected. Condition improved, semi-conscious and partly rational, but sluggish. Temperature dropped to normal. Dec. 18, lumbar puncture, no fluid withdrawn, 25 ccm. serum injected. Dec. 19, lumbar present, 30 ccm. serum injected.

Patient continued to improve, rigidity of neck and pain grew less and disappeared and the Kernig disappeared. Leucocytosis dropped from 24,000 to 16,000. She was discharged from the hospital nearly well after twenty-five days. During convalescence she developed an arthritis in the ankle and knee-joints and slightly enlarged glands in the neck, which symptoms have since disappeared. She is now perfectly well. No impairment of sight or hearing. Here also the serum was given late.

Case IV. G. W. M., male, twenty-five, an employee of the hospital. Entered the medical service Dec. 20, 1907. Was taken suddenly ill the preceding day with vomiting and headache which became intense. This morning he was broken out with purplish spots all over his body.

Physical examination: Marked prostration. Skin dusky and pale and showing petechial and hemorrhagic spots all over his body. Pupils equal and react to light. Left eyelid droops slightly. No rigidity. No Kernig. Pulse very weak and almost imperceptible at the wrist. Heart very weak. Vomiting bile-stained fluid almost constantly. Morphia was given for the intense pain, after which he went into a profound sleep. During the afternoon his neck became tender and rigid. Kernig sign had developed and hyperesthesia. Drowsiness increased and he became unconscious. Lumbar puncture was done, 30 ccm. turbid fluid withdrawn and the meningococcus found. Twenty-five cubic centimeters Flexner's serum injected.

Dec. 21. Condition not improved. Lumbar puncture with 90 ccm. turbid fluid which escapes under intense pressure. Meningococcus present. Thirty cubic centimeters Flexner's serum injected. Dec. 22, condition not improved. Lumbar puncture with 40 ccm. orange colored fluid. Thirty cubic centimeters Flexner's serum injected. Patient died Dec. 23, after four days' illness.

There were three injections given, with a total of 85 ccm. serum. This was a fulminating case; the symptoms were very intense and insidious and the disease progressed very rapidly to the fatal termination. Had the serum been given twelve or eighteen hours earlier and repeated sooner, the result would have been different.

Case V. B. M., boy, fourteen years. Entered hospital Jan. 11, 1908. Illness of three days' duration; general weakness, drowsy and forgetful. This morning he vomited, had general convulsions (except face muscles) and became unconscious.

Physical examination: Marked prostration. Head slightly retracted; neck tender and somewhat rigid. Pupils widely dilated, react to strong light; tongue not protruded; pulse rapid, fair volume and tension; Kernig sign absent; abdomen scaphoid.

On evening of entrance lumbar puncture done and 45 ccm. clear fluid escaped under pressure. Report from pathologist, staphylococcus growth, but was thought probably a contamination. No abnormal cells found in fluid. Twenty-five cubic centimeters Flexner's serum injected. Dec. 12, patient's condition grew worse, with more stiffness and retraction in the neck and Kernig's sign present. At this time the case seemed hopeless. A small pneumonia patch was found in the right back just under the scapula. Dec. 13, change for the better noted. Temperature, pulse and respiration lower. Lumbar puncture again done and 10 ccm. fluid withdrawn, but no organisms found. Temperature and pulse continued normal and patient's condition gradually improved from this time. Rigidity of neck and Kernig's sign soon disappeared and his mental condition gradually cleared up. He left the hospital after two weeks in normal condition.

Although this case presented the characteristic clinical picture of a severe meningitis, the diagnosis lacks the confirmatory evidence from the lumbar puncture. During forty-eight hours he was very sick and it looked as if he would die. Only one injection of the serum was given, but it would seem that this did contribute something toward his recovery.

Case VI. P. B., male, fifty. Admitted to the service Jan. 27. Three days' illness, with headache and pain in the ears. Discharge from the right ear. Became delirious and unconscious.

Physical examination: Neck rigid and tender; pupils equal and react to light sluggishly; discharge from right ear; drum shows perforation; tongue not protruded; Kernig's sign present; general nervous irritability; signs of pneumonia in both lungs. Lumbar puncture soon after entrance, 15 ccm. thick, turbid, bloody fluid withdrawn. Thirty cubic centimeters Flexner's serum injected. Pneumococcus found in spinal fluid. Patient grew rapidly worse and died the following morning.

The symptoms in this case were due to the pneumococcus, and the serum probably had no effect.

This group of cases is too small to warrant any definite conclusions, but in a general way one might say that the serum appeared to have a favorable effect in three out of the five cases. Any remedy like this must have a careful and thorough trial in a very large number of cases to prove whether it is of benefit or not. In every well-marked case an early diagnosis by lumbar puncture should be made, and, if the meningococcus is found, an early injection of the serum should be given.

Meningitis has to be regarded as a very severe and dangerous disease. The death-rate is said to vary in different epidemics from 20% to 70%, but is usually very high. There are recorded, in the report of the Boston City Hospital from 1898 to 1906, 166 cases with the diagnosis of acute cerebrospinal meningitis, and of this number 120 died. Of those who do not die from the disease many are left either deaf or blind. Any remedy is welcomed which will give us better results than we can look for from the usual symptomatic treatment. From the encouraging reports that have already come from various observers who have tried it, we look with much hope in the future to this new remedy, the antiserum which Dr. Flexner has worked out.

Dr. W. T. Councilman: I am sure we are all enthusiastic and delighted that Dr. Flexner's work has been crowned by this very great success. Of course, it is the goal of all scientific work to accomplish something of definite benefit to the community, and it is a great privilege to have listened to-night to the record of such an achievement.

After hearing such statistics as have been quoted by Dr. Flexner to-night, it is very difficult not to believe that his results will stand the test of time and be verified by other observers. In the epidemic of 1897 the mortality in cases occurring in this vicinity was about 66%. This or higher mortality is the rule. The results here reported to-night certainly more than substantiate Dr. Flexner's very modest opinion as to the value of the serum.

As to the pathogenesis of the disease, a great deal of light has been given us by his work, so that I think it would be of great value even without the crowning success of the discovery of the serum. All that he says as to the pathogenesis of the disease agrees very thoroughly with our results obtained during the epidemic of 1897.

Further, it seems to me that this work gives us a promise for the future because it represents the first serum effective against an endotoxin. Most infectious diseases are due to an endotoxin rather than a toxin, and hence must be combated by a serum effective against endotoxins.

I was much interested to hear Dr. Flexner speak of the wide variation in the number of organisms present in the spinal fluid in different cases. We found the number of organisms to vary enormously. In some of the foci of pneumonia which developed in cases of true meningitis, foci of one or two cm. in diameter, made up wholly of purulent exudate, we found that every cell may contain masses and masses of organisms, far more than are contained in the cells of the spinal fluid.

DR. FLEXNER in closing said: I have been asked how any physician may obtain the serum for use in his cases. Our facilities are very limited. We have now but two horses yielding serum; the first horse we immunized for eight months before we began to use serum taken from him. This animal is now in his second year of immunization and is in good condition. We have one other horse now yielding serum and from these two animals we obtain about six liters of serum every two weeks. One more horse has been started but it will be some months until we can use him.

You see therefore that it will be impossible for us to send the serum to all of those who ask for it. It seems best to guard its use rather carefully while we are in the experimental stage, for I think we still are in the experimental stage, while we are working through the tail end of an epidemic. In time the impressions of the clinician, as he compares the results under serum treatment with those obtained in the past without serum, will settle its value. Our statistics reported to-night will seem very small to outsiders. We cannot expect that the foreign clinicians should be impressed by our few hundred cases. Therefore I am especially anxious that the serum should be in the hands of a few observers of first-rate critical judgment.

Another reason for guarding very carefully the use of the serum is the danger of secondary infection of the spinal canal through the puncture wound. It is always possible to carry in the skin cocci and set up a secondary infection, especially in cases where several punctures have to be made. Only with the greatest care in asepsis can such accidents be avoided.

Therefore we shall select very carefully the men to whom we give the serum. You are very fortunate in this vicinity in having Dr. C. Hunter Dunn, who is willing to go out into the surrounding suburbs to diagnose and treat cases of suspected meningitis. I shall ask him to take charge of all the serum to be used in Boston and its vicinity, and I shall refer to him every one from this part of the country who applies to me for serum. In each of the large cities of the country I hope to have one person to whom I can send the serum with the assurance that all that is distributed through him will be used for cases accurately diagnosed and carefully reported at the bedside.

I hope that the serum will not be exploited by the manufacturers for some time. Sooner or later, of course, this must come, but first we hope to be able to collect the results of a large group of cases in which the diagnosis is trustworthy and the clinical observations accurate.

I advise that the serum should be injected at the time of the first lumbar puncture without waiting for the results of bacteriological examination. The serum appears to do no harm in any case and it may be important not to lose any time.

A word as regards the completeness of recovery in the cases that get well after the use of our serum. Out of 130 cases of which I have complete records, there are but three in which any after-effects or complications have occurred. In all of these there was more or less serious impairment of hearing. So far these are the only bad consequences known. If in a larger series of cases this turns out to be true the serum will have a considerable value aside from its effect upon the mortality of the disease.

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Book Reviews.

A Clinical Atlas. Variations of the Bones of the Hands and Feet. By THOMAS DWIGHT, M.D., LL.D., Parkman Professor of Anatomy at the Harvard Medical School. Illustrated. Philadelphia and London: J. B. Lippincott. 1907.

For many years, as is generally known, Dr. Dwight has been interested in a study of variations in man, particularly those relating to the spine and the bones of the hand and foot. This investigation, begun in a purely scientific spirit, has shown many practical bearings as it has progressed, particularly brought out by the increasing use of the x-ray. In his study Dr. Dwight, through the courtesy of Mr. Walter J. Dodd, of the X-ray Department of the Massachusetts General Hospital, has made liberal use of the x-ray in addition to post-mortem anatomical study. As the number of examined cases has increased, it has become more and more evident that variations are much more common than ordinarily supposed and are frequently of decided surgical significance. In preparing this atlas the author has had in mind particularly the needs of the practitioner, and to this end comparatively little scientific discussion has been introduced beyond a somewhat detailed account of the plan of the hand and foot as presented by the late Professor Pfitzner. The text concerns itself, first, with an account of Pfitzner's plan and a discussion of variations in additional bones and of the fusion of bones both in the hand and foot. This involves a careful review of the descriptive anatomy of the individual bones, together with many details not found in the ordinary textbook of anatomy. Useful as the text is to a student of the subject, the admirable plates, numbering 26 and including 79 cuts, constitute the essential value of the book. The reproduction of the photographs, whether x-ray or of the ordinary type, is beyond criticism, and the arrangement, with descriptive text in each instance opposite the various plates, conduces to ease of reference in a way permitted by no other method. We most cordially commend this monograph to the attention of anatomists and surgeons. It is regrettable that more of this type are not published in this country.

A Very Young Ovum in Situ. By PROF. G. LEOPOLD. Authorized English translation by W. H. VOGT, M.D. With 16 lithographic plates. 8vo, 69 pages. St. Louis: C. V. Mosby Co. 1907.

Dr. Vogt has made a very successful translation of Leopold's memoir. The ovum, which forms the subject of this investigation, originated from a young woman who committed suicide with phosphorus. At the post-mortem examination the ovum was at first overlooked, but was detected by the use of a magnifying glass. A square piece of mucous membrane, about 1 cm. long, with its underlying muscularis, was excised. After the specimen had been carefully hardened in formaline and in increasing strengths of alcohol, serial sections were prepared and these form the basis of Professor Leopold's study.

The numerous plates are beautifully done and represent various sections and parts of sections from this series, and give us some information in regard to the structure of the mucous membrane. The ovum itself was certainly not in a normal condition, perhaps as a result of the poisoning, and differs from what we should expect of so early a stage. The bad condition of the ovum is further indicated by the fact that no trace of any embryonic structure, yolk sac, or body stalk was found. It might be considered very doubtful whether this specimen throws any light on the normal conditions. The most valuable part of the book is to be found in the author's analysis and discussion of the observations of others upon very early stages of pregnancy.

The Essential Similarity of Innocent and Malignant Tumours. A Study of Tumour Growth. By CHARLES W. CATHCART, M.A., M.B., C.M., F.R.C.S., Surgeon, Royal Infirmary, Edinburgh. New York: William Wood & Company. 1907.

This monograph is a presentation in extended form of two lectures on the "Essential Similarity of Innocent and Malignant Tumours," which the author delivered before the Royal College of Surgeons in Edinburgh. His thesis that there is no essential difference between the innocent and the malignant types of tumor is supported by a large array of facts. The literature has been carefully studied and detailed clinical and pathological observations are presented. The value of the work is enhanced by nearly forty admirable photographic plates. This work is deserving of study by all interested in the pathology and clinical characteristics of tumors.

Abel's Laboratory Handbook of Bacteriology. Translated from the tenth German edition by M. H. GORDON, M.A., M.D. Oxon., B.Sc. With additions by Dr. A. C. HOUSTON, Dr. T. J. HORDER and the translater. London: Henry Frowde. 1907.

This is a small book, one that can be carried in the pocket and yet containing clear, detailed descriptions of all the ordinary technical procedures used in medical bacteriology. The fact that since 1898 a new edition has been issued nearly every year is evidence of its popularity in Germany. As the author states in the preface, it is not meant to take the place of a textbook or of personal instruction, but to serve as a supplement to them. Additions have been made to this English edition, the most important of which is a section on methods of examining the blood in relation to immunity.

Although a pocket laboratory guide, methods are described here that are not to be found in more pretentious works. Here, for example, are full directions for making Pfeiffer's bacteriolysin test, for which we have searched in vain in some standard bacteriologies. In the excellent description of the differential diagnosis between B. typhosus and bacilli simulating it the statement should be made that B. fecalis alkaligenes, unlike B. typhosus, produces an abundant brownish growth on potato.

This book is one of the admirable series of medical works recently issued by the Oxford University press.

Blood-Stains: Their Detection and the Determination of Their Source. A Manual for the Medical and Legal Professions. By MAJOR W. D. SUTHERLAND, of his Majesty's Indian Medical Service, Doctor of Medicine. New York: William Wood & Company. 1907.

The modern knowledge and the recent tests for blood stains are here for the first time collected in a single volume. This work reflects high credit on the author. He presents a clear, detailed, systematic discussion of the entire subject. The sections on the serological tests for blood stains are admirable. The literature has been reviewed with great care. A bibliography of 336 works has been appended. All these have a distinct bearing on the statements made in the text. The author states in the preface that he has had some unpleasant surprises when engaged in verifying references of others and desires to spare the reader a like experience. Unpleasant surprises of this nature are unfortunately familiar to all who engage in bibliographical studies.

Bilharziosis. By FRANK COLE MADDEN, M.D., Professor of Surgery, Egyptian Government School of Medicine. New York: William Wood & Company. 1907.

Although one of the most important parasitic diseases, the pathology and clinical manifestations of bilharziosis are almost unknown to physicians in this country. It is endemic in Egypt and to a less extent in other parts of Africa. That 930 cases were treated at the Kasi-el-Ainy Hospital in one year indicates the prevalence of the disease in Egypt. Imported cases have been observed in England and in this country. The writer, who is professor of surgery in the Government School of Medicine in Cairo, has had an extensive experience with the disease. The first two chapters contain a description of the parasite and the pathological changes it produces. The author has been aided by his colleagues, Looss and Milton, whose contributions to the knowledge of this disease are well known. The volume is illustrated with many excellent photographs which show in a striking manner the enormous papillomatous masses and the great thickening of the bladder wall produced by this parasite. The disease attacks chiefly the genito-urinary system and the intestinal tract.

A Dictionary of Medical Diagnosis. By Henry Laurence McKisack, M.D., M.R.C.P. Lond., Physician to the Royal Victoria Hospital, Belfast. New York: William Wood & Co. 1907.

This book includes much of the subject matter of the usual type in "Physical Diagnosis." The arrangement is essentially different from other recent books on physical diagnosis in that the subjects are arranged in alphabetical order. The book is almost completely confined to a description of the signs and symptoms of disease with very little consideration of disease itself. The discussion of each sign and symptom forms a distinct entity, and the connecting framework, found in most books, is absent. The descriptions are fuller than would be expected from the title, "A Dictionary," etc. The author intends the book to be used in connection with the clinical case, but to the reviewer it would appear more useful when used, as its name implies, to find out the meaning of terms encountered in reading medical texts if somewhat more information is desired than can be found in the medical dictionary. It is a book rather for the beginning student than for the practitioner. The various descriptions of signs and symptoms are well written. The illustrations, of which there is a moderate number, serve well their intended purpose. Printing, paper and binding are of high quality.

Introduction to Infectious and Parasitic Diseases, Including Their Cause and Manner of Transmission. By Millard Langfeld, A.B., M.B., Professor of Bacteriology and Clinical Medicine, John A. Creighton Medical College, Omaha. Philadelphia: P. Blakiston's Son & Co. 1907.

No one who has ever attempted to lecture on bacteriology in training schools for nurses has failed to realize the great difficulty of presenting the essentials of the subject in a clear and simple manner. This volume is intended primarily for nurses, and the author has succeeded in producing a book which contains a large amount of valuable information presented most interestingly. It is a book of interest not only to nurses and physicians, but to general readers as well. As Prof. Lewellys F. Barker points out in the introduction, the author has carefully avoided the use of terms and the discussion of questions which would be unintelligible to beginners in the subject. Some idea of the scope of the work will be conveyed by an enumeration of the titles of the different chapters: Causes of Disease; Bacteriology; Phenomena of Infection; Inflammation; Animal Parasites; Avenues of Exit of Infectious Agents and Parasites from the Body; Portals of Entry of Infectious Agents and Parasites into the Body; Portals of Entry and Avenues of Exit of Micro-Organisms in the Various Diseases; Disinfectants and Disinfection; Collection and Examination of Secretions and Excretions. In the appendix weights and measures are given and a useful table of thermometric equivalents.

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A TARDY RECOGNITION.

Although a number of years have elapsed since the cause of yellow fever was discovered, through the devotion and sacrifice of certain physicians, there has finally been recognition on the part of the Government of their great service. Dr. Jesse W. Lazear and Dr. James Carroll practically sacrificed their lives in their devotion to a scientific cause, Lazear dying in a fever camp outside Havana in 1900, and Carroll in 1907, from the remote results of a violent attack of the fever, experimentally induced. Pension bills are now before Congress, endorsed by President Roosevelt, Surgeon-General Riley and by the medical profession in general, providing $125 a month for the widows of Dr. Lazear and Dr. Carroll. The enactment of these bills is regarded as assured. Major Walter Reed, under whose direction the yellow fever investigation was instituted in Cuba, it will be remembered, died in 1902. A sum of $25,000 has been raised, chiefly through the medical profession, as a testimonial to his services. Congress has passed a special act, also, granting Mrs. Reed a pension of $125 a month. The service of these men to this country in particular and to the world in general, in practically leading to the eradication of yellow fever, is surely not over-estimated by this act of the Government in providing for their widows.

ANNUAL REPORT OF THE MASSACHUSETTS GENERAL HOSPITAL.

The annual report, the ninety-fourth, of the trustees of the Massachusetts General Hospital, demonstrates the gradual but steady growth of the institution. The statistics show that at the General Hospital in Boston 5,517 patients were admitted in 1907 as against 5,075 in 1906, with a daily average of seven more during the last year. It is worthy of note that upwards of five hundred less free patients were treated in 1907 than in 1906, and that 2,232 paid for services rendered them in whole or in part. There was a slight increase in the number of new patients in the out-patient department as also in the accident room. The average number of days in which patients remained at the hospital was slightly over twenty, somewhat less than in 1906.

Owing to vacancies in the staff, due to the resignations of Drs. H. H. A. Beach, Arthur T. Cabot and George L. Walton, Drs. F. G. Balch, C. A. Porter and H. C. Baldwin were promoted to fill their places. For some years past there have been certain ceremonies commemorative of the first administration of ether on Oct. 16, 1846. Through a vote of the Board of Trustees, it is proposed hereafter to secure a speaker of eminence to make an address as a part of the yearly ceremonies.

The amount of work which the General Hospital, which now numbers 321 beds, accomplished during the year 1907 is noteworthy. In spite of the relatively limited number of beds 5,800 persons were treated during the year, but it was also necessary to refuse at least as many more for lack of provision. This fact is significant of the possibilities of the hospital, which cannot be fully met through lack of resources. A significant addition to the hospital equipment has been the opening of the new orthopedic ward, which began to receive patients, Nov. 6, 1907. This ward contains 18 beds and 4 cribs, and has already proved its usefulness.

The report of the acting administrator, Dr. F. A. Washburn, Jr., in the absence of Dr. H. B. Howard, shows that in spite of the increased cost of supplies the revenue has been such that the total deficit for the year has been reduced over that of 1906. An appointment of interest to friends of the hospital is that of Mr. Walter J. Dodd to the position of skiagrapher. The equipment of the hospital in x-ray apparatus is admirable, and under Mr. Dodd's supervision will doubtless be used to the greatest possible advantage. The report from Dr. J. H. Wright, director of the pathological laboratory, shows the usual activity in that department of the hospital. A considerable amount of teaching, more than heretofore, is now conducted in the laboratory in relation with clinical work. The chemical laboratory, under the charge of Dr. W. F. Boos, also gives evidence of much activity.

The most significant addition to the McLean Hospital has been the use of the Codman House, which has increased the capacity of the hospital by 40 beds, making a total of 220 beds. Dr. George T. Tuttle, medical superintendent, makes an interesting statement of the condition of the training school for nurses. He finds that of the entire number of graduates, 596, of whom 375 were women and 221 men, 358 women are now living, and 207 men. Of the women 207 are still pursuing the work of nursing, and but 76 of the men. The others have entered the most various pursuits, a fair proportion having become physicians, dentists or students of these two professions.

The report this year, as heretofore, epitomizes the work of a great hospital, and illustrates the increasing demand which the widening scope of medical study is making both upon physicians and philanthropists.

SUSCEPTIBILITY TO INFECTION.

Mr. John Guille Millais, who has written a life of his great father, the painter, now demonstrates in himself the artistic temperament in his book, "Newfoundland and its Untrodden Way."[1] Many have erroneously imagined that island to be connected mostly with "fogs, dogs and bogs"; we learn that in reality it is a region most attractive. We are mostly concerned here with Millais's description of the Micmac Indians. He praises lavishly the whites, the Norwegian, fine sailor and whaler as he is, directly descended from those Northmen who conquered Normandy and ruled England, who discovered the western world several centuries before the time of Columbus, and those other Newfoundlanders whose fathers came from the west of England, — companions of Drake and Raleigh, — the only men who can to-day hunt the hair seal on the ice floes, the men who are selected by Peary and others for polar explorations. But in greatest esteem are held these Indians who have thus far been a most virile tribe; as guides their endurance is untiring; as canoe men and in the wilderness they are wonderfully skilful. But "consumption and the trader's rum are playing havoc with this fine race. In one drunken spree they often waste the earnings of a month of toil. The law forbids the sale of liquor to them; but in the far-off outposts the law is a dead letter."

With regard to our American Indians the same dreary story has obtained, wherever and whenever the "civilizing" white has introduced among them his tubercle bacillus and his fire water. Flick, by the way, expresses his belief that tuberculosis and alcoholism are in no wise related; that each of these degenerative agencies must be answerable by itself for its ravages. Nevertheless, even though there may be no etiological relation between them, they are almost invariably concomitant.

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[1] Longmans, Green & Co., publishers.

Dr. Grenfell, whose "parish" includes as much of Labrador as he can circumvent, has observed that endemic diseases have up to recent years been practically unknown along the Labrador coast; "it is an excellent place to study incubation periods." The infections which the natives have contracted have been introduced mostly from regions to the south. In one little Labrador settlement, which was for the first time visited by typhoid fever, Dr. Grenfell, when he arrived upon his healing mission, found eighty frozen bodies of those who had succumbed to it, speedily and most pitifully. Diphtheria and the exanthemata are much more fatal among the Labradoreans than among us. Particularly is tuberculosis fatal, despite that one factor in the cure — fresh, cold air — is ideally present; the disease seems to have been unknown until it was introduced by a case from Halifax.

Our negro population is fast being decimated by such factors peculiar to civilization as syphilis, alcoholism, and especially tuberculosis — factors which, it seems, were utterly foreign to the soil to which that kindly and unfortunate people were indigenous. Roger[2] relates how measles, a disease comparatively so innocuous among us, was, in 1875, for the first time, introduced in the Fiji Islands; it caused the deaths of 40,000 out of a population of 150,000.

Such data as these demonstrate beyond peradventure that, *as a rule*, susceptibility to any infection is most pronounced among a people that have for the first time in their history come in contact with it. It is then suffered much more intensely than by those who have, through many generations, acquired a comparative immunity to the infection, who have established for themselves a racial resistance to the essential bacterium. This phenomenon of susceptibility is emphasized by the contrasting fact that experience of an infection through many generations renders a race comparatively immune to it. Thus does the negro suffer but little from yellow fever and malaria; whilst the Jewish people have, during the forty centuries of their existence, established for themselves a racial immunity to tuberculosis.

There is here matter worth considering, when we contemplate spreading the blessings of civilization among races assumed to be savage and barbarous. The white man who (for reasons more or less altruistic) so willingly assumes the burden of carrying the blessings of civilization into benighted regions is much too often accompanied by agencies most cruelly destructive of the oftentimes superb peoples, among which he seeks to exert his influence.

MEDICAL NOTES.

Pneumonia in Alaska. — It is stated that Dr. G. B. Gordon, of Philadelphia, during an ethnological survey, last summer, of a large river in Alaska found in one hut the dead bodies of five Indians. He later learned that pneumonia had passed through this river valley, leading to the death of practically all the natives. Unless modern medical methods are introduced into this region, it is conceivable that in a few years the inhabitants will be exterminated.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, March 11, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 54, scarlatina 74, typhoid fever 4, measles 142, tuberculosis 55, smallpox 0.

The death-rate of the reported deaths for the week ending March 11, 1908, was 19.42.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, March 14, 1908, was 226, against 265 the corresponding week of last year, showing a decrease of 39 deaths and making the death-rate for the week 19.34. Of this number 128 were males and 98 were females; 221 were white and 5 colored; 138 were born in the United States, 81 in foreign countries and 7 unknown; 52 were of American parentage, 152 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 48 cases and 3 deaths; scarlatina, 91 cases and 1 death; typhoid fever, 3 cases and 3 deaths; measles, 201 cases and 0 deaths; tuberculosis, 60 cases and 27 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 33, whooping cough 0, heart disease 25, bronchitis 3 and marasmus 0. There were 14 deaths from violent causes. The number of children who died under one year was 43; the number under five years 59. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 75.

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[2] Introduction to the Study of Medicine.

There were 4 cases and 6 deaths reported from cerebrospinal meningitis, during the week.

A Tuberculosis Inspector Removed. — Dr. James J. McDevitt has been removed by Mayor Hibbard from the position of tuberculosis inspector in the Health Department of the City of Boston. The appointment was made by Mayor Fitzgerald in 1906. The duties of the office seem to have been largely nominal.

Legislative Bills. — The petitioners to the Massachusetts Legislature for the registration of optometrists have been given leave to withdraw.

The bill regulating the sale of cocaine, introduced by Dr. Charles Harrington, Secretary of the State Board of Health, has been favorably reported by the committee.

Public Lecture on Nervous Breakdown. — Dr. James J. Putnam, Professor of Neurology at the Harvard Medical School, delivered a public lecture at the New York Academy of Medicine March 14, on the subject "The Nervous Breakdown." Dr. Putnam placed chief stress upon the application of common sense in the treatment of various nervous disorders and analyzed the condition of so-called nervous breakdown into its constituent elements.

The Committee on Reorganization of the Boston Board of Health. — From our note last week concerning the composition of the above committee, the name of Dr. John T. Bottomley was omitted. Dr. Bottomley is a member, and one of the three medical members of the committee.

Report of the Butler Hospital. — According to the recent Report of the Trustees and Superintendent of the Butler Hospital, Providence, R. I., there were in the hospital on Dec. 31, 1906, 170 patients, — 74 men and 96 women. There have been admitted 105 patients, — 57 men and 48 women. The whole number under treatment during the year was, therefore, 275. The maximum number at any one time was 182, the minimum 161, and the average for the year 169. The discharges numbered 113, of whom 56 were men and 57 women, leaving in the hospital at the end of the year 162 patients, — 75 men and 87 women. Of the admissions 41 were residents of Providence, 26 of other parts of Rhode Island, 27 of New England states, 9 of other states, and 2 of Canada. Of the discharges, 21 had recovered, 53 were improved, 30 were unimproved, and 9 had died. The percentage of voluntary admissions during the year was 48.60.

Training School for Nurses, Massachusetts General Hospital. — The graduating exercises of the Massachusetts General Hsopital Training School for Nurses was held in the Out-Patient building of the Massachusetts General Hospital March 11. Music was furnished by a chorus of physicians and an address made by the Rev. Francis G. Peabody, of the Harvard Medical School. Diplomas were presented to the graduates by Dr. Henry P. Walcott, chairman of the board of trustees. Twenty-eight nurses were graduated.

NEW YORK.

Money for the Nassau Hospital. — By a bazaar arranged by committees of ladies from the different churches of the town which was held at Roslyn, Long Island, on March 3, the sum of $550 was netted for the Nassau Hospital, an excellent institution which, it will be recalled, has of late been in financial difficulty.

Maintenance of the Insane. — In its fifteenth annual report, just issued, the State Charities Aid Association declares that unless a larger amount is soon available for the maintenance of the insane, the standard of care will have to be reduced below a proper and decent level. "To keep the insane at the rate allowed by the appropriation already made, with the prevailing high prices of supplies, means that the food and clothing and bedding will be insufficient and of poor quality, and that the already inadequate supply of attendants will be further reduced. Perhaps the most serious result of a reduction in the appropriation is the effect on the attendants. As wages are fixed by statute, they cannot be reduced, and the only possible resort is such a curtailment of the force that those employees who remain in the service are seriously overworked and patients are neglected. . . . The occasional instances of neglect and even abuse of patients, which do so much to discredit the state hospitals and to prejudice people against them, are largely due to the difficulty of securing a sufficient force of reliable employees to work for the remuneration offered." The total increase of insane in the state for the year is given at 791. The report states that the state hospitals, which are mostly overcrowded, need not only more land, but better equipment in their agricultural and other related departments, and that they should be allowed to increase their farm adjuncts, such as cattle herds and poultry plants, which furnish supplies for these institutions. The report goes on to say that the Aid Association has appointed committees in different parts of the state for the "after care of the insane," whose object it is to secure help and employment for needy and friendless patients discharged from the hospitals until such time as they may be able to make a livelihood for themselves.

Value of Life of a Child.— It appears that the life of a young child is valued at, at least, $1,000 more in New York than in New Jersey, where recently only $150 was allowed, and this simply to cover the funeral expenses. On March 12 a verdict of $1,250 was awarded by a jury in the New York Supreme Court to the parents of a girl four and a half years old, who had been killed by a street car.

Opposition to Anti-vivisection Legislation. — The State Medical Society is vigorously opposing the enactment of two bills, whose provisions are somewhat similar, for the further restriction of vivisection, which are now before the legislature; and a number of the most prominent physicians have signed a statement prepared by Dr. Frank Van Fleet, chairman of the legislative committee of the society, to the effect that experiments upon living animals are sufficiently regulated by the present law, which was passed in 1867. In this it is claimed that the charges that many authorized persons neglect to give anesthetics during operations and are indifferent to the infliction of pain are not true. "The abuse of vivisection," the statement goes on to say, "so far from being common, is rare, and already forbidden by statute. To fetter the discretion of qualified persons by means of legal restrictions beyond those of the statute aforesaid would be to imperil the progress of medicine, which has never been swifter or more beneficent than at present, and to which the experimental method is absolutely indispensable."

Obituary.

CHARLES AYER CLOUGH.

Dec. 19, 1849 — Feb. 8, 1908.

The sudden death of Mr. Clough from heart disease, at Pinehurst, N. C., last month, brought sorrow to his many friends among the medical profession, and a few words of tribute to his memory in the Boston Medical and Surgical Journal seem eminently fitting.

For nearly twenty-five years he was the senior member of the firm of Clough & Shackley, the well-known pharmacists in Boston, their combined names being a synonym for integrity and fair dealing to all who came into business relations with them. In comparatively recent years Mr. Clough had retired from active work in the firm and had devoted himself to the less confining life of a farm in Groton, Mass., while interesting himself in avocations more congenial to his tastes.

For a number of years previous to his establishing the firm at the corner of Charles and Beacon streets, he had been the resident pharmacist at the Massachusetts General Hospital, and it was in this position that he came in contact with the then young members of the profession, as they year after year were passing their apprenticeship in medicine before becoming full-fledged physicians. Among these men he made many dear and lasting friendships, and no one who had the privilege of knowing him in those days fails in paying tribute to his sterling character and to his many traits which won the love and respect of all with whom he came in contact.

Mr. Clough was a man of sensitive, rather retiring, nature, except with his intimates; with them he showed his true self, a pure, sincere man of intellectual tastes, hating cant or hypocrisy in any form, sometimes blunt in speech, but always kindly and with a ready sympathy in time of need.

In early life compelled of necessity to forego the pleasures and privileges which had been granted to many of those with whom he was in sympathy, he found in later years great delight in the friendships formed at the Tavern Club in Boston, of which he was one of the best-known and most beloved members. There he could give free rein to the expression of his tastes, and find congenial companionship among those whose paths led in different directions from his own. There, as elsewhere, the ringing laugh, the bright, good-natured banter, the kindly glance of "Clummy," as he was affectionately called by his intimates, became an integral part of that genial circle and will always remain a happy memory in the minds of his friends, now saddened by the thought that he is gone.

On the morning of Feb. 8, when visiting his relatives in Pinehurst, N. C., whither he had gone apparently bright and well a few days before, he suddenly complained of pain about the heart. Within a few moments he became unconscious, and almost immediately expired, without apparent suffering. He died as he would have wished.

The death of a man of such sterling worth as Mr. Clough is a distinct loss to the medical profession, dependent as they are in their practice upon the character of the pharmacist. It is as a friend, however, that he will be most sorely missed by many.

V. Y. B.

Current Literature.

Medical Record.

Feb. 8, 1908.

1. *Smith, E. E. *Blood Reactions of Inflammation and the Diagnostic Prevention of Terminal Stages of Infections of the Appendix and Gall Bladder.*
2. *Bartlett, W. A. *Diagnostic Prevention of Terminal Stages of Infections of the Appendix and Gall Bladder.*
3. *Bryant, W. S. *Stricture of the Eustachian Tube with its Baneful Consequences Traced to Adhesions in the Fossa of Rosenmüller.*
4. Haig, A. *Organic Factor in High Blood Pressure.*
5. *Dunham, H. B. *Incipiency in Tuberculosis from the Standpoint of Sanatoria. The Safety and Value of the Tuberculin Test to be Safe Guarded Solely by the Clinical Method.*
6. Stoll, H. F. *Benjamin Rush as a Phthisiotherapist.*
7. Van Baggan, N. J. P. *Misuse of the Voice and its Cure. Vocal Muscles and Resonance.*
8. Weber L. *Favorable Influence of Small Doses of Arsenic, and Bichloride of Mercury in Three Cases of Exophthalmic Goiter.*

1 and 2. Smith and Bartlett consider the importance of estimating (1) the absolute number of leucocytes; (2) the relative number of the neutrophiles; (3) the degree of fibrin formation in the blood during active inflammatory processes. They discuss the theories and the pathological significance of an increase of any one of these elements of normal blood, and then they give a number of cases to illustrate the importance of the routine examination of the blood with reference to these three elements.

3. Bryant states that almost all adults and many children show more or less obstruction of the fossa of Rosenmüller. This results from hypertrophied lymph follicles which, as life advances, become atrophied and leave behind fibrous adhesions. This closes the Eustachian tube a little behind its orifice, while the opening is held open. Thus the physiological function of the tube is interfered with. This can be demonstrated with the salpingoscope. Relief of this impediment by curetting and application of nitrate of silver allows of effective treatment of middle ear conditions.

5. Dunham believes that physicians are still lacking in ability and willingness to diagnosticate tuberculosis in its incipiency. It is the experience of state sanatoria for tuberculosis that they are unable to fill their beds on account of the inability to find incipient cases among those referred to them. He believes that the use of tuberculin as a diagnostic test is of great value, and of no disadvantage to the patient if properly conducted. Fully 95% of cases can be diagnosticated in this way. If we rely upon the examination of the sputum for a diagnosis, we shall obtain few really incipient cases for treatment. [W. B. R.]

Feb. 15, 1908.

1. *Coffey, R. C. *What shall We do for Far Advanced Cancer of the Large Bowel?*
2. Gorgas, W. C. *Sanitation of the Canal Zone.*
3. *Worth, C. E. *A Method of Milk Production.*
4. Davis, A. E. *The Importance of Correct Diagnosis in Diseases of the Eye is the Chief Reason why Opticians should not Prescribe Glasses.*
5. Jenkins, N. B. *Phthisis in Outdoor and Indoor Life and in Isolated and Cosmopolitan Races.*

1. Coffey, from a series of ten cases treated in the past year, comes to the conclusion that far advanced cancer not pathologically extensive should always be excised. For extensive growths producing obstruction, excision may be used in certain cases with the hope of relief, if not cure, but a larger percentage is best treated by some form of entero- or colo-colostomy, or colostomy. Extensive growths with marked cachexia, but with no obstruction, should be treated by whatever operation the comfort of the patient demands. He refers to the cases reported by Meyer and also those by Jonas. In his cases where possible, he did entero-anastomosis.

3. Worth suggests the following plan to purify the milk supply: (1) The use of sterile covered pails and sterile milk cans. (2) The dairy house, where the washing and sterilizing of utensils, and cooling and bottling of the milk are done, may be at a distance of several miles from the cow stable without increasing materially the bacterial count, provided the milk is delivered at the dairy house within one hour after milking. (3) Increase the functions of the creamery, so that it becomes a washing and a sterilizing plant for the milk pails and milk cans of all the farmers contributing milk to it. (4) Substitute covered milk cans, or "pail-cans," for the wide open milk pails now in use. (5) Let the creamery do all the cooling and bottling of the milk. (6) Concentration of operations at the creamery for a large number of farmers would be business economy, and would likewise eliminate many sources of contamination. [W. B. R.]

New York Medical Journal.

Feb. 15, 1908.

1. Beck, C. *On Some Points Regarding Urethroplastic Operations, with Special Reference to the Dislocation Method.*
2. Cummins, W. T. *Squamous Celled Carcinomata of the Esophagus.*
3. Ballin, M. J. *Some Observations on the Removal of Adenoids.*
4. Collins, J. *Psychasthenia.*
5. Brothers, A. *The Management of Febrile Conditions after Abortion and Labor.*
6. Braddock, C. S. *Vaccination in the Far East.*
7. Klotz, F. E. *Diseases of the Breathing Apparatus which Affect the Breath: the Breath as an Aid in the Diagnosis of These and Other Diseases.*
8. Pelton, H. H. *The Treatment of "Cold in the Head."*
9. Kinch, C. A. *The Teaching of Dermatology in Medical Schools.*

Feb. 22, 1908.

1. Seaman, L. L. *Some of the Triumphs of Scientific Medicine in Peace and War in Foreign Lands, with Suggestions upon the Necessity of Important Changes in the Medical Service of the United States Army.*
2. Mettler, L. H. *Art and Science as Applied to the Practice of Medicine.*
3. *Morse, J. L. *The Management and Treatment of Tuberculosis in Infants and Children.*
4. Robinson, W. F. *Precautions to be Taken in Coming South.*
5. Brav, A. *The Rational Treatment of Iritis.*
6. Campbell, W. F. *Some Unusual Effects of Gonococcus Infections.*
7. Speese, J. *Carcinomatous Degeneration of Breast Cysts.*
8. Allen, A. H. *Notes on Dengue in Cuba.*

3. The general principles of the management and treatment of tuberculosis in early life are the same as in later life. Children are much less able than adults to bear exposure, and great care must be taken in "hardening" them. They are much more amenable to treatment, and almost always make good patients. Moreover, they accommodate themselves to institutional life much better than do adults. In cases of surgical tuberculosis, experience has shown that a stay of at least a year in a sanatorium is necessary to obtain a cure. Pulmonary tuberculosis in children is usually a part of a more or less generalized tuberculosis. Most cases are incurable, and the children with pulmonary tuberculosis withstand "hardening" and exposure very poorly. For the prevention of the dissemination of tuberculosis among children, Morse suggests the removal of all children in families where there is open tuberculosis, treatment in separate sanatoria for the pre-tuberculous, for latent and surgical tuberculosis, early open tuberculosis and advanced cases. The schools should be inspected at least once in six months. [R. I. L.]

The Journal of the American Medical Association.

Feb. 15, 1908.

1. Jordan, E. O. *The Problems of Sanitation.*
2. Power, J. E. *Pregnancy as an Etiologic Factor in Dental Disease.*

3. Tyndale, J. H. *Physical Diagnosis: Urgent Need of Revision.*
4. Sanford, A. H. *Simultaneous Sphygmomanometric Pressures as Modified by Postures.*
5. Harvie, J. B. *A Case of Hair-Ball in the Stomach.*
6. Holden, W. A., and Collins, J. *Polio-encephalitis Superior; Its Causation, Clinical Course and Termination, with a Report of Six Cases.*
7. Young, H. H. *A Report of One Hundred Consecutive Perineal Prostatectomies without a Death.*
8. Scripture, E. W. *Experiments on Subconscious Ideas.*
9. MacGowan, G. *Enuresis Following Prostatectomy. Report and Analysis of Eleven Cases, with Recommendations as to Treatment.*

Surgery, Gynecology and Obstetrics.

March, 1908.

1. *Cushing, H. *Technical Method of Performing Certain Cranial Operations.*
2. Tracy, S. E. *Fibromyomata Uteri. A Study of the Degenerations, Complications and Associate Conditions in Three Thousand Five Hundred and Sixty-one Cases.*
3. Hancock, J. C. *Acquired Atresia of the Common Duct, Due to Gallstones.*
4. *Balloch, E. A. *Hematuria in Pregnancy.*
5. *Murphy, J. B. *Tuberculosis of the Patella.*
6. *Bartlett, W. *Prophylactic Use of the Filigree in Infected Wounds of the Abdominal Wall.*
7. *Haines, W. D. *The Differential Diagnosis of Duodenal Ulcer and Gallstones.*
8. Moore, J. E. *Preparatory and Post-Operative Treatment.*
9. Leonard, C. L. *A New Form of Surgical Adhesive Plaster.*
10. McMurtry, L. E. *The Treatment of Fibroid Tumors Complicated by Pregnancy.*
11. Harsha, W. A. *Tuberculosis of the Tongue, with Report of a Case.*
12. Hasbrouck, E. M. *A Case of Interscapulo-Thoracic Amputation for Sarcoma of the Arm.*
13. Van der Veer, E. A. *Report of a Case of Degenerated Uterine Myoma.*
14. *Steele, D. A. K. *Stab Wound of Fetus in Utero.*
15. Bolt, R. A. *Ovarian Hernia, with Report of a Case.*
16. *Reverdin, J. L. *Some Remarks on the Intraglandular Enucleation of Goiter.*

1. After a hopeful, but not unduly optimistic, prognosis for the future of cerebral surgery, Cushing describes in detail the technical steps of osteoplastic resection, subtemporal decompression and suboccipital craniotomy, together with points in the preparation and after-care of head cases. Most noteworthy are his use of lumbar puncture during operation, to prevent undue brain protrusion; the constant auscultation of the heart by the anesthetist through an ingenious telephonendoscope; and the administration of urotropin after compound skull injuries, as a prophylactic against sepsis by its excretion as formaldehyde in the cerebrospinal fluid. The article is of great value as representing the newest advances in technic of those operations which promise most to widen the possibilities of surgery upon the brain.

4. Balloch reports a case in which rapidly repeated pregnancies apparently induced a toxic hematuria, and comments on the relation of such a condition to the so-called essential renal hematuria, and to the other toxemias of pregnancy.

5. Patellar tuberculosis is rare. Murphy, reviewing the literature and reporting two cases, believes this rarity due to the absence in the patella of "epiphyseal or capillary loop circulation." The importance of trauma as a determining factor in bone tuberculosis is shown by quoted experiments in which animals, injected with tuberculous sputum or pus, failed to develop bone lesions unless the bone were traumatized.

6. Bartlett reports 6 cases in which a silver filigree was implanted in a septic laparotomy wound, 4 of which healed perfectly, and are without hernia in the scar. As a result of these observations and of animal experiments, he concludes that such a filigree may be employed as successfully in a septic as in a clean wound, and recommends its use in all cases in which for any reason subsequent ventral hernia is particularly liable to occur.

7. There is no touchstone of diagnosis between gallstones and duodenal ulcer, for both have the same trilogy of cardinal symptoms, — pain in the right upper quadrant, vomiting and gas. Haines relies chiefly on the nature of the pain, which in ulcer is less sudden and severe, burning or gnawing rather than boring or lancinating, and relieved by food or by eructation. The vomiting with gallstones is more persistent and less in quantity, and does not afford relief to the pain.

14. Steele reports a unique case in which a stab-wound penetrated a six-and-a-half months' gravid uterus, entered the abdominal cavity of the fetus and severed its jejunum, without terminating pregnancy. The child, born alive at term, showed both ends of the divided gut closed by plastic adhesions, the proximal part much distended, the distal intestine collapsed and protruded through the fetal wound. The child died eight hours after an operative attempt to relieve this condition; the mother experienced no subsequent ill effects.

16. As a result of his large clinical experience, Reverdin prefers, for benign thyroid tumors, fluid or solid, intraglandular enucleation rather than partial thyroidectomy, which he believes should be reserved for malignant or diffuse growths, or for highly vascular or inflamed benign neoplasms. He describes the operation as practiced by him, and discusses its relative advantages and disadvantages over other procedures. [R. M. G.]

The Lancet.

Feb. 22, 1908.

1. Eyre, J. W. H. *Erasmus Wilson Lecture on the Pyogenetic Activities of the Pneumococcus.*
2. *Gray, H. M. W. *Considerations Concerning the Functions of the Stomach and the Operation of Gastro-Enterostomy.*
3. Parsons, J. H. *Night Blindness.*
4. Clutton, H. H., and Dudgeon, L. H. *Case of Aneurysm of the Femoral Artery in a Man Aged Seventy-eight Years, in which Suppuration took Place from Pneumococcal Infection; Recovery.*
5. Pearson, R. S. *Three Cases of Poisoning by Carbonic Oxide; One Recovery.*
6. Morton, J. J. *A Method of X-Ray Examination in Cases of Urinary Calculus.*
7. Ewart, W. *"Dammed Circulation" and "Interrupted Circulation." A Note in Nomenclature.*

2. Gray presents certain considerations concerning the functions of the stomach and the operation of gastro-enterostomy. He believes that certain cases where there is regurgitant biliary vomiting, etc., are due to the fact that sufficient care is not taken in the selection of the site of the opening in the stomach. He states that Mayo's guide, that the opening should lie in a vertical line from the cardiac orifice, is a thoroughly sound one when the stomach is lying undisturbed in the abdominal cavity. He also believes that the stomach can no longer be called a "one-compartment" organ; that x-ray tracings of the stomach of normal individuals who have taken meals mixed with bismuth subnitrate show distinctly that the stomach consists of two parts separated more or less clearly by a zone of constricting fibers, which can be definitely demonstrated at autopsy. The two parts he calls the cardiac sack and the pyloric tube. The cardiac portion acts as a reservoir, in which the food is in a great measure prepared for further digestion by being subjected to the action of the juices secreted in that part. Later, after having reached its proper chemical reaction, the food is propelled into the pyloric portion, which by its marked peristaltic efforts thrusts the food towards and through the pyloric sphincter. This pyloric portion resembles the duodenum in its pathology. The reaction of this secretion is alkaline. With the importance of all of these points fully appreciated, he believes that in performing gastro-enterostomy one must endeavor to preserve as nearly as possible the natural condition of things. Finney's operation in suitable cases fulfills best this *desideratum*, but it is by no means always applicable, and in any case the opening must be made as near the pylorus as possible. It should be a large one,

and should provide drainage not of the cardiac but of the pyloric portion, so that food will not pass at once from the cardiac portion into the jejunum. In repeated observations with the salol test he has found that when the operation is done as he has indicated there is practically no departure from the normal.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 3.
Jan. 16, 1908.

1. *Martin, A. *The Treatment of Uterine Cancer, Especially its Inoperable Form.*
2. Levy, F. *The Ophthalmo-Tuberculin Reaction.*
3. Klebs, E. *Immunization Against Tuberculosis.*
4. Strasburger, J. *The Measurement of Diastolic Blood Pressure in Man.* (Concluded.)
5. Barberio, M. *The Value of Leo's Method for Determining the Acidity of the Monometallic Phosphates in the Stomach Contents.*
6. Neumann, A. *The Treatment of Injuries to the Liver.*
7. *Meyer, F. G. A. *Anthrax Infection with an Unusual Point of Entrance.*
8. Köllner. *The Etiology of Abducens Paralysis, Especially Isolated Paralyses.* (Continued article.)

1. Martin says the percentage of operability in uterine cancer has risen from 30% to 80%; Mackenrodt even reports 92%. The primary mortality has dropped from 50% to 20% or lower. At the present time the average survival of five years is 20% instead of 10% a few years ago. The differential diagnosis can only be made by the microscope. Cancer of the body of the uterus has a better prognosis simply because it is much more liable to cause hemorrhage than that of the cervix, and so is earlier discovered. In all his experience he has only encountered 2 cases of cancer developing in women who have previously been treated for gynecological troubles. Pregnancy is of dire importance. In such cases with incipient cancer of the cervix he has always found extensive infiltration of the lymphatics and metastases in the broad ligaments. He has treated a number of inoperable cancers complicated with pregnancy, and has always succeeded in controlling the hemorrhage. The actual cautery is the best treatment for inoperable cancer. The cauterization often puts an end to the pain, even when it has previously resisted morphine. Hot irrigations to the bladder and hot applications will sometimes relieve. A retention tube in the rectum will also sometimes relieve symptoms.

7. Meyer reports a case of anthrax gaining an entrance into the body through the inflamed tonsils, and causing an anthrax meningitis and encephalitis. The lesion of the tonsil was not a true carbuncle, but a severe diphtheritic angina. The autopsy, however, left no doubt that the tonsil was the true entrance point of the infection.

[L. G. M.]

Münchener Medizinische Wochenschrift. No. 3.
Jan. 21, 1908.

1. Dungern and Coca. *Hemolysis from the Combined Action of Oleic Acid and Cobra Poison.*
2. *Hamburger, F. *Skin Tuberculids in Infancy.*
3. Flesch, J. *Neurology of the Tongue.*
4. Holzbach, E. *A Report of Eighty Spinal Anesthesias without Mishap.*
5. Gebele. *Bier's Hyperemic Treatment.* (Continued article.)
6. Jolles, A. *The Significance of Pentose in the Feces.*
7. Bermbach, P. *The Action of "Pyocyanase" Subcutaneously Administered.*
8. Mayer, M. *The Transmission of Hog Erysipelas to Man.*
9. Uebl. *Psychology and Psychopathology in Police Cases.*
10. Galli, G. *Indications for Oxygen Treatment.*
11. Doerfler, H. *Report of the First Year of the Station for the Care of Infants in Weissenburg.* (Concluded.)

2. Hamburger describes a tuberculid seen often in infancy in connection with general tuberculosis, which up to the present time has received very little attention. The lesions are at times scarce and easy to overlook, but with a little practice are extremely easy of recognition. They are papulo-squamous, from the size of a pin's head to a split pea. At first they are bright red papules, but after a couple of days they become livid blue to brownish, and carry a brown scale or crust in the middle. Under the crust is a round excavation with a dry base, which rarely bleeds on loss of the crust. Without the crust the lesion appears as a sharply defined loss of substance. The most characteristic things about this efflorescence are the absence of ulceration, the depressed center, the blue color and the shiny appearance when the skin is put on the stretch. The distribution, unlike that of other tuberculids of the skin, is not symmetrical. Often when these papules appear they form the only clinical sign of tuberculosis, though a strong suspicion of the disease may exist. These lesions are to be found much more often in infants than in older children or adults. The author believes that the papulo-squamous tuberculid appears very often in the tuberculosis of infancy, and is therefore of great importance as a diagnostic point. It should be more carefully looked for in all infants suspected of tuberculosis.

[R. D.]

Berliner Klinische Wochenschrift. No. 3.
Jan. 20, 1908.

1. *Martin, A. *Tuberculosis of the Genitol Organs.*
2. Pfeiffer, W. *Observations on Runners and Bicycle Riders.*
3. Pels-Leusden. *A Case of Strangulation of the Penis.*
4. Baron, L. *Abscess of the Lung in Infants.*
5. Herxheimer, K. *The Treatment of Eczema with Preparations of Tar.*
6. *Rosenthal, O. *The Treatment of Syphilis with Arsenic.*
7. Brauser, H. *Gummatous Lymphoma of the Neck.*
8. Pielicke, O. *The Treatment of Tuberculosis of the Kidney with Tuberculin.*

1. The author points out that tuberculosis of the genitalia, especially in women, is rarely primary, and that the frequency of the occurrence of such an infection is difficult to establish. According to the observation of Jung, nearly a quarter of the "permanently" inflamed adnexa are of tuberculous origin. In well marked cases of tuberculosis of tubes or adnexa, the possibility of pregnancy is excluded. The author has used tuberculin to aid in the diagnosis, without any encouraging results. As to prognosis, the outlook is not very favorable; 57% of the cases were discharged cured, 14% were unimproved.

6. Rosenthal has used atoxyl and other preparations of arsenic in syphilis with some success. He does not claim that arsenic is to be compared with mercury and the iodides, but considers that next to these drugs it is the most important therapeutic agent in syphilis. It is especially useful in cases of idiosyncrasy or intolerance to mercury, or in cases where the organism seems to have become used to the action of mercury so that it has temporarily lost its effect. In pertinacious lichen-like or tubercular syphilides, with or without ulceration, it acts extremely well, especially in cases of malignant syphilis.

[R. D.]

Chvostek (*Wiener Klinische Wochenschrift*, No. 2, 1908) points out the relation between myasthenia gravis and the parathyroids. After reviewing exhaustively the various theories of the origin of this affection, and showing their fallacies, he presents his evidence in favor of the assumption that it is the result of defective functioning on the part of the parathyroids. The symptoms, the course of the affection, the frequent combination with affections for which some changes in the blood glands are known to be responsible, in addition to the changes in the muscle, all tend to show that myasthenia belongs in the category of the blood gland affections. The frequent combination of tetany and myasthenia with Graves's disease is important in this connection. Insufficiency of the parathyroid secretion leads to tetany, but perverted or excessive secretion may lead to myasthenia. The cause of the functional disturbance in the parathyroids may lie in the glands themselves, or may be in the nerve centers and tracts regulating their secretion. There is no connection between the persistent thymus and myasthenia; when present it is an anatomical anomaly. [L. G. M.]

Correspondence.

LETTER FROM PARIS.

[From our Special Correspondent.]

"THE SURGEON TRIUMPHANT." A "SPECIFIC" FOR WHOOPING COUGH. MARRIAGE-RATE AND BIRTH-RATE: AN INVERSION.

PARIS, March 3, 1908.

Mr. Editor: 1. Time goes on, and with it proceeds the triumphant career of the omnipotent surgeon. His advance is, no doubt, much less rapid and sensational now than it was at one time, not that he has become less daring, but the supply of new worlds for him to conquer is apparently on the point of running out.

He has grown so thoroughly at home in the peritoneal cavity that he does not hesitate to invite his friends to partake of afternoon tea with him there. In the cranium he does just about as he likes. In the thorax he, it is true, yet moves with caution; but still, he is there to stay. The earth is his, and the fullness thereof, though there did seem for a while to be one lacuna in his otherwise unbroken record, one system that had put up a board with "no trespassing" on it against his advance; this was the circulatory apparatus, heart and vessels.

But, as is so common, this one region that was lacking to make his conquests complete, only served as a spur to drive him onward to its subjection. First, he opened and drained the pericardium. Then he found that he could repair the damaged myocardium without disaster. At present he is engaged in suturing wounds in big arteries and veins, and in effecting anastomoses in these vessels, the very *noli me tangere* of the entire body! And now that this final barrier has gone down before his persevering efforts, he manifests his derision of this system which defied him for so many years by inducing artificial circulation in cases of anesthetic syncope during operation, by massage of the heart through the diaphragm by means of the hand inserted into the peritoneal cavity! How low have the mighty fallen.

That there is now no longer any limit whatever to what the surgeon considers feasible, can be gathered from the following intervention that has recently been reported to the Biological Society.

Two experimentors took a female cat, removed with great care and all the necessary precautions, and *in one single block*, both kidneys, with vessels leading to the aorta and vena cava, a segment of both these vessels, the two ureters with their vessels, and the piece of the bladder comprising the terminal orifices of the two ureters. They then took another female cat of similar size; performed the same operation on number two; and finally introduced into number two the entire urinary apparatus removed from number one, sutured everything carefully and accurately into place, and some of the cats thus treated lived! They even give the picture of one "miaouw," looking fat, amiable and prosperous, on the eighty-first day after such an operation!

The 81-day cat.

What can we poor medical men say in face of such triumphs? Just consider the position we shall now be placed in, and very shortly, — I mean we American physicians; for the mind of the American patient is so alert, that he will hear of this performance fully as soon as his medical adviser. The taste of the lay public for medical reading is now unbounded. There is an American penny-dreadful that appears in Paris as an offshoot to its New York edition, that every Sunday serves up an entire page, six columns, of general medical information to its readers. As soon as this operation appears, it will be reprinted in the New York sheet and be read by a large number of persons. And I look forward with positive certainty to the patient who is going to turn up in my office in a few weeks from now with a bottle of urine and a puzzled mien, to ask for information about "this new operation they are doing for Bright's disease," and who the "very best specialist" is to whom he can apply to have it done. And the only thing to prevent that man from rushing headlong into this parlous venture will be the trouble he will have in finding other men willing to hand over a kidney for a consideration, — for it naturally will not do to be unreasonable and expect a single fellow to fork out his entire set! We Americans are an amazing people. You may think that what I have said above is exaggeration. But it is nothing of the sort. If I live, I shall see that American this spring.

Speaking of the public craze for medical reading, I saw recently in a popular French monthly a long article, profusely and well illustrated by actual photographs, on the evolution from start to finish of a rachi-cocain operation for appendicitis. First the patient is prepared, and sits up for the injection into the spinal cavity which is duly photographed. Then she lies on the operating table, face turned to the right and smiling at the reader, while the abdominal region is covered with the usual sterilized cloths, in the center of which is the opening with its familiar bunch of projecting forceps handles; and the different phases of the affair are duly represented in a whole series of excellent photographs. In a brief preface the writer remarks that since appendicitis is now the fashionable disorder, which every one who respects himself is bound to have sooner or later, he thinks it not a bad idea to let the general public know more or less in what it consists! I hope the said general public will feel better when they have seen that literary contribution! I'll venture to say that it has given many a person horrible nightmares since it appeared, particularly persons who, having already had one or two slight attacks, know that if they have another they will have to undergo operation *nolens volens*.

When we poor medical practitioners — mere outcasts, groping in the darkness of Egypt — look at the surgical clan, swaggering around in the land of Canaan, superior and compassionate, the question inevitably crops up as to whether or not our day will ever come, whether a medical Pasteur will arise and save his chosen people. It all seems so ridiculously easy, for the surgeon, almost child's play. With cleanliness, rapidity and technic he can do any mortal thing he chooses. Shall *we* ever find ourselves in a similar position?

When one has lived through the past ten years, and has seen the appearance of the Roentgen rays, Marconi wireless telegraphy, Curie's radium, and the farther decomposition of atmospheric air, one becomes wary about desponding over *anything*. Just think of the ideas we were brought up on as regards the air: 79 N, 20 + O, and a little Co^2, aqueous vapor and impurities, and there you were; it all added up to about one hundred, and everybody was happy. But there are some people who can never stay "put," and that inquisitive Englishman couldn't sleep because there was a fraction of 1% that he was unable to account for; also, if I remember right, some bands in the spectrum; and so he kept at it until he added argon, helium and a variety of other things to our sum in arithmetic that used to be so easy to remember. And those good old molecules and atoms that we used to rely on, and that gave such universal satisfaction, — where are they now? Split up into an infinity of new things called ions. So all that edifice has got to be pulled down and reconstructed.

But still in spite of the wonders of the past few years, the problem before the medical man is so infinitely more complicated than that of the surgeon, and we are as yet apparently so grossly ignorant of the whole question of the life. properties, reactions and means of defence of cellular elements, that it is impossible to conceive, even with all the optimism imaginable, that any one discovery of whatever magnitude can prove to medicine what antisepsis, or its outcome asepsis, has been to surgery. We are only on the threshold of the whole question of antitoxins, agglutinins, precipitins, opsonins, hemolysins, and other ins known and unknown. And what does the general practitioner know of such matters? Have they yet spread beyond the sanctum of the laboratory?

No; there is no use shutting our eyes to the fact that *our* day of jubilee has not come yet. In times of great spiritual dejection I am wont to turn to the writings of your immortal philosopher, Mr. Hosea Biglow, from whose pages I seldom fail to derive substantial comfort. To-day I find the following:

> "No, never say nothin' without you're compelled tu,
> An' then don't say nothin' that you can be held tu,
> Nor don't leave no friction-idees layin' loose
> For the ign'ant to put to incend'ary use."

In spite, however, of the vast amount of good common sense condensed into these lines, and also in fact of the well-known failure of prophesying as a liberal profession (which has also been referred to by Mr. Biglow in a line that must be far too familiar to Bostonians for me to dare to quote it), I will venture to predict that salvation, if it ever comes to medicine, will come slowly and painfully; and not by one grand, triumphant stroke of genius, as was the good fortune of surgery.

II. Tissier has published an article on the treatment of pertussis by means of fluoroform, which, both on account of the number of his cases (117), the length of time during which he has tried the remedy (four years), and the professional standing of the writer, deserves to attract attention (*Bull. Gén. de Thérap.*, Nov, 8, 1907).

I need not remind the readers of these pages of what a public nuisance this disease is; and how fatal it is among infants in the poorer classes where proper care cannot be given to the little patients. Thus, below the age of two, the death-rate in Paris and Bâle averages as high as 20%!

Bromoform, a remedy closely allied to fluoroform, has unquestionably given good results in the treatment of pertussis; but owing to its pharmacological drawbacks, as well as its real toxic properties, it is one that is never likely to enter into general use. Next to this in efficacy can probably be mentioned antipyrin.

Looking around for something to replace bromoform, Tissier was led to try fluoroform; and the results of this experiment have been that he now puts forward the latter "as, so to speak, a specific treatment."

Fluoroform is a colorless gas with a faint smell of chloroform; water dissolves it in the proportion of 2.8 per 100. When kept for a while in glass bottles it gives rise to flakes of silicium fluoride, which float in the liquid. The fresh solution is colorless, odorless and practically tasteless.

In no instance has Tissier had any unpleasant results from this treatment, even when by mistake the proper dose was exceeded. In addition to this the little patients take the preparation just like water, on account of the absence of all disagreeable qualities mentioned above.

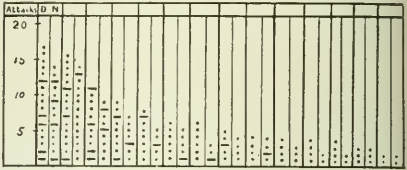
He requires the parents to keep count of the coughing fits on an ordinary temperature chart, dividing the day into two halves, 7 A.M. to 7 P.M., and 7 P.M. to 7 A.M., a dot for a small attack, a line for a more important one, in vertical columns beginning at the bottom. This is an *excellent* plan, from various points of view.

The effect of the remedy appears in two or three days when the dose is suitable; thus, with 30 attacks *per diem* there is a diminution of one third on the third day, and shortly after of one half. Vomiting, that distressing and often serious complication, soon disappears. It is unusual after a week of treatment that more than ten attacks should occur *per diem*, even in the most serious cases One of Tissier's patients, a baby of eleven months, with *seventy* attacks a day, consequently a very severe form of the disorder, recovered rapidly under the fluoroform.

In no instance treated by Tissier before the onset of bronchopulmonary complications did such complications occur; and *all* of his 117 cases recovered!

Doses: Below the age of two, one drop of this 2.8% fluoroform gas solution after each attack, the first day; two drops *idem* the second day; three the third; and so on, not to exceed 5 gm., 100 drops, *per diem*. Between two and four years, 10 drops four times a day, to rise to 5–10 gm. *per diem*. Above that age the amount can be increased to 15 gm., and with adults to 30 gm. *per diem* in teaspoon doses. As the remedy is not toxic it would seem likely that these doses could be made greater still; but Tissier has been satisfied with the results given by the above posology.

The one drawback to the remedy appears to be tha it is rather expensive.



Tissier's pertussis chart.

III. The weekly health-report of the city of Paris once more calls attention to the fact that whereas during the last two or three decades the marriage-rate has been steadily increasing, the rate of births has been equally progressively decreasing. The compiler of these tables finds this state of affairs paradoxical; in fact he frankly admits that it is not what was to have been expected!

He will, I imagine, have to add this to the list of insoluble problems of deep philosophic bearing that we meet on our way through life, and ponder over at length without ever reaching satisfactory conclusions. To cite another among so many, — one that a protracted sojourn in this gay town affords frequent occasions of observing, — how is it that all the good-looking women are able to wear the smartest of clothes and keep motor-cars to ride in, whereas, we ordinary mortals are thankful to be decently dressed, and circulate in the humble fiacre? For instance, it was found recently on the death of a fashionable actress here, that she owed her *lingère* over one hundred thousand francs. This was only for what these plain spoken people call her *dessous;* so what must her bills have been for the remainder? Now I am quite sure that if I owed my tailor a hundred dollars for a few months he would be making discrete inquiries about my prosperity. Yet I am not too modest to say that my moral character and standing in the community are quite as good as those of the woman in question. How is it, then, to return to our conundrum, that a good-looking woman's credit is practically without limit?

Puzzling problems, these; always recurring, as they have ever occurred. Who will be so bold as to attempt to solve them?

"Spectator."

P. S. I have just recalled a skit on rachi-cocain operations that appeared in the papers a while ago, representing a patient lying on the operating-table reading the morning paper with a sardonic smirk on his face, while the surgeon and assistants have all got their heads into his abdominal cavity looking for a ring which the operator claims to have lost off his finger!

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SANATORIA FOR TUBERCULOSIS.

Boston, March 16, 1908.

Mr. Editor: Two letters have recently appeared in the Journal from foreign correspondents,[1] which I cannot help feeling may have an unfortunate effect in discouraging the use of sanatoria for tuberculosis, and even the employment of rest as an essential part of the treatment of most cases of tuberculous patients, which latter, judging from the details of treatment at Frimley, its physicians did not intend.

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[1] Feb 20, page 272, and Feb. 27, page 308.

As with all other successful methods of treatment, unfortunately too much has been claimed and hence too much expected from the sanatorium.

It is, nevertheless, still true that all that is needed in the way of treatment of the poor can be much better accomplished in such an institution than at home, and even for the well-to-do, that complete rest of body and mind, so essential in the beginning of most cases, can be here much better secured. The details of treatment in sanatoria are properly a fair subject for criticism. I have thought that my patients have been treated very injudiciously in some of them.

The fact that many patients suffer relapse after leaving sanatoria is no argument against the treatment which has benefited them while there, the relapse being due to a resumption, too early perhaps, of old conditions of life, and effort is now being made at many sanatoria to keep patients after the disease is arrested, and gradually inure them to an increasing amount of work under constant supervision. The importance of supervision of patients after they leave sanatoria was the subject of a paper which I read at the meeting of the American Climatological Association in Washington last May, and such supervision is one of the most important duties of the state and private associations at the present time.

In regard to the question of exercise for tuberculous patients, most of them require rest in the beginning of treatment, and I trust that the impression of this fact, which has but lately been made on the general profession, will not be impaired by any reports of the benefit of exercise, which may be proper if timely, but very improper and disastrous if untimely. Just when, after a period of rest in most cases, exercise ought to be resumed and gradually increased is a matter for careful determination by the physician. The opsonic test is at present hardly available for general use. If exercise causes much rise in temperature, diminishes the appetite for food, or seems to impair the general well-being of the patient, it should be diminished or again discontinued for a time. The workshop and farm-colony, where work can be graded and superintended, are certainly very important additions for treatment of tuberculosis, but the "Liegehalle," some protected place, by whatever name one may call it, where patients may lie quietly in the fresh air, is still necessary for the proper treatment of most cases.

All physicians who are called upon to treat patients with tuberculosis must bear in mind that it is the patient that is the proper object of treatment, and not the disease; that routine treatment, whether in a sanatorium or out of it, is wrong, and that each individual case requires great care, skill and experience in selecting therapeutic conditions and measures which are adapted to it.

Very truly yours,
Frederick I. Knight, M.D.

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INSTRUCTIONS IN REGARD TO TUBERCULOSIS IN THE PUBLIC SCHOOLS.

Boston, March 13, 1908.

Mr. Editor: In your issue of Feb. 20, in an editorial commenting on certain bills now before the Massachusetts Legislature, you characterize a certain bill introduced by Representative Bennett, of Springfield, with the object of introducing the study of the prevalence, prevention and treatment of tuberculosis in the courses of hygiene and physiology in the public schools, as "carrying the campaign to a virtual absurdity."

I dissent so strongly from this view, and I believe that physicians interested in the prevention of tuberculosis will agree with me, that I believe something should be said in behalf of this bill. It is rather unfortunate that a journal with the influence which your journal has in this state should characterize as absurd anything which tends to make children familiar with the need of fresh air, cleanliness, sunshine and proper food, and which aims to acquaint them with the ravages being done by tuberculosis to-day. Those of us who are doing work along these lines believe that one of the most important factors, if not the most important factor, in an educational campaign such at this, is to present the facts simply, forcibly and clearly before children in regard to the rules of hygiene and proper living, for childhood is the time when habits are formed which guide the child through life.

Dr. Luther H. Gulick, director of Physical Training in the Public Schools of New York, has recently published in his hygiene series a short book called, "Town and Country," which takes up the question of tuberculosis along with the question of alcohol, food inspection, overcrowding, bathing, etc. This book is destined to be used in the New York public schools, and to the most casual reader it seems eminently fitting that school children should be acquainted with the facts which are there presented. The bill which Governor Guild has just signed, which met with your disapproval, is aimed to accomplish the same results, and I believe will prove to be a very important measure in the anti-tuberculosis work in this state.

Very truly yours,
John B. Hawes, 2d, M.D.

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THE ALCOHOL PROBLEM.

An Appeal to American Physicians.

Hartford, March 14, 1908.

Mr. Editor: During the year 1907 over two hundred papers, lectures and pamphlets were published in Europe and America presenting different phases of alcoholism and inebriety, purely from a scientific point of view. Many of the authors complained that these papers were not widely read and were practically lost, because they did not reach medical men interested in the subject. The Federation Bureau of this country, organized nearly two years ago with the object of collecting and disseminating all facts concerning the alcoholic problem in connection with the International Bureau of Europe having the same purpose, proposes to secure a list of medical men and scientists interested in the scientific study of the alcoholic problem. This list is to be made available for authors and students who write on this subject and wish to address a special audience of physicians, not only to increase their interest, but to stimulate farther studies of the subject. Such a list will enable the Bureau to extend its work of accumulating facts from the most reliable sources, and keep both authors and readers in close touch with all that is done. This is a practical effort to group and concentrate the experience and observation of medical men and make them acquainted with what is being done in the scientific study of the alcoholic phenomena. All physicians who are interested in the scientific literature, research work and studies of medical men, at home and abroad, are urged to send their names and addresses so as to be registered and receive copies and abstracts from authors and persons who may wish to have their work examined and read by interested parties. As chairman of the board of directors of the Federation Bureau I urgently request all physicians interested in this subject to send me not only their own names, but lists of reputable physicians who would care to receive some of the most important literature coming from the press and hear what is said in the scientific world concerning this problem.

Very truly yours,
T. D. Crothers, M.D., *Chairman.*

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ENDO-ANEURISMORRHAPHY.

2255 St. Charles Avenue,
New Orleans, La., March 10, 1908.

Mr. Editor: As I am compiling the statistics of operations for the radical cure of aneurism by the method of intra-saccular suture (endo-aneurismorrhaphy) I should be very much obliged to all surgeons who have had experience with this operation for brief reports of their cases.

Very truly yours,
Rudolph Matas, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, March 7, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	6	1
Chicago	—	—	Waltham	6	1
Philadelphia	—	—	Pittsfield	10	3
St. Louis	—	—	Gloucester	6	2
Baltimore	235	72	Brookline	8	—
Cleveland	—	—	North Adams	6	1
Buffalo	—	—	Chicopee	9	6
Pittsburg	—	—	Northampton	11	3
Cincinnati	—	—	Medford	8	1
Milwaukee	—	—	Beverly	3	—
Washington	—	—	Leominster	—	—
Providence	89	29	Hyde Park	0	—
Boston	220	46	Melrose	3	0
Worcester	57	14	Newburyport	—	—
Fall River	50	14	Woburn	5	0
Cambridge	20	8	Westfield	—	—
Lowell	47	9	Marlboro	2	1
Lynn	21	5	Revere	3	1
New Bedford	28	13	Attleboro	2	1
Springfield	26	6	Peabody	—	—
Lawrence	28	14	Adams	7	4
Somerville	14	0	Clinton	5	2
Brockton	20	5	Gardner	4	3
Holyoke	20	2	Milford	4	—
Malden	15	6	Watertown	2	1
Chelsea	15	3	Plymouth	—	—
Newton	12	3	Weymouth	—	—
Salem	16	6	Framingham	3	1
Haverhill	12	1	Southbridge	—	—
Fitchburg	11	1	Wakefield	—	—
Everett	6	4	Webster	—	—
Taunton	14	3	Arlington	—	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED MARCH 4, 1908.

Foster, M. H., passed assistant surgeon. Leave of absence granted Passed Assistant Surgeon Foster for two months and eleven days from Oct. 9, 1907. Amended to read two months and nine days. Feb. 27, 1908.

Earle, B. H., passed assistant surgeon. Granted leave of absence for five days from March 2, 1908. Feb. 27, 1908.

Scofield, R. B., assistant surgeon. Granted leave of absence for three days from Feb. 23, 1908, under paragraph 191, Service Regulations.

Keatley, H. W., acting assistant surgeon. Granted leave of absence for five days from Feb. 26, 1908. Feb. 29, 1908.

Comfort, N. C., pharmacist. Directed to report to Passed Assistant Surgeon V. G. Heiser, chairman of a board of examiners to determine his fitness for promotion to the grade of pharmacist of the second class. March 3, 1908.

Keen, W. H., pharmacist. Granted leave of absence for twenty days from March 6, 1908. Feb. 29, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at Manila, P. I., upon the call of the chairman, to examine Pharmacist N. C. Comfort for promotion. Detail for the Board: Passed Assistant Surgeon V. G. Heiser, chairman; Passed Assistant Surgeon T. B. McClintic, recorder. March 3, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MARCH 14, 1908.

T. W. Richards, surgeon. Detached from the "Colorado" and ordered to the Naval Hospital, Mare Island, Cal., for treatment.

E. M. Brown, passed assistant surgeon. Granted sick leave for three months, when discharged from treatment at the Naval Hospital, New Fort Lyon, Colo.

C. L. Moran, assistant surgeon. Ordered to duty at the Naval Hospital, Norfolk, Va.

A. C. Stanley, assistant surgeon. Ordered to duty at the Naval Medical School Hospital, Washington, D. C.

E. S. Bogert, Jr., surgeon. Detached from the "Pennsylvania" and ordered to the Naval Academy.

J. F. Urie, surgeon. Detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the "Pennsylvania."

RESIGNATIONS.

Dr. R. H. Fitz has resigned the Hersey Professorship of the Theory and Practice of Physic in the Harvard Medical School, the resignation to take effect Sept. 1, 1908.

Dr. G. A. Craigin has resigned as clinical instructor in Pediatrics in the Harvard Medical School, the resignation taking effect Feb. 1, 1908.

SOCIETY NOTICES.

Boston Society for Medical Improvement.—The regular meeting of the Society will be held in Sprague Hall, Medical Library Building, on Monday, March 23, 1908, at 8.15 p.m. Program: "The Newer Ferments and their Participation in the Vital Processes." A. E. Austin, M.D. (by invitation). "The Clinical Value of the Estimation of Ammonia in Diabetes." Harry W. Goodall, M.D., and Elliott P. Joslin, M.D.

Daniel Fiske Jones, M.D.,
Secretary.

American Society of Tropical Medicine.—The American Society of Tropical Medicine will hold its Fifth Annual Meeting at the Johns Hopkins Hospital, Baltimore, Md., on Saturday, March 28, 1908.

John M. Swan, M.D., Philadelphia,
Secretary.

RECENT DEATHS.

Granville Albert Harlow, M.D., M.M.S.S., died in Tyngsborough, March 10, 1908, aged fifty years.

Charles Francis Joseph Kennedy, M.D., M.M.S.S., died in Springfield, March 11, 1908, aged forty-one years. Dr. Kennedy, although born in Philadelphia, had spent most of his life in Springfield, where his mother is a practising physician. Dr. Kennedy had been a member of the Mercy Hospital staff since 1900. He held membership in many organizations, including the Massachusetts Medical Society.

BOOKS AND PAMPHLETS RECEIVED.

Cryptogenetic Streptococcus Infection with Persistent Cutaneous Eruption, Enlargement of the Lymphatic Glands and Fever Suggesting Syphilis. By Alfred Stengel, M.D., J. William White, M.D., and Joseph S. Evans, M.D. Reprint.

The Submucous Resection of the Nasal Septum. By Lee Maidment Hurd, M.D. Reprint.

The Communal Life of Physicians. Its Cultivation and Value. By Leartus Connor, A.B., M.D. Reprint.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 41. Milk and Its Relation to the Public Health. By various authors. Washington. 1908.

Seventh Annual Report of the Work of the Cancer Laboratory of the New York State Department of Health Conducted at the Gratwick Research Laboratory, University of Buffalo. For the Year 1905–6.

U. S. Department of Agriculture. Bureau of Plant Industry. Bulletin No. 121, Part I. The Supposed Relationship of White Snakeroot to Milksickness, or "Trembles." By Albert C. Crawford. Washington. 1908.

Bericht über die Thatigkeit des Temporären Lazareths am Golitzyn-Hospital in Moskau während des Russisch-Japanischen Krieges (18. Juni 1904–10. April 1906). Moskau: S. P. Jakowlew. 1908.

"La Phobie du Regard." By C. H. Hughes, M.D. Reprint.

Ninety-fourth Annual Report of the Trustees of the Massachusetts General Hospital. Including the General Hospital in Boston, the McLean Hospital and the Convalescent Home in Waverley. 1907. Boston. 1908.

Sur la Technique de la Réduction des Luxations Congénitales de la Hanche par la Méthode non Sanglante. Par Le Docteur Paul-Vital Badin. Paris: Henry Paulin et Cie. 1908.

Tinnitus Aurium. By G. Griffin Lewis, M.D. Reprint.

A New Instrument for Partial Tenotomies. By G. Griffin Lewis, M.D. Reprint.

The Diagnosis and Treatment of Pulmonary Tuberculosis. By Francis M. Pottenger, A.M., M.D. Illustrated. New York: William Wood & Co. 1908.

Personal Hygiene in Tropical and Semi-Tropical Countries. By Isaac Williams Brewer, M.D. Illustrated. Philadelphia: F. A. Davis Co. 1908.

Original Articles.

DENTAL CARIES AS A FACTOR IN THE ETIOLOGY OF OTHER DISEASES.*

BY LAWRENCE W. BAKER, D.M.D., BOSTON,

Member of the teaching staff of the Harvard Dental School.

That diseased teeth are a cause of other diseases of the human body is a fact long known to medical science, but that the control of these dental diseases is a factor in preventive medicine worthy of attention is apparently not generally recognized. It is the object of this paper to call attention to the significance of dental caries, the most prevalent disease that attacks man, as an etiological factor in the development and spread of contagion and in the development of other systemic disturbances.

The illustrations that accompany this article help to show how dental caries, or tooth-rot, is a medium for the development and spread of disease. Figure 1 exhibits a carious tooth in section. The disease has attacked and broken down the enamel, invaded and destroyed a portion of the dentine, until the body of the tooth is badly undermined. The large retentive cavity which is thus formed is filled with both decomposing food and decomposing tooth substance. In teeth thus affected we have probably the most perfect conditions within the human body for the development of bacteria; in fact, these carious teeth are perfect culture tubes with all the requirements for the cultivation of germ life, for here are heat and moisture at body temperature, and an abundance of culture medium. These carious cavities, these culture tubes, are wide open for contamination by all forms of bacteria that find entrance to the mouth, — "the vestibule of human life." Furthermore, these stagnant pools are stock cultures for the development of millions of disease-producing germs, which continually drain further into both the alimentary and respiratory tracts, endangering the health of the particular individual in proportion to his lack of resisting capacity. Figures 2 and 5 are microscopic views of specimens of this culture medium.

In these days of eternal vigilance against germ diseases, no such unsanitary conditions as these would elsewhere be tolerated; yet the foul conditions shown here are no exception to the conditions existing among the masses, where contagious and other diseases are most prevalent. Not only are these oral conditions a menace to the health of the individual, but they serve as a vehicle for the spread of contagion. According to Hermann Koninger, in the *Journal of Hygiene and Infectious Diseases*, "a person coughing or sneezing can scatter germs to a distance of more than twenty-two feet. Germs are scattered through the air by means of salivary droplets. These droplets are really microscopic balloons, having a bubble of air in the center, and remain in suspension for a short time. The dissemination of droplets, with their germ-originating capabilities and tendencies, is most marked during coughing and sneezing. The more pathogenic microbes the mouth contains, the greater the danger of infection. Washing the mouth has the effect of decreasing the diphtheritic and other bacilli susceptible of being detached."

Figure 3 is a photograph of several specimens from the clinic of the Harvard Dental School, which are typical of the progress of dental caries in uncared-for teeth. Note the characteristic undermining of the enamel and the consequent retentive shape of the cavities, the nature of which causes pieces of meat, fish and other food débris to stagnate and become putrid in these pockets. Terming these carious cavities human culture tubes is in no sense an exaggeration.

From the specimens shown in Figure 3, it is easy to see how the disease has penetrated to the dental pulps. These have consequently become infected, and the result is gangrene of the pulp and the formation of pus. Gangrene of the pulp is the usual cause of dental or alveolar abscesses, probably the most common form of abscess that attacks the human body. Although it is so common that it almost loses its significance as an abscess, nevertheless it is a true bone abscess, of streptococci and staphylococci infection of the most virulent type. Illustration number 5 is a microscopic view of a specimen of decomposing food retained in an abscessed molar of a child. This specimen clearly shows how infiltrated the retained food became with pyogenic organisms. The pus products from these abscesses, and from pyorrhea alveolaris, in addition to the other pathogenic germs and germs of decomposition propagated in these carious cavities, make a mixed infection which continually drains into the intestinal tract. Among other pathogenic tendencies, this infection is an important, but generally overlooked, element in causing decay of food within the body, the poison from which is the direct cause of many grave and far-reaching diseases, as gastric catarrh, appendicitis, anemia, nervous debility and other diseases, the common etiological factor of which is the decomposition of food within the alimentary canal. Physicians as well as dentists are more than ever realizing the importance of an efficient masticatory equipment in preventive medicine. So eminient an authority as Sir Frederick Treves, surgeon to King Edward, has placed himself on record in regard to this matter by the following:

"Defective masticating teeth are exceedingly common among the subjects of appendicitis, and especially among those who have passed the period of youth. Over and over again it would appear as if the want of proper and efficient teeth had been the direct cause of the attacks. Such patients often bolt their food, and such meat as they eat can hardly reach the stomach in a condition fit for complete digestion. The bolus passes into the bowel still ill-digested. It fails to stimulate normal peristalsis; is prone to lodge in the great receptacle, the cecum, where it decomposes, and, if there be any existing lesion of the appendix, must tend to encourage the morbid change."

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* Read before the American Academy of Dental Science, Jan. 1, 1908. By request of the Boston Society for the Relief and Control of Tuberculosis these illustrations and quotations from the text have been incorporated in their public exhibition.

A case coming under the observation of the writer in the clinic of the Harvard Dental School serves as a practical illustration of the far-reaching effects of oral sepsis. Boy nine years of age. During last three years he has been attacked by two contagious diseases, — scarlet fever and diphtheria, and has been unable to attend school; has been subject to frequent attacks of bronchitis. His cuts heal with difficulty; small wounds become infected readily. Last summer he was severely infected by getting a sliver into the sole of his foot. An oral examination revealed a shocking dental condition (see Fig. 4), there being a series of broken-down, carious and abscessed teeth and roots. From this infected area there was a noticeable septic odor. This dental condition was associated with a swelling of the glands in the neck, on the right side of which there had been a glandular breakdown as indicated by the characteristic scar.

A minute dental examination revealed two or three exposed or partially exposed pulps. Eight or nine dental abscesses were also observed. On freeing the débris from the openings into the root canals of two of these abscessed teeth, a copious discharge of yellowish white pus gushed out; pressure about the other abscesses caused pus to well up through the cavities in the teeth or roots, and in several places this pressure caused a discharge of pus from about the sockets of the teeth. Smear preparations were taken of this pus, and a microscopic examination showed it to be teeming with streptococci and staphylococci; in fact, it was difficult to find anything else but pus germs. Smear preparations were also taken from the food contained in several cavities. (Fig. 5.) In these the pyogenic germs were also found in great numbers, as well as several varieties of bacilli. The boy subsisted only on the softest food, and with his meals he drank a great deal of liquid food. His mother said that he had a peculiar habit of spitting after eating. No doubt this habit was acquired by his effort to rid his mouth of the septic matter.

From this case we may draw the conclusion that the septic state of the entrance of the digestive tract, combined with the loss of mouth digestion, was at least a pre-eminent factor in causing the boy's anemic state, reducing his resisting capacity, so that he fell a victim to the contagious diseases.

Oral sepsis and its relation to disease have been made the subject of careful study by William Hunter, the eminent English physician. In his recent work ("Oral Sepsis as a Cause of Disease") he says:

> "Infective disease of the mouth, as elsewhere, is not, fortunately, a mere question of the presence of an organism, however pathogenic, but a question of *dose* and *resistance*. In the case of the mouth, the question of dose becomes a very important one, when we have to deal, not with an isolated carious tooth, but with a whole series of such teeth, not only dark and necrotic themselves, but lying in inflamed septic and actively suppurating sockets.
>
> "The continuous swallowing of mouthfuls of pus organisms is not tolerated indefinitely by the stomach mucosa. The number of organisms that enter the stomach from the mouth is very large — the most of them to be destroyed, fortunately, by the gastric juice. But this is by no means true of all. A very considerable proportion (as many as eight out of twenty-five, according to Professor Miller) are to be found in the stomach contents. The observations of Macfayden and others show that only a certain proportion are destroyed by the gastric juice. It is only when the acidity of the gastric juice is considerable — *e. g.*, an hour or two after food — that it exercises any direct bactericidal action.
>
> "In long-standing dental disease, the conditions are thus, I consider, precisely those most likely to produce infection of the stomach, viz., on the one hand, *diminished resistance*, *i. e.*, diminished acidity as a result of the chronic indigestion and catarrh; on the other hand, *increase of dose*, *i. e.*, increased supply of pus organisms from the necrotic teeth, reaching the stomach not only during digestion, but in the intervals between meals when the free HCl is at a minimum or *nil*. That under such circumstances disturbances may arise from abnormal fermentative processes in the stomach is a fact to which both clinical and pathological experience testifies, one, too, that is generally recognized. What, however, I find is, that the effect is not limited to a mere fermentation of food products, but that actual *infection of the mucosa* with pathogenic organisms may itself occur. The mucosa of the stomach continually exposed to infection — *e. g.*, of pus organisms from the teeth — becomes eventually infected. A septic catarrh is set up, never to be got rid of, but continuously sustained by influx of septic organisms into the stomach; if continued long enough, this chronic catarrh leads to the usual effects of a glandular catarrh, viz., glandular atrophy, with increase of interstitial tissue around.
>
> "These considerations as to the possible effects, both general and local, of long-continued dental and oral sepsis are of no mere pathological interest. On the contrary, they are of supreme practical importance, exemplified as they are (to a degree which, in my judgment and almost daily experience, is altogether insufficiently recognized) by the cases one meets with of gastric catarrh in association with dental and oral sepsis.
>
> "The ashy-gray look and general languor which such patients, in one's experience, characteristically present, are really manifestations of long-continued septic absorption; the local symptoms of clamminess of the mouth, which one simply looks upon as manifestations of gastric catarrh, are really the result of the oral sepsis; while the nausea, indigestion and gastric discomfort are the result of 'septic' gastric catarrh produced by direct infection of the stomach with the pus organisms.
>
> "These considerations, as I have thus put them, may appear so obvious that they require no further emphasis. But the cases I have to describe illustrate two points: first, the frequency of the conditions; and, secondly, the extraordinary way in which the most remarkable conditions of oral sepsis are overlooked, while the patient is being all the time sedulously treated for the local effects."

The numerous cases that Dr. Hunter then describes give striking and conclusive evidence of these facts, especially as the cases were not selected rare ones, but were from his own experience. Similar conditions may be seen in great numbers in our city. A visit to the out-patient department of any large hospital shows on the

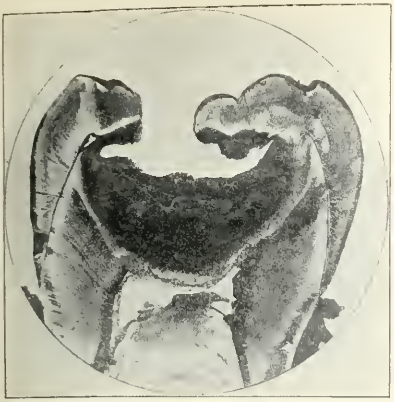

FIG. 1. "Undermining caries; destruction of tooth-substance from within." (From: "A Study in Pathology of the Teeth." By W. D. Miller, M.D., D.D.S., Ph.D., Sc.D., *Dental Cosmos*, January, 1905.)

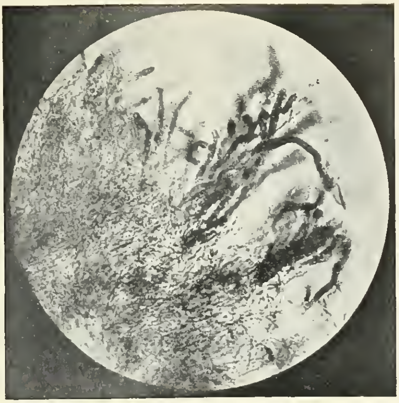

FIG. 2. A microscopic view of culture medium from a carious tooth, stained to show leptothrix racemation, a lactic acid producing bacteria and an important element in causing dental caries. By J. Leon Williams, M.D., D.D.S., from "Marshall's Operative Dentistry."

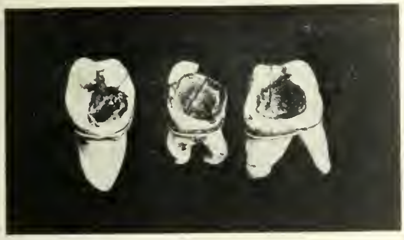

FIG. 3. A few varieties of human culture tubes. (From the clinic of the Harvard Dental School.)

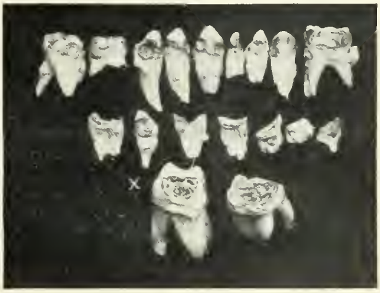

FIG. 4. The nine-year-old boy, from whom these septic teeth were removed, has within the last three years been attacked by diphtheria and scarlet fever.

Has this infected area an influence in the causation of these diseases? (From the clinic of the Dental Department of Harvard University.)

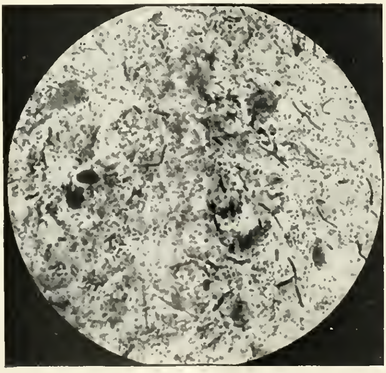

FIG. 5. A microscopic view of the food from a carious cavity. (See x in the above photograph.) This illustration shows staphylococci, streptococci, diplococci and several bacilli, also epithelial cells. (Specimen prepared by C. W. Staples, D.D.S., and photographed by the Pathological Department, Harvard Medical School.)

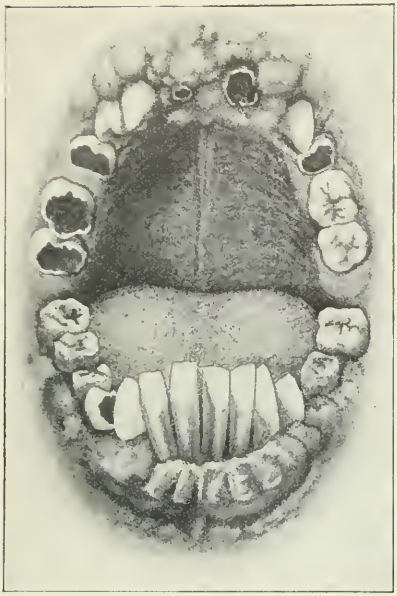

Fig. 6. The process of mastication is the key that unlocks nutriment from food.

Poorly chewed food decomposes in the intestines and causes self-poisoning.

Dental cripples cannot absorb the full nutritive value from their food. (Illustration from "Zahnhygiene in Schule und Heer." Professor Jessen.)

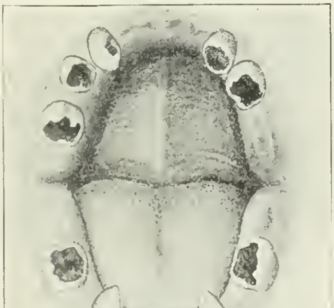

Fig. 7. The putrid condition of these temporary teeth invite tuberculosis, diphtheria, scarlet fever and other contagious diseases.

These little dental cripples are forming wrong life habits of eating, which seriously interfere with their nutrition. (Illustration from 1902 Report of the City of Strassburg, Public Dental Clinic.)

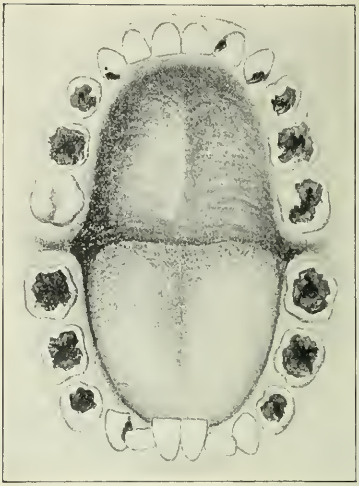

Fig. 8. Accompanying such destruction there is a swelling of the glands of the neck and a fetid odor from the breath — the result of self-poisoning.

When dental inspection is established in the school systems these human culture tubes will disappear. (Illustration from 1902 Report of the City of Strassburg, Public Dental Clinic.)

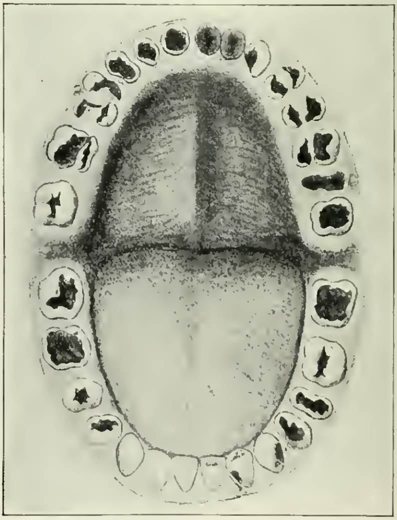

Fig. 9. — Such conditions are a check upon the physical, mental and moral development, and are far-reaching elements in preventing these unfortunates earning good livings.

Dental caries or tooth-rot is a problem of civilization. (Illustration from 1902 Report of the City of Strassburg, Public Dental Clinic.)

benches of the waiting room many patients suffering from the various phases and stages of oral sepsis. For example, an oral examination of a woman with chronic gastritis will generally reveal a foul, furred tongue, bordered by a series of discolored, broken-down septic teeth and stumps, many of which have reached the chronic abscess state, from which on pressure a copious discharge of pus wells up, having that unmistakable odor of bone abscess. It is in this septic entrance to the digestive tract that the actual process of digestion begins. Not only is the patient forced, because of her crippled mastication surface, to bolt the food into the stomach in masses much too large to yield the normal nutritive efficiency, but the food is actually inoculated with the mixed infection already referred to. The deplorable state of her mouth cannot but have a direct and powerful influence in the causation of the gastric trouble. This form of oral sepsis is prevalent enough to be called a type.

Another type, hardly less common, may be illustrated by the following case: On the lower jaw are found only eight or ten teeth, which are in the various stages of decay; in addition to this, the sheltered surfaces of the teeth are covered with scales of calculus, which have collected in such masses that the bony sockets of the teeth have become irritated to the pus stage, resulting in the formation of pockets which are filled with this pus and decomposing food débris. This condition has existed, continually increasing, for some time until now the sockets are nearly destroyed and the teeth are literally floating in pus. The condition of the upper jaw is unfortunately not much better than that of the lower, for the teeth have been lost and their places taken by an ill-fitting rubber plate which evidently has received as little sanitary attention as the mouth itself. The sheltered surface of the plate is filthy beyond description, being covered with a foul, slimy film, the result of germ life. It must be realized that this foul internal drainage is continuous in these neglected cases, and no thinking person can deny that it is a pre-eminent factor in the causation of disease and the spread of contagion.

It has been my experience, in the infirmary of the Dental School, to see mothers, in a state of oral sepsis similar to this indicated in Figure 6, fondling their puny infants. In this close human contact it is highly probable that the unsanitary oral state is a means of conveying diseases to the offspring. Concerning this practice Dr. Hunter says: "No physician would tolerate for a moment that a person who has a foul septic ulcer on his arm should periodically suck it; and yet this is what is allowed to go on in the case of the mouth for periods of years, unheeded alike by doctor and patient." He also makes a just criticism of the judgment of a certain class of dental practitioners for their disregard of the laws of sanitation in restoring lost masticating surface, especially in the unhygienic construction of bridge work. He criticises these same men for not pointing out to their patients the far-reaching dangers resulting from dental decay and necrosis. In the same connection he says, regarding surgery:

> "The surgeon who is punctilious to a degree — and most rightly so — in seeing that, so far as local scrubbing and disinfection can effect the result, no single septic organism shall remain in the portion of the skin he operates on to contaminate his wound; who regards, and rightly so, even one drop of pus in connection with his wound as an evidence of sepsis and of partial failure on his part to attain the perfection of results; whose whole life, it may be said, is passed in excluding and combating septic infection, even in its slightest degree, — he also, without hesitation, will perform the most complicated and severe operations, *e. g.*, on the stomach or intestinal canal, without the slightest regard to the presence of septic teeth, septic roots, septic conditions of the gums and buccal mucous membrane."

In this country these statements should be somewhat modified, for the leading surgeons are fast realizing the dangers of oral sepsis as a source of infection. As Dr. J. Collins Warren has lately stated in a letter:

> "In regard to the value of the Dental School as a part of the new system [the Harvard Medical School and group of adjacent hospitals], I could say that experience has shown that a dental school is an important feature of hospital work. Success in operative surgery is, in a measure, dependent upon the proper care of the mouth; the teeth of the class of patients which frequent charitable institutions are usually in such a condition as to give rise to the possibilities of grave complications after the use of anesthetics.
>
> "The proper care of the teeth is, or should be, part of the hospital nurse's training and a prominent feature of the hygienic discipline of a great hospital.
>
> "Consequently, the presence of a dental school . . . cannot fail to be of great value to such a system as is contemplated."

As a final piece of testimony to the significance of oral sepsis, the words of Professor Osler to the students of the Royal Dental Hospital of London may be quoted:

> "You have just one gospel to preach, and you have got to preach it early and you have got to preach it late, in season and out of season. It is the gospel of cleanliness of the mouth, cleanliness of the teeth, cleanliness of the throat. These three things must be your text throughout life. Oral hygiene,— the hygiene of the mouth,— there is not any one single thing more important to the public in the whole range of hygiene than that, and it is with that, you as practitioners will have to deal."

Thus far I have attempted to point out a few of the causes and some of the dangers of oral sepsis; now I shall endeavor to explain how, in a measure, it may be controlled. The prevention of this condition falls under the head of oral hygiene. This fact is well assured. Therefore it should be handled, broadly speaking, as all other problems of hygiene, by the education of the public in that special direction. The fight against tuberculosis is a good illustration of this special training. The one great difficulty in combating oral sepsis is that it is on the border line between medicine and dentistry. That is, the medical practitioner considers it in the province of dentistry, and consequently is not trained in the art of stomatology enough to realize the full importance of this condition. On the other hand, the realm of the dentist, unfortunately, does not extend beyond the specialty of stomatology, although the modern training of the dental student is much broader than this. Thus, with the responsibility divided between the two professions, oral sepsis exists to a shocking degree. The first step in the battle, therefore, is co-operation between these two professions. Not until there is a definite understanding between them will it be possible to educate the masses.

With this co-operation secured, the question is how to conduct the campaign against oral sepsis. Much can be done by the hygienic discipline in hospitals and through the medium of the district and the school nurse; also a great amount of good is done at the clinics of the various dental schools. " Emerson has taught us," says President Eliot, " that if we hope to reform mankind, we must begin not with adults, but with children; we must begin in the schools." The study of oral hygiene should, therefore, be introduced into the public schools; tooth brush drill is just as important to the health of the child as the prescribed physical exercises.

Several attempts have been made in this country at teaching and practicing in the schools this branch of hygiene. One instance in particular is worthy of note. The results of treatment in a children's home were, according to the superintendent's report, a marked decrease in contagion, with a consequent financial saving to the institution. Dental inspection has been introduced into the public schools of Brookline, and Prof. William H. Potter, of the Harvard Dental School, reported on the results of this work in this Journal. (Dec. 13, 1906.) The teachers of the Dental Department of Harvard University are urging the public school officials of Boston to introduce dental inspection and the study of oral hygiene into the school system. These men, trained in this special work, realize that the enforcement of this measure would be a great step in preventive medicine, with a consequent financial saving to the citizen. The testimony of high authorities on this subject is strong. Dr. George V. I. Brown says: " If the mouths of the children in our public schools could be systematically examined by competent persons, and instructions given and enforced with regard to the intelligent use of brushes and antiseptic solutions, the death-rate of this country would be very materially lessened, the percentage of illness much reduced, and a stronger and more vigorous race result in consequence of these prophylactic measures."

According to the London *Lancet* (Oct. 21, 1902), Professor Osler's words are: " If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth."

The city of Strassburg, in Germany, affords a striking example of systematic compulsory education in the care of the mouth and teeth. The third annual report of the work declares: " Since the introduction of the treatment there is a marked improvement in the general health of the public school children and there are less headache, earache and stomach troubles." It is almost unnecessary to add that pain from dental origin has been practically controlled.

The following three cases are taken from this same report. They are so highly typical of the conditions which we find among the poor children of Boston that I have included them in this paper, the only liberty taken being free translation of the text.

Case I. Fig. 7 shows the dental condition of a child at five years and six months of age. Although these teeth are only temporary ones, still their putrid condition is a menace to the child's health, as this condition invites tuberculosis and pus poisoning, and diphtheria, scarlet fever and other infectious diseases of childhood. Mouth digestion is impossible, for the crushing of food upon the irritated " nerves " of the broken-down teeth would cause the child so much pain that the food is bolted into the stomach. The child is unconsciously learning many habits of eating which are a menace to its present and future health. Furthermore, according to the most advanced ideas in economics of nutrition, the child is gaining only a small part of the nourishment of the ingested food, with at the same time a great tax upon its digestive apparatus.

No such conditions would exist if oral hygiene were taught in the public school system and if each town established public dental infirmaries. In the city of Strassburg, where these measures are enforced, experience shows that the school children are influencing their parents and their younger brothers and sisters to take advantage of the public treatment. This school instruction, combined with the public dental inspection and treatment, is the only successful method of fighting dental caries, — the disease of the people.

Case II. Among other symptoms accompanying the destruction of the teeth of a seven-year-old girl (Fig. 8), there was a marked swelling of the glands of the neck and a fetid odor from the breath. With all children suffering from dental caries to a marked degree there is a tendency towards these symptoms. The air of the schoolroom is, of course, infested by this infected area to a high degree. Innumerable bacteria are inhaled into the lungs, and more are drawn further into the digestive tract, and many are thrown out with the breath in speaking, coughing and sneezing. Thus the diseased teeth with their focus of putrition are a continual danger to the individual and the surrounding scholars.

It will be seen that three of the four extreme back teeth are badly diseased. These teeth are the six-year molars, which should render service throughout life; but through the putrid influence of the temporary teeth, they have turned carious soon after eruption. This illustrates the destructive influence of diseased temporary teeth upon the permanent ones. From the facts regarding these two cases, we are driven to conclude that the diseased mouth must interfere with the physical and moral development of the child. Of course, the mothers of the poor children are entirely ignorant of these facts. Instruction should be given. The people's health depends upon it. The fight against the people's disease must be taken up everywhere with energy.

CASE III. The repulsive condition of this young woman's mouth (Fig. 9) is not only a check to her physical and mental development, but is a far-reaching element in preventing her earning a good living.

When every town establishes school dentistry, then these infected mouths, full of carious teeth, with exposed and gangrenous pulp, putrid roots and tumorous fistula, will disappear and with them a great many pale cheeks, dull eyes, fetid breaths and indications of nervousness, all symptoms of anemia and gastritis.

CONCLUSIONS.

Dental caries, or tooth-rot, is the most prevalent disease that attacks man, and is a pre-eminent factor in the causation of other diseases in the human body. This initial disease is the cause of great physical suffering, to check which many millions of dollars are annually spent in this country. Thus, to prevent dental caries would be a great financial saving, and a very great step in preventive medicine. Since this disease is a problem of the civilized world, it should be further investigated; and to aid investigation money should be provided to secure the most eminent men in research work.

In the present state of scientific knowledge, the most adequate means of combating dental caries and oral sepsis is by the enforcement of hygienic measures. In order to make his hygienic fight successful, the physician and the surgeon should co-operate with the dental practitioner, for this branch of hygiene requires a thorough knowledge of the teeth and their adjacent tissues. Skilled dentists, therefore, should be placed upon the various hospital staffs to treat this infected area which so materially hinders both surgical and medical treatment. Dentists should give the nurses instruction in the hygienic care of the teeth. Dentists should also be placed upon the staff of medical inspection of the public schools, for the condition of the child's mouth is just as important to its health as the condition oi its throat and nose.

COLLATERAL READING.

Micro-organism of the Human Mouth, by W. D. Miller, M.D., D.D.S., Sc.D., Ph.D.

Essentials of Bacteria, by M. V. Ball, M.D.

A Contribution to the Study of Mouth Bacteria, by S. A. Hopkins, M.D., D.D.S.

Diseases of the Stomach and Intestines, by Prof. E. C. Ewald.

Various writings, by D. D. Smith, M.D., D.D.S.

The (Periscope) Dental Cosmos.

THE PEOPLE'S DISEASE: HOW TO PREVENT IT.*

BY WILLIAM R. WOODBURY, M.D., BOSTON.

THIS account of the growth of the crusade for the better care of the teeth will convince you, I am sure, that the movement should be organized.

The plan which is suggested creates an organization which will give it a permanent foundation and will permit effective work to be done in the broadest possible field and most comprehensive manner. Boston has six dental societies. My suggestion is that a Dental Hygiene Council of the allied dental organizations of Boston be created; that council to consist of seven members, one from each of the six dental organizations, save the Metropolitan Dental Society, the largest, and that society to have two representatives on the council; and that this council help encourage and promote better care of the teeth by:

1. Putting into wider circulation the leaflet on the "Care and Use of the Teeth."
2. Furnishing literature on dental hygiene, and information and assistance in promoting the cause.
3. Providing popular exhibitions — charts, photographs, instructions, literature — for settlements, schools and institutions.
4. Giving practical talks on the care of the teeth, and popular and timely articles to the newspapers — country and city.
5. Co-operating with the organizations working to check and control tuberculosis.
6. Providing lists of registered skilled dentists who will work for nominal fees for deserving and worthy persons.
7. Discouraging the sale and use of dental preparations injurious to the teeth.

The City of Boston maintains six free gymnasiums. These and the public baths constitute the Municipal Bath Department — a city department created and maintained to promote the physical and moral welfare of the community. They are institutions which come in the closest touch with the homes of the people; their central idea is to promote good health. Last winter in these gymnasiums the children's teeth were examined. It was a part of the constructive work in hygiene which is being carried on by the Bath Trustees. One definite fact emerged from this examination. That fact was that there was a crying need to encourage children to take better care of their teeth. There was hardly a child that had good teeth; many of their mouths looked like a burnt district; only a very small percentage of the children ever cleaned their teeth; many of them never used a tooth brush; and not a few shared the use of one of the family tooth brushes — the mother and girls having a common tooth brush, and the father and boys using but one brush between them. The best results in physical training and development can be obtained only when all the organs of nutrition are sound and can do their work properly. A complete knowledge of the physical needs of the body includes a knowledge of the care and use of the teeth. A proper regard for the body demands good teeth.

To help those who use the municipal gymnasiums to get the largest benefits, and to promote a wider knowledge of the hygiene of the teeth and mouth, to help the people who need them to obtain these advantages, a practical working plan was set going in these gymnasiums for creating an intelligent interest in better care of the teeth. A leaflet on "The Care and Use of the Teeth" was prepared and distributed; short, practical and interesting talks on the teeth and health are given the gymnasium classes; and an opportunity is extended to those who use the gymnasiums to come to the gymnasium doctor — each gymnasium has a man and woman medical examiner — to have the teeth examined. The children and the women and men who have a dentist are advised to consult that dentist. Those who have no dentist and who cannot afford to pay for good dental work are informed of the clinics of the dental schools and the privileges they offer.

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* Read before the American Academy of Dental Science, Oct. 2, and before the Boston and Tufts Dental Alumni Association, Dec. 11, 1907.

Much time and painstaking care were given to the preparation of the leaflet. It was submitted to the frankest and severest of critics. Dr. William H. Potter submitted it to the Academy of Dental Science and to the faculty of the Harvard Dental School. It was submitted to the Tufts Dental School. The Academy and both of the Dental Schools gave it their official endorsement. It also received the approval of Dr. Samuel H. Durgin, chairman of the Board of Health, and Mr. James J. Storrow, chairman of the Boston School Board, and of Superintendent Brooks. So far as was possible, every point of view was obtained, the desire being to distribute a leaflet which would be readable, concise and meaty; one which could not be misunderstood, which would bite into the memory, and its instructions such that everybody, child and grown-up, in any station in life could put them in practice. The short talks on the care of the teeth and what good teeth mean were given the gymnasium classes by the instructors, at the beginning of the class work. They were talks of only a few minutes, and in the vernacular, and were made to appeal to the everyday, practical common sense of the men and women; and the children listened with the closest attention to these talks. Then came the class work and a right good time. This year the same kind of work is continued; and it is broadened by requiring of every child that comes into the gymnasiums an examination of the teeth and mouth as well as of the body. And the leaflets are distributed in all the public baths. In the city of Boston there are 23 public baths, 7 of them being open all the year round.

Immediately an active interest in this movement was shown by institutions and organizations outside and beyond the Bath Department. The South End House, Denison House, the Children's Friend Society and the Boston Dispensary asked for the privilege to distribute the leaflets, and to lend their hearty assistance in bringing the benefits of this crusade within the reach of a wider public. At the spring exhibition of the winter's work at the South Bay Union — under the direction of the South End House — was included a popular demonstration of the process of decay of the teeth. This demonstration was arranged by Mrs. Ellen H. Richards, of the Massachusetts Institute of Technology. The Civic Service House and the North End Union allied themselves to this movement. The Boston Association for the Relief and Control of Tuberculosis asked the Bath Trustees for a large number of the leaflets for distribution. In his letter the secretary of the Tuberculosis Association says :

" The well-defined and frequent connection between carious or defective teeth and tuberculosis of the throat and glands, as well as the concern we feel for general hygiene of the patients, have led to the making of a careful examination of the throat of each applicant for admission to the Day Camp of Consumptives, by a specialist. The more obvious ills of the teeth may be determined in this way and the patient instructed to see a private dental practitioner or to go to one of the public clinics. Subsequent examination reveals to our physician the result of this instruction. A patient who could not be persuaded to profit by such advice would be discredited and probably excluded from the camp.

"After a recent visit to Rutland Sanitarium where I saw how each patient is required to have a good tooth brush and to use it three times a day I became convinced that we should use the opportunity we have at our Camp Sanitarium to teach the value and delight of this habit.

"Accordingly, a copy of the tract on 'The Care of the Teeth,' prepared under the direction of the Bath Trustees of this city, has been furnished each one of our patients and will be given each new one admitted. The patients will be directed to the clinics of the dental colleges, and one or more of the weekly addresses to the assembled group will be upon Care of the Teeth as a Factor in Prevention and Care of Tuberculosis."

The Boston Tuberculosis Association has incorporated in its traveling exhibitions and libraries a dental exhibit, and instructive and educative literature upon the care and use of the teeth. The Bath Trustees received a letter from the local Tuberculosis Association in Holyoke, Mass., asking for a generous number of the leaflets on the care of the teeth. A request for copies of this leaflet has come from the Philadelphia Association for the Protection of Colored Women. " Such a leaflet is something we have been wanting for a long time," says the secretary of that association. The Children's Aid Society, the Children's Mission, the New England Home for Little Wanderers, and the Society for the Prevention of Cruelty to Children have written to the Bath Trustees asking for large numbers of the leaflet for distribution.

Requests for the leaflets have been received from the Boston City Hospital, the Boston Normal School, Filene's, and Dr. Southard, of Wellesley College. Filene's have distributed 600 of the leaflets among their employees.

In June, 1907, the Boston *Transcript* made formal announcement of " A Popular Movement Being Inaugurated for the Better Care of the Teeth," and gave half a column to that announcement. The *Transcript* did this because the secretary of the State Board of Health, Dr. Charles Harrington, assured them that people did not know all about taking care of their teeth; that such a movement was necessary. The Cape Ann *News* printed as an editorial leader the *Transcript's* announcement. To quote Dr. Osler :

'There is not any one single thing more important to the public in the whole range of hygiene than the hygiene of the mouth."

At the annual meeting in June of the Harvard Dental Alumni Association its seal of approvement was set upon this movement for the proper care of the teeth; and its council was authorized to give it the active co-operation of the association.

No one knows better than does your profession the evils which come from neglected teeth; and next to dentists, this knowledge comes most frequently to physicians. The teeth are organs of the first importance; they are essential organs of digestion. When they are decayed and lost, growth and nutrition are hindered; they are contributory factors in setting up diseased conditions of the throat, the nose, the ears and the eyes; they cause a disturbance in the nerves; they increase markedly the chances of catching infectious diseases; and decayed teeth and a foul mouth offer a favorable opportunity for the development of tuberculosis. And again to use Dr. Osler: "If I were asked to say whether more physical deterioration was produced by alcohol or by defective teeth, I should unhesitatingly say defective teeth."

In this country there are more than 20,000,000 school children, one fifth of the entire population, and hardly a child among them but has defective teeth. And among the other four fifths there is scarcely a man or woman who has never had need to employ a dentist. Everywhere throughout the civilized world the same condition obtains.

Stating the same facts differently it can be said, and truthfully, that nearly every man, woman and child has defective teeth; and by that token the name, the People's Disease, has been given to the condition known as carious or decayed teeth. It is a disease of civilization; and how to check the havoc it is working upon human kind is one of the serious problems of the day.

The mouth and teeth are important parts of the human body. Everything that enters the body has but one way to get in; the only entrance is through the mouth. Through it enter the air, food, and the germs of disease, and the good or evil they work depends upon the condition of the mouth and the teeth. Only when the teeth are sound and healthy, and each tooth in its place and in working condition, is the first and most important part of the function of digestion rightly performed.

The teeth are not merely for ornament. Their chief use is to prepare the food for the stomach — to grind the food and mix it thoroughly with the saliva. Food which is not thoroughly chewed cannot nourish the body; it causes indigestion and constipation. It is not what we eat that nourishes us, it is what we make our own, what we assimilate, and when the food is slowly and thoroughly chewed, less of it is needed to meet the demands of the body and its functions, and the simpler, less expensive kinds of foods, and the most healthful, satisfy the appetite.

"Healthy teeth, healthy stomach, healthy body," says an eminent German physician; and with these come good general health. With poor teeth and poor digestion come faulty nutrition and retarded development.

At no period of life is there greater need of a clean mouth, sound and healthy teeth, and perfect nutrition than during the years of childhood. The child is growing, and natural growth and development cannot proceed unless there is perfect nutrition; and perfect nutrition cannot take place unless the teeth do their work, — and it is an important work. Upon them depends both physical and mental progress.

Therefore, the child's first teeth, the milk teeth, should not be neglected; they are of quite as much if not more importance than the permanent teeth. They are important organs of nutrition, when nutrition is most needed. The utmost care should be taken to keep them from decaying.

In the sixth year come the first permanent molars; and when the child is twelve years old he should have twenty-eight teeth, — the twenty milk, and eight permanent teeth.

The six-year molars are of more importance than the permanent front teeth, or incisors, because they are the foundation stones of the dental arches; they determine the future shape of the jaws; their neglect causes serious irregularity of other permanent teeth. And they are the grinders of which the growing child stands in the highest need. Besides, they are permanent teeth. They are intended to last the entire lifetime, and when they are allowed to rot away no new ones take their place.

The earlier the child acquires the habit of keeping the teeth and mouth clean, the more certain the reward of growing up into a strong, healthy and wholesome man or woman.

Beginning at the sixth year, the teeth should receive the closest attention. Twice each year, at least, they should be carefully inspected by a good dentist; and if any trouble appears it should be promptly attended to — and before the child begins to complain of any pain. If the teeth are not properly attended to between the sixth and twelfth years of age, they decay very rapidly. Neglect of the teeth in these early years works evil, and in many ways.

In each of the three crises in the life of the child — birth, teething and puberty — new structures develop, structures and organs demanded for complete life. At the adolescent period it is of the first importance that eating habits should receive particular attention; it is an extreme hygienic necessity that the teeth be given closest attention so that no fault in them may interfere with the proper growth and development of the maturing boy or girl. Youth should have no hindrance against coming into full and healthful maturity.

At the very dawn of puberty there is a marked change in the amount of food required; there is a new relation to food. The proportion of solid food desired and needed increases. The jaws grow stronger and the muscles of mastication develop. There is a propensity to chew and eat substances that require good teeth. Animal food is usually more in demand; and a well-balanced dietary is especially needed when the range of appetite normally enlarges.

In adolescence the propensity for sweets and mild acids is greatly increased; therefore, the greater need to prevent acid fermentation in the mouth. If the products of decomposition are not removed they become a poison; and as the biproducts of decay accumulate and as the chip pile of dead matter increases there is progressive liability to infection by micro-organisms.

Bad eating habits in quality, in quantity, or in manner are important factors in nervous breakdowns in childhood, youth and in the adult. Bad eating habits are one of the causes of the alcohol habit.

The tendency to bolt food unchewed is not always due to impetuosity of appetite or poor table manners. It may be due to poor teeth.

Taste is the doorkeeper at the entrance of the alimentary canal. All the higher metabolism depends upon keeping the appetite true to the needs of the body. In a mouth that is filthy from neglect and tooth-rot there can be no reliable doorkeeper.

The age of second dentition is most susceptible to the nervous disorder of stuttering. Everybody knows how essential good and regularly ordered teeth are to a good speaking and singing voice.

Naturally, the child eats deliberately and thoroughly chews each mouthful before it is swallowed — the proper way to eat. But when the teeth are so decayed that he cannot chew without it hurting him, he speedily falls into the habit of washing the food down with a gulp of water, or tea as it is too frequently the case; and the child becomes a bolter. He wants to be in the select group of chewers, but his aching, neglected teeth will not allow it. The result is that the food which he washes down into his stomach in large, unbroken masses, fails to nourish him; and both the physical and mental development is upset and retarded. Besides, the child suffers from indigestion, which even in children is a grievous evil.

Neglected teeth cause toothache, and when a tooth begins to ache good and hard, the child is dragged to a dentist (not the best introduction to a friend who can do him so much good) and the offending tooth is pulled; and more often than not the child leaves at the dentist's office one of his permanent teeth, a six-year molar, and its place will never be taken. As most of us know, there is no pain harder to endure than a jumping toothache; and the sleepless nights, the irritability, and the nervous, excitable condition caused by such pain does not do a growing child any good. It interferes with the proper performance of his schoolwork. All of which the child can and should be spared.

A foul mouth and decaying teeth add to the chances of catching infectious diseases. The decomposing food which sticks to the teeth and lodges all along the edge of the gums, between the teeth, and in the crevices of the grinding surfaces, causes the teeth to decay; and this in turn causes the lining of the mouth to become irritated until it loses its power of resisting the attacks of the disease germs. In a clean mouth, the healthy tissue destroys many of the weaker germs, but in a foul and uncared-for mouth the germs find favorable lodgement, and grow and develop; and the vitality being lowered, the diminished resistance finally yields, and a more or less serious sickness establishes itself. There is every reason to believe that if the practice of thoroughly cleaning the teeth after breakfast was universally observed by school children, if they had the habit of keeping their mouths clean and wholesome, epidemics of infectious diseases would happen less often and be of a less serious nature.

The presence of bacteria within or upon the human body, the transmission of disease germs from the sick to the well, is but one of the factors which tend to cause disease. A lowering of the bodily resistance is the first step. Disease finds its opportunity when the power of resistance is diminished. The healthy body has the power to resist disease; but a body cannot be healthy with a foul and neglected mouth.

In diphtheria the bacteria rarely enter the body; they grow in grayish-white masses upon the moist surface of the mouth and throat; and a bad condition of the throat, the nose and the ears is made worse by decayed teeth. A clean mouth is a protection against pneumonia; the germ of that disease is a weak germ which cannot work its evil unless the resistance to it is diminished by a lowered vitality of the lining of the mouth.

Well cared-for teeth and a clean mouth help prevent tuberculosis. Daily we may inhale germs of tuberculosis, but we do not fall under the ban of the disease unless our resistance is lowered. Tuberculosis is curable, it is recoverable. It is never cured by the physician, but by the patient himself; that is to say, by the natural powers of recovery. These, however, may be, and usually need to be, stimulated, assisted and directed by wise medical guidance. Under favorable surroundings at least three fourths of those affected with pulmonary tuberculosis should recover. In the physician's management of consumptives, of persons affected with pulmonary tuberculosis, drugs play a useful but a secondary part. The principal means of treatment for the relief or recovery of these patients are included under the general term of hygienic measures which are, life in the open air, with abundance of sunlight; properly selected diet; and sound teeth and a clean mouth. These bring about a physiologic reinforcement of the patient's recuperative energy, and this conquers the disease. The hygienic management of tuberculosis is now getting proper recognition.

It is not uncommon to find an inflamed condition of the eye which has been caused by neglected teeth; and certain inflammations of the eye, if neglected, result in loss of sight. So close is the connection between the eyes and bad teeth that doctors recognize the necessity of examining the teeth when looking for the cause of certain inflammatory diseases of the eye.

Says Professor Ewald of Berlin: "In the

etiology of chronic gastritis there are two important factors — the care of the teeth and slow eating." Bolted, half-chewed food, we are told by Professor Cannon, of the Harvard Medical School, causes cancer of the stomach.

"For every child a tooth," says an old proverb. There is no sacrifice which a mother will not make, and gladly, too, for her child, but she need not sacrifice her teeth. Painstaking care to prevent the increased acid secretion in the mouth from eating into the teeth will save her much needless suffering. In sickness too great care cannot be taken to keep the patient's mouth clean and sweet. Nothing brings greater comfort to the sick person than such care, and it is an essential part of the treatment of every disease.

From a practical view point a few minutes devoted to the care of the teeth every day saves money. Parents who allow a child to grow up with a mouth filthy with tooth-rot and neglected teeth, with a mouth that presents the appearance of a burnt district, fail in their first duty to the child; they have denied him a precious inheritance — good health. "Mine son, he don't work mit his teeth," a Dutch woman said to a health officer who refused to give the boy a certificate of health because of the unwholesome condition of his teeth and mouth. To be sure he does not, but before her boy would be allowed to serve the United States Government, in the army, in the navy, or in the postal service or before he could qualify as a policeman, or a fireman in any sizeable city (not a bad job any one of them), he would have to spend many dollars and much time in having his teeth and mouth cleaned up. No matter how excellent his qualifications in every other particular might be, he would be held up until that was done.

White, even teeth add greatly to the attractiveness of any face, and not infrequently they are a feature which carries with it a reassurance of neatness and honesty — which are excellent business recommendations. Recently a young woman was refused a desirable position in a progressive department store because she had bad teeth; in every other respect she was well qualified for the place.

There should be thirty-two permanent teeth. They should last until the end of life; their work does not end until then, but altogether too frequently their value is not fully appreciated until it is too late — until there are no teeth for chewing the food.

Money will buy artificial teeth, a full set of them, but though they may be good to look at, generally they are of but small use as organs of digestion; they are of but little help to an over-worked stomach. To keep them clean and wholesome requires more care and time than do the natural teeth. As grinders they fail signally; the crushing power of sound natural teeth is 275 pounds, while that of the most skillfully made artificial teeth is only 25 pounds. So at best artificial teeth are but makeshifts.

In childhood should be formed the habit of caring for the teeth. The child should be taught and encouraged to keep the mouth as clean as the face, and the habit should become as nearly as possible an instinct. In the home the foundation of the habit is to be laid. And parents should have a broad enough background of knowledge concerning the teeth to furnish the child with a motive, to give him a good and sufficient reason why he should spend five minutes every day upon what seems to him to be unnecessary. Mere words and nagging are ineffective. Even to teach a small thing one must have large resources.

The public and private schools have a clear duty to perform for their pupils in encouraging the better care of the teeth. Theirs is the opportunity to emphasize the full meaning of neglected teeth and unclean mouths, to help parents fix the habit in the children of giving their teeth the proper care. Here and there the work of caring for school children's teeth has been undertaken in a tentative way. Wherever an examination has been made into the condition of the teeth of the school children there has been found a most deplorable state of affairs, and an absolute lack of any appreciation of the value of good teeth Strassburg, in Germany, is the first city to provide school dentists, and to undertake a systematic municipal work for the care of the teeth of the school children. There it was discovered that 97.5% of the school children had diseased teeth.

Brookline, at the beginning of this school year, undertakes a similar kind of work under the direction of the school committee.

The Massachusetts Board of Education has issued a pamphlet on medical inspection, and in that pamphlet is a chapter on the teeth. United and earnest effort on the part of the dental societies, augmented by the individual endeavor of the dentists themselves, should bring about a very general adoption of dental inspection in the schools. It would mean the widest possible practice of the excellent suggestions made by the committee of dentists who prepared the chapter in the state pamphlet. The co-operation of dentists and medical men is needed.

The dental profession could do no greater service to humanity than to take an active interest in having dental inspection put into practical operation in the schools. No one can give better information or more assistance in promoting better care of the teeth and educating the public up to asking for dental inspection in the schools than can the dentists themselves.

One of the most effective ways of pointing facts, of convincing people into doing things, is to let them see with their own eyes. Photographs, charts, diagrams, make deep impressions, and these, together with popular literature and printed instructions and information will do more than any other one factor in promoting better care of the teeth. The college and social settlements in Boston and throughout the country stand ready to lend their assistance by providing the opportunity and space for such exhibitions. Mr. Robert A. Woods assures me that social workers everywhere will give their heartiest support to such a movement.

The lay public and the newspapers expressed genuine appreciation of Dr. Samuel A. Hopkins's lecture at the Harvard Medical School last winter. How to take good care of the teeth is a matter of intimate concern to everybody, and the public wants to know how it can be done. Popular lectures by dentists of acknowledged reputation would receive serious attention.

The newspaper in Boston which is most read by the people and which influences most strongly public opinion (it is a matter of serious regret that its influence is not always for the best) is persistently conducting a crusade of its own against neglected teeth. The text is forceful and convincing, and the facts are stated with a vigor and directness which its readers cannot but feel. Country newspapers could do their readers immense good by equally effective articles.

To have the dental profession of Boston, its schools and its organizations, go on record as a working body with the organized movement for checking and controlling tuberculosis would be cause for much pride in the community. The Boston Association for the Control and Relief of Tuberculosis has already opened the way, and they are ready and willing to give and receive co-operation.

There is a large number of worthy and industrious working men and women who cannot take the time to go to dental clinics; who want good work, and who do not know where to find it. It has been suggested that lists of registered, skilled dentists be provided for the benefit of such persons, in order that they may have dental service which is not hurried and indifferent, or worse, and that they may obtain deliberate, painstaking care combined with skillful and intelligent work.

It is a well-known fact that a large number of the dental preparations on the market injure the teeth; that commercialism is the dominant factor in their manufacture and sale. Much harm comes to the unsuspecting and ignorant public through their use. An organized effort on the part of the dental profession to protect the public against such injury is needed quite as much as is the work of the medical profession, to discourage the sale and use of injurious patent medicines. Here are the words of one of your own profession, Dr. George H. Wright:

"Dr. W. D. Miller said there has not been for years any doubt in my mind that most cases of wasting observed in our practice are due to mechanical action, which means, in particular, the action of the tooth brush combined with tooth powder. It must be borne in mind, however, that imperfectly formed enamel and dentine are more susceptible to wasting than perfectly formed structure. Dr. R. R. Andrews has shown from his research in enamel formation that there are faulty enamel bodies as also imperfectly calcified dentine. Wasting is produced, not alone by the abrasive action of powders, but through the agency of acids derived from various sources.

"It is necessary that we should know the contents of some of the abrasives used in the form of tooth powder and pastes. Some of the following ingredients (in varying amounts) have been found from careful examination by chemical analysis, washing and photomicroscopic study to be the constituents of English, French, German, Chinese, Japanese and American tooth powders and pastes:

"Three grades of pumice from 5% to 15%, charcoal, silex, whiting, impure cuttlefishbone, containing grains of sand, talcum, insoluble grits, stannic oxide, cliff chalk, infusorial earth, emery, microscopic marine concretions, pulverized oyster shells, calcium carbonate, sodium chloride, sodium bicarbonate, sodium perborate, and many others of this latter group.

"In the pastes are oily substances, — glycerin, vaseline, honey, orris-root, white sugar, vegetable fibers and indeterminable inorganic and organic substances."

"When we consider the extravagant claims of the manufacturers of tooth powders and pastes, should we, as a profession, stand silently still and permit without a word of protest, the too free use of dangerous and harmful ingredients of the character already noted? Is it not our duty to instruct and educate our individual patients as to what is destructive and what is useful? And for that larger world, the people, who are rising in the ranks, do we not owe to them also something of the advantages and blessings of this later knowledge?"

These seven brief articles of faith are not easy to accomplish; they require work and time. But the time seems ripe to begin this work. It is already begun; and it is ready to be organized and continued. The plan of organization suggested is a logical one. It calls for a compact working council of the organizations that can best conduct this crusade. The dental profession should be the leaders in dental hygiene. You can depend upon the co-operation of all the organizations and institutions which now constitute this movement; and you can bring many more to you to help promote it. It has been suggested that a general conference be called to define and extend the plans for future work. And who could better call such a conference than the Dental Hygiene Council?

A wider knowledge of the hygiene of the mouth and teeth is needed in the home, in the schools — everywhere; it helps promote good health. A clean mouth is as important as a clean body, and cleanliness is the best guard against disease. A crusade for better care of the teeth is a crusade for the relief and control of the People's Disease.

IDIOPATHIC DILATATION OF THE COLON, WITH REPORT OF A CASE IN A MAN OF FIFTY-SIX.

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Little or no mention of the disease, "idiopathic dilatation" of the colon or "giant colon," will be found in our popular textbooks of medicine; but the clinical and post-mortem pictures presented are most interesting. As early

In 1843, Oulmont reported, with autopsy findings, an evident case. It remained, however, for Hirschsprung, in 1886, to first accurately describe the clinical and pathological picture in a series of cases; and in Germany, for this reason, this condition is commonly known as Hirschsprung's disease. In 1903, Duval reported 48 cases. Since then the accounts of a considerable number of cases have been published, showing that this condition is much less rare than previously supposed.

In this disease the dilatation of the bowel is "idiopathic"; in other words, there is apparently an innate tendency to dilatation, independent of any discoverable cause. It is interesting to note that in the acquired cases of colonic dilatation, following a definite stricture, or chronic constipation, there are commonly found scybalæ and fecal impaction, whereas, in the true Hirschsprung's disease this is rare. Neither is the dilatation due to paralysis or atony alone, since so many cases develop in apparently healthy persons, and at autopsy the intestinal walls are found hypertrophied.

Cases of giant colon are seen most commonly in early childhood and in males. Thus, in the 24 undoubted cases, reported by Griffiths, the occurrence in relation to age was as follows:

0-1 year,	6 cases	10-20 years,	5 cases
1-5 years,	8 ,,	20-30 ,,	3 ,,
5-10 ,,	1 case	30-40 ,,	1 case

Twenty of these 24 cases occurred in males. Hale White reports 12 cases, 11 of which were in males. Duval reports 36 males in 45 cases.

The genesis of this disease may be interpreted in two ways: according to Mya, the dilatation and hypertrophy are inborn (megacolon); while according to Generisch, only an abnormal length and abnormal course are hereditary, following which the dilatation and hypertrophy arise as secondary factors. Nothnagel and Coucetti on the other hand believe the idiopathic dilatation to be due to an inborn weakness or partial defect of the muscularis in the lowest part of the large gut, with a secondary hypertrophy of the portions above.

The pathological picture is usually characteristic. The greatly distended abdomen has caused one famous case, reported from Philadelphia, to receive the title of the "balloon man." On opening the abdomen there immediately presents the large gut, enormously dilated, either throughout its entire extent or only in its descending portion. The bowel is thickened and opaque as a rule, and the longitudinal muscle bands are hypertrophied. The abdominal cavity is tremendously enlarged, the diaphragm and liver being pushed high up into the thoracic cavity. No obstruction is found to account for the dilatation and hypertrophy. The small intestine and stomach are usually normal. Inside the gut are found ulcerations, which point to a secondary intestinal catarrh and may account for the fact that when the obstipation is relieved, diarrhea frequently ensues. In a minority of cases the bowel walls are thinned.

Microscopically there is lymphoid infiltration of the mucosa. The glands of Lieberkühn are usually preserved, but often they may be obscured by the infiltration.

The clinical history of cases of Hirschsprung's disease is simple and almost unvarying. These patients, whether children or adults, come to the physician with a story of great abdominal distention and high-grade constipation for days or even weeks. Both symptoms usually disappear, to return again and again, with greater or less severity. Usually no other positive facts are obtainable. The patients are usually males and most commonly children.

On examination, the children are found to be pale, poorly nourished and undeveloped; the adults, usually, are not. The most striking sign is the great abdominal distention. The abdominal parietes are tense and apparently thinned out. The superficial veining over the abdomen in some cases, especially where there is an associated anemia, is marked; in others, it is absent. There is no tenderness. Visible and palpable intestinal coils, with a high pitched tympanitic note, especially in the flanks, are detected. Splashing and metallic sounds are often noted. Frequently, there is a marked peristalsis with visible sacculations of the large bowel in the lumbar regions. If the distention is extreme, with general tympany, the hepatic dulness may be entirely obliterated, and the heart displaced considerably upwards; for the same reason, the respiratory rate is increased and marked cyanosis may occur.

On rectal examination one is surprised to find the lower rectum empty, in spite of the great constipation. The rectal tube goes high up and gives to the examiner the impression that it rolls itself up in a large cavity. Usually, gas escapes through the tube; then one can feel parts of the distended bowel and note the extreme atrophy of the abdominal muscles.

The differential diagnosis is far from being an easy one, as the signs fit the most varied conditions. Thus, Murray reports a case of Hirschsprung's disease in a child of four years, upon whom he operated, believing he had to deal with a case of tubercular peritonitis. He operated fifteen months later, still believing the case to be the latter, only to find a case of idiopathic dilatation of the colon. Fitz calls attention to the fact that these large tumors of the colon or stercorines may disappear suddenly after copious evacuations and thus be mistaken for phantom tumors.

Lastly, and most important of all, from the standpoint of treatment is the differential diagnosis between giant colon and intestinal obstruction. The former cases, as a rule, have no vomiting; while in the latter vomiting is extremely common. In adults, the long standing history of constipation, accompanied by attacks of distention, with no loss of weight and absence of cachexia, tends to rule out intestinal obstruction, especially that due to malignant disease. In obscure cases, we may resort to the method of

Johannesen, who advises the use of the Rœntgen ray after injecting bismuth into the lower intestinal tract.

The prognosis, as to cure, based on the cases, so far recorded, is bad. As regards life, while the great majority of the children die in early childhood, Hirschsprung and others record an occasional case which, after careful medical treatment, has reached an adult age. Our patient lived to the age of fifty-six, and is one of the oldest of which we can find any account. Death in early childhood is most commonly due to either obstruction, volvulus, perforation, toxemia or exhaustion. Such cases as escape the above complications may be enabled by the aid of medical treatment to live fairly comfortably up to adult life; while in certain others, where the physical condition permits, surgical intervention may be tried.

Treatment is either medical or surgical. Medical treatment, while not curative, will prolong life and is solely recommended by various writers. Various measures may be tried, such as electricity, massage, lavage, drugs, etc. Massage, while advised by some, is strongly interdicted by others, because of the liability to perforation. The use of eserin, strychnine and a concentrated solid diet, each has its advocates. The most common method of medical treatment is the employment of enemata and cathartics. Certain authorities maintain that intestinal lavage tends to increase the dilatation, and patients have been known to die after receiving a single enema.

Very frequently, medical treatment will fail, and some grave complication may necessitate surgical intervention, either colostomy or entero-anastomosis. Though the operative treatment for giant colon has not yet been well tried out, the favorable results reported in a few cases promise much for the future. A great deal, of course, depends on the condition of the patient and the skill of the surgeon, for the operation for complete cure is of necessity a serious one. Osler reports a case, in a boy of ten, where merely an artificial anus was made, and the patient recovered with no return of the symptoms during the several years that he was under observation. Fenwick recommends resection of the dilated bowel, and Murray, Treves. Perthes and others have operated on cases, some of them poor surgical risks, with recovery. Murray resected the descending colon and sigmoid, suturing the transverse colon to the upper part of the rectum, and recovery followed without constipation or distention. Sir Frederick Treves reports a case which, while not true Hirschsprung's disease, is instructive in this connection. In his patient, the rectum was represented by a solid looking, though pervious tube, 8 to 9 in. long, and he excised not only the distended descending colon and sigmoid, but also that part of the bowel corresponding to the rectum, with recovery.

The following case of this interesting condition was observed in the medical clinic of the Carney Hospital during my service as interne, and is here reported at the suggestion of Dr. Henry A. Christian, physician-in-chief of the Carney Hospital.

A. W. B., age fifty-six, was admitted to Carney Hospital Oct. 13, 1907.

Family history. — One of six children. One brother died at age of six months, cause unknown; one sister living and well; three brothers living and well. Mother died at fifty, of heart disease. Father died at seventy of cancer. Ancestors, as a rule, were vigorous and long-lived. No disease similar to patient's ever in family.

Past history. — Patient states, and brother reaffirms statement, that when one day old he was operated on at the Boston City Hospital, for an imperforate anus, the anus being covered by a membrane composed of skin. His father was accustomed to giving him enemata daily in childhood for purposes of causing movement of the bowels. He says that he has been subject to attacks similar to the present one throughout his life at irregular intervals, but always made a good recovery after the bowels had been actively moved. Of late years, patient has neglected to go to stool regularly. At times he would sit at toilet for one or two hours, and after much straining expel gas and feces in very large amounts. He never had gonorrhea or syphilis; uses tobacco only moderately; does not use alcohol in any form. Nine years ago he had typhoid fever.

Present illness. — During the spring and up to the day of entrance to the Carney Hospital, he has been making his home aboard a small yacht in South Boston. Usually, he has been in these quarters alone, and the toilet facilities were poor. In regard to his eating habits he has been very irregular, securing his meals at various restaurants or cooking them himself. His habits in regard to going to stool have also been irregular; sometimes he would not go to stool for days. He has been known to go without a movement for as long as thirty days. His appetite has always been of the best. He has never suffered from bleeding per rectum; has lost no weight. He worked till day before entrance and felt as well as ever, eating heartily, and slept well till morning of entrance, when he began to have severe colic with distention, diarrhea, and severe tenesmus, for which he was sent into the hospital. Movements had been dark, small, ten in number. No blood passed but much gas.

Oct. 13, 1907, brought into the Carney Hospital on an emergency call, though the patient insisted on walking to the ambulance from the boat-landing. He was admitted to the wards at 12.30 P.M., in an almost moribund condition. He was seen immediately on arrival, but complete routine physical examination was not made, because of critical condition of patient. He was a well-developed; large-framed man, well nourished; cyanotic, extremities cold; pulseless. Respiration shallow, 48 to the minute, but regular. Mind clear, very anxious. Hesitates to reply to questions because of extreme distress. Teeth bad. Tongue coated. Throat negative. Cardiac action violent, rapid, but regular; first sound at apex sharp and valvular; pulmonic second sound accentuated; no murmurs.

Lungs: resonance, vocal and tactile fremitus normal; over both bases posteriorly, fine crackling râles, but no marked signs of pulmonary edema. No hepatic or splenic dullness obtainable.

Abdomen much distended; naval is protuberant. Costal angle large. No tumor felt, no tenderness, no collateral venous circulation noted. In both flanks marked visible peristalsis and irregular bulgings, very suggestive of sacculations of the large intestine. No dullness in flanks, no fluid wave. Instead, on percuson the highly tympanitic note of gas under tension obtained; no vomiting; no micturition.

Knee jerks normal. No edema of legs or elsewhere.

Rectal examination: finger passes easily into a long, sily yielding anal canal, about one inch in diameter; ger not grasped by sphincters. No hemorrhoids. o masses in rectum, which is empty and capacious. o prostatic enlargement. No tenderness. No blood n finger.

Treatment consisted of (1) high compound enemata; 2) hot water bottles to feet and about body; (3) turentine stoops to abdomen constantly; (4) whiskey ℥i; 5) atropine, gr. 1-60, strychnine gr. 1-30, subcutaeously.

At 2 P.M., Oct. 13, 1907. After both enemata patient assed a tremendous amount of gas and large quantiies of dark green fecal matter, containing no mucus, ot excessively foul, not bloody. General condition eemed a trifle better, pulse now being just palpable at he wrist. The abdomen is less distended and tymanitic. There is less bulging in the flanks. Still no igns of fluid are obtainable. No masses felt.

At 5.30 P.M., Oct. 13, 1907. Condition now noticebly worse. Heart sounds very weak and just audible. yanosis increasing. No pulse felt at wrists. Pupils, ight slightly larger than left; both react to light and distance. Suffering a great deal of abdominal distress, ut no pain; constantly straining and desires to defecate. Patient restless. Wants to get up and sit upon bedpan placed on a chair. This was tried, but patient vas unable to pass gas or fecal matter.

At 6.30 P.M., Oct. 13, 1907. Still weaker and more estless. Assumes knee chest position in bed in endeavor to defecate. Enema followed by slight fecal discharge and much gas.

At 7.30 P.M., Oct. 13, 1907. Abdomen much more distended. Cyanosis and distress increasing.

At 11 P.M., Oct. 13, 1907. Losing ground steadily. Respiration 60. Pulse not obtained. Heart sounds not audible. Scattered râles throughout lungs increasing. Distention of abdomen much greater. Mind clear to last.

Died at 2 A.M., Oct. 14, 1907.

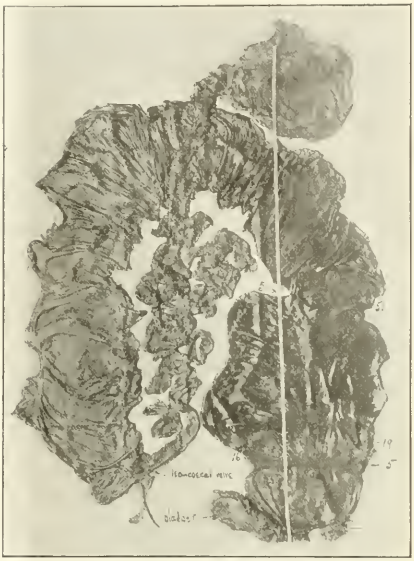
AUTOPSY AT CARNEY HOSPITAL, OCT. 14, 1907, BY DR. THOMAS ORDWAY.

Body of a well-developed and fairly well-nourished white man, 172 cm. in length. Moderate rigor mortis; marked lividity of dependent parts. Left internal saphenous vein prominent. Skin somewhat sallow; no rash; no pigmentation or desquamation. No general glandular enlargement.

Abdomen is greatly distended and tense. No dilatation of superficial abdominal veins. The anus is patulous and no sphincter is felt. The palpating finger is introduced into the pelvis without meeting any obstruction and with the escape of a large amount of gas and a moderate amount of soft, unformed, fecal matter.

On opening the abdomen an enormously large sigmoid flexure presents. This extends from the true pelvis up under the diaphragm, which is at the third rib on the left and at the fourth rib on the right. Laterally, the distended sigmoid, 20 cm. at its widest point, extends from flank to flank; it entirely covers the small intestines, descending and transverse colon, stomach and liver. The ascending colon and cecum are seen bulging out from under and to the right of the enlarged sigmoid. The colon and cecum are also markedly distended, the average circumference being 23 cm. The small intestines are normal in size and appearance; they are not distended, no dilatation occurring above the ileo-cecal valve. (See Fig. 1.) The stomach is normal; the pylorus and duodenum are normal.

The entire large intestine is 170 cm. in length. Owing to the extreme dilatation the limits of the sigmoid are very indefinite; its length is approximately 36 cm.; 14 cm. above the anus, a tough, elastic, circular band, 1.5 cm. in thickness and 24 cm. in length, passes about the intestine on a level with the pelvic brim; above and below this, for a varying distance and gradually diminishing in the thickness, the intestinal wall is much thickened (.4 to .8 cm.). The wall of the cecum, colon and upper part of the sigmoid is thinner than normal. Five centimeters above this thick, circular band there is a large (12 cm. by 4 cm.) irregular, indurated (apparently healed), ulcer, with the long axis transverse; the edges are elevated and undermined, the base ragged.



The vessels of the sigmoid and rectum are considerably injected. There are numerous ecchymoses in the mucosa, also dark olive green discoloration. The parietal peritoneum of the left lower quadrant is considerably reddened and there are numerous ecchymoses.

The proximal 4 cm. of the appendix is retro-cecal and buried in old fibrous adhesions; the distal 3.5 cm. is felt. The mesenteric lymph nodes are considerably enlarged. The peritoneal cavity contains about 100 cc. of clear, straw-colored fluid.

The *pleural* and *pericardial cavities* are normal.

The heart is normal.

Lungs: These are of a mottled, dark red color, with general bluish cast and show considerable black pigmentation. They are crepitant throughout. Along the margins, they are of a lighter reddish color and doughy consistency. On palpating, the air is forced from part to part along these margins. On section, they are of a dark red color and considerable bloody, frothy fluid exudes.

Kidneys: Weight normal (estimation). Cortex 7 mm. Capsule strips easily, leaving a smooth surface with dilated venules. The kidneys are of a dark, reddish gray color. On section the glomeruli are visible as sparkling points. The vessels of the cortex and pyramids are considerably injected.

Bladder: This is contracted and has the fetal "tent-shaped" form.

Aorta shows a few light patches of varying size.

Brain: Pial vessels are considerably injected. There is moderate sub-pial edema.

All other tissues are normal.

The circular band described in the sigmoid region at about the level of the pelvic brim was thought possibly to be the internal sphincter distorted upward by the distention. Histological examination did not confirm this view since no muscle fibers of such a sphincter were present.

Anatomical diagnosis. — Dilatation of the large intestine; anomaly of sphincter ani; chronic appendicitis; congestion and edema of lungs; slight emphysema of lungs; slight arteriosclerosis, aorta.

This case is of special interest, owing to the advanced age of the patient, fifty-six, and the definite etiological association of the condition with a congenital anomaly, imperforate anus. It is not possible to determine definitely just how much of a causal factor the latter was; perhaps in addition there was some congenital anomaly of the colon. However, the existence of the former is known; as to the latter, surmises alone can be made.

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NOTES ON X-LIGHT. NOTE 204. ON COOLED TARGETS IN X-LIGHT TUBES.

BY WILLIAM ROLLINS, BOSTON.

In the spring of 1896 after seeing the organs of the chest with Dr. F. H. Williams's x-light apparatus, it was evident no examination of the chest could be complete unless x-light was used. An attempt was therefore made to design and construct an x-light tube giving a bright and steady light of a uniform quality. The cooled target was one of the results. After being thoroughly tested, the tube was described and illustrated in Note 1, in the *Electrical Review* for Dec. 1, 1897. In Note 3 another construction was described in which copper was substituted for platinum, except for a short tube used to seal the hollow target to the glass of the vacuum tube and for that part of the face of the target struck by the cathode stream. As no illustration accompanied Note 3, two are here given to show the details of the second form, for time has proved it to be useful. The metal used for the impact area, or that part of the target struck by the cathode stream, did not form part of the wall of the vacuum tube; therefore porosity, which was often present in the metals suitable for impact plates, uranium, iridium, platinum, could not cause the tube to leak, as sometimes happened with the form illustrated in Note 1. Efficient, cooled target tubes with faces from seven to fifty centimeters in diameter and with stems from one to thirty centimeters in length have been illustrated. Therefore, the proportions can vary within wide limits. Quite a bright light can be obtained from these cooled target tubes, for several horsepower of electrical energy have been and can be expanded on a cooled target without injury. A cooled target allows many exposures to be made with one tube, but if the target is an anode the deposit of metal on the walls of the tube at length makes the action of the tube irregular,[1] though as shown in Note 16, an efficient, cooled target tube can be made in which the target is not an anode, the anode being a ring of aluminum surrounding, or at least placed symmetrically to the target. This construction is illustrated in the accompanying figures.

Description of the figures. — Figure 1 shows a copper tube of any required length with a disk of copper soldered to it and faced with uranium, iridium or platinum.

In Figure 2, a copper rod is shown which had been bored and turned to take the place of the copper tube in Figure 1, avoiding a soldered joint near the face of the target.

The other figures illustrate annular anodes which diminish the blackening of the tube.

NOTE 205. ON ALLOYING ALUMINUM WITH BERYLLIUM AND USING THE ALLOY FOR THE CATHODES OF X-LIGHT TUBES.

In Note 27, 1898, the suggestion was made of using beryllium for the cathode of an x-light tube. The metal is still expensive, but an alloy can be made and is here recommended for cathodes.

NOTE 206. MAGNETIC FOCUSING OF THE CATHODE STREAM IN X-LIGHT TUBES.

In August, 1896, E. P. Thompson published "Rœntgen Rays," an invaluable book on account of the author's historical sense. After reading it, repeated attempts were made, to utilize Chappin's observation, the results of which were shown Feb. 19, 1896, and described on page 123 of the book mentioned. Chappin stated that the intensity of an x-light tube could be increased from five to eight by using a magnet bring the cathode stream to a focus, and his periment has been repeated at intervals by any others. Though the writer did not suc- ed in making a sufficiently practical tube on is plan to be acceptable to the tube makers, he nsidered its bearing on the heat or train of aves theory of x-light which has been advanced in these notes, instead of the single pulse theory of Stokes.

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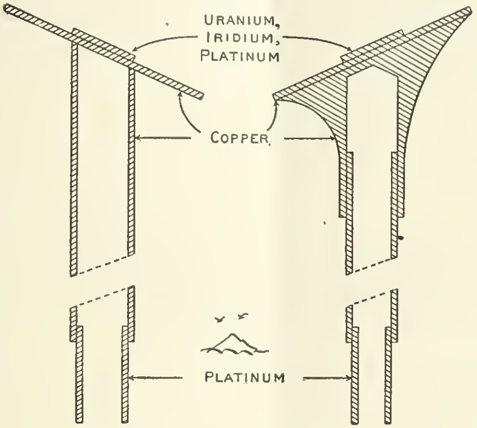
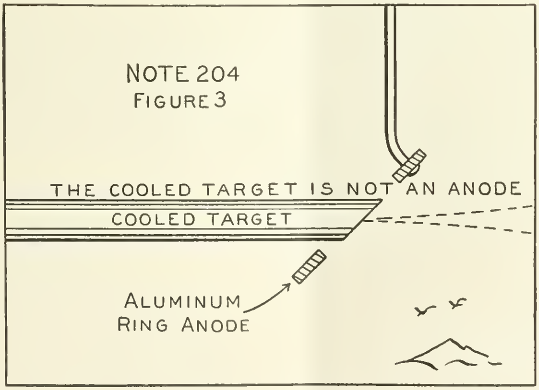
[1] Refer to Note 46 for a photograph of a cooled target which showed the effect of six hundred hours' use.

Chappin's observation is also interesting in connection with the tube described and illustrated in Note 188, for the same result was there obtained by non-magnetic means, two sources of x-light being simultaneously obtained from the same tube, one source from a focused cathode stream being brighter than the other from a spread cathode stream, indicating that when the particles of the cathode stream are brought together at the impact plane by non-magnetic means, the same increase in brightness results as when concentrated by a magnet. This was a better experiment in support of the heat or train of waves theory of x-light than a magnetic one, for with our present knowledge of magnetism it would be unwise to say the magnetic brightening might not be partly due to other causes than simple concentration, for an example, to increase of speed.

NOTE 204.

FIGURE 1. FIGURE 2.




NOTE 204
FIGURE 3

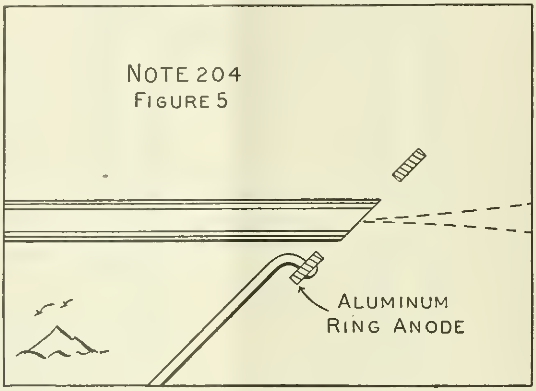
NOTE 207. *A.* — ON ANNULAR CATHODES IN BROAD AREA TUBES FOR THERAPEUTICS.

B. — THERAPEUTIC TUBES WITH AERIAL FOCI.

A. — In Notes 166 and 167, it was said, when the non-deviable Lenard rays, *i. e.*, x-light, derma rays and others, were used in treating diseased tissues near the surface, the source of the radiation should be near the wall of the vacuum tube and not in the center of the bulb, as in focus tubes, — the only kind in use, — because the therapeutic intensity of vacuum tube radiations diminished approximately as the square of the distance.

Therefore, if the source of the radiation was placed in the middle of the bulb it could not be brought nearer the diseased tissue than one hundred millimeters even with the surface of the tube in contact with the skin, for the tubes usually had a diameter of two hundred millimeters. Authorities were quoted showing that the most advanced practice was to use the source of radiation at a distance of from two to four hundred millimeters from the diseased tissue being treated. Under these conditions it was shown the source must be, to accomplish the same result, from forty to one hundred and sixty thousand times as strong as when the construction of the tube allowed it to be brought within one millimeter of the surface. Attention was also called to the object Rœntgen had in mind in adopting the Crookes or focus tube, *i. e.*, to produce a small radiant area to get sharp definition, and it was stated that definition being of no value in therapeutics the cathode stream, instead of being focused on the impact area of the target, should be spread, to avoid heating and to increase the size of the radiant area allowing a larger surface to be treated without moving the tube. In cases where it is desirable to have a somewhat higher resistance in the tube, there is a tendency for the light produced by the central pencil of the cathode stream, even from a flat or convex cathode, to be of a more penetrating character than that made by the other parts of the stream; therefore, when a broad, radiant area of uniform intensity is wanted, the center of the cathode may be removed, making a tube of the type mentioned in Note 8, and these annular cathodes are here recommended. Tubes for therapeutics in which the source of radiation instead of being in the center of the bulb is on or near the tube wall deserve more attention than they have received since being described and illustrated in this series of notes, for with them some of the remarkable results which Dr. Williams has obtained with radium in superficial new growths can be duplicated with the small amount of energy supplied to a vacuum tube by a little coil of a motor car, making the apparatus portable and cheap, while the cost of the radium would be several thousand dollars. When these types of tubes are used for treating new growths, only small and superficial ones should be selected, focus tubes alone being suitable in attempts to affect deeply seated tissues, for the reasons given in Note 167.

B. Therapeutic tubes with aërial foci. — The energy applied to a vacuum tube to produce a radiation arising from the wall of the tube, for use in therapeutics, should be expended in making a radiant area about the size of the new growth. In such cases the concave movable cathode, described in Note 4, is often desirable to bring the cathode stream to an aërial focus within the tube, beyond which it spreads again; the impact area on the wall of the tube from which the therapeutic radiation arises being adjusted to the correct size by moving the cathode either by mechanical or magnetic means, both of which have been described in this series of Notes.



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Medical Progress.

PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE.*

BY HENRY A. CHRISTIAN, M.D., BOSTON.

EXPERIMENTAL NEPHRITIS.

Historical retrospection in a subject usually results in the selection of certain events as division points, mileposts, so to speak, which mark the progress of its development. Unlike the units used in linear and temporal measurements these divisions are commonly of unequal length and may be chosen arbitrarily to suit the fancied needs of the subject. Thus, an historical discussion of nephritis divides itself for me into the following periods: the period prior to Bright's publication in 1827; the period from Bright to Frerichs, 1827 to 1851; the period from Frerichs to Weigert, 1851 to 1879; the period from Weigert to the present decade, 1879 to 1898; the present decade, 1898 to 1908.

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* Presented in part at a meeting of the Bender Laboratory Club, Albany, N. Y., March 9, 1908.

Prior to Bright knowledge of renal disease was in a state of great confusion. To Bright belongs the credit of clearly associating the clinical symptoms, albuminuria and edema, with lesions in the kidney. From Bright to Frerichs various forms of renal lesions were described. Frerichs regarded these various forms of nephritis as stages in a single process which began as acute nephritis and ended as the small granular kidney of chronic interstitial nephritis. In 1879 Weigert clearly showed the fallacy of this conception of Frerichs. Weigert regarded the stages of Frerichs merely as types of renal lesions, convenient for description and representing the varying reaction of renal structure of varying resistance to the action of injurious substances of varying strength acting during varying periods of time. Weigert's conception of nephritis remains in essential the one now generally accepted. From 1879 to the present decade, new renal lesions have been described and the finer histological details have been more carefully investigated by modern technical methods. Probably the chief advance of this period has been the emphasis of the importance of the glomerular lesions in the chronic parenchymatous type of earlier writers. The contribution of the present decade appears to me to lie in the results obtained from a study of renal lesions produced experimentally in animals. The end of this present period has not come. Whether it will be marked by a contribution that will finally throw light upon many unexplained phases of nephritis remains to be seen. Some of the recent work in experimental nephritis, however, seems of distinct importance and this I propose to review here.

During the eighty years that have elapsed since the publication of Bright's monograph, the study of nephritis has been almost solely a clinico-morphological one. This has yielded much knowledge of the disease, but has failed to explain the very frequent discrepancies between clinical observations and post-mortem findings. We are still unable in many cases to foretell the anatomical changes in the kidney from the clinical course of the disease. In other words, our knowledge of the function of the diseased kidney has not been greatly advanced by these studies. An anatomical classification, carefully elaborated from the results of the study of human kidneys by means of the best methods of preserving and staining tissues, has so far failed to explain functional differences which are encountered in the disease. In recent years the study of nephritis has taken on a more clinico-functional aspect, and some advance has been made by applying to man physico-chemical methods. However, in man direct study of the kidney in varying stages of disease is impossible. This study can be made only in animals, and hence the importance of studies of experimental nephritis.

Renal lesions can be produced in animals by the injection of various substances, and these in many respects show an analogy to the lesions of the natural disease in man. Up to the present time more careful studies of the experimental acute lesions have been made than of the chronic, though it has been shown that lesions closely simulating chronic interstitial nephritis of man can be produced in animals. Ammonium and potassium bichromate, mercuric chloride, cantharidin, arsenic, uranium nitrate, and other substances have been used by various experimenters to produce acute toxic nephritis. Bacterial toxins have also been employed. The lesions produced by these substances divide themselves into two general groups, while in the individual cases there is considerable variation dependent on dosage, susceptibility, etc. With the chromium, mercury and uranium salts there are produced very marked degenerative changes in the tubular epithelium which rapidly progress to complete necrosis. These are focal in distribution, but may be very extensive. With cantharidin and arsenic degenerative changes in the tubular epithelium are less prominent, but there are more evident anatomical changes in the glomeruli.

The origin of urinary casts has been studied in nephritis produced experimentally (after neutral ammonium chromate, cantharidin, corrosive sublimate, ligation of the ureters, artificial coprostasis, and experimental biliary obstruction) by Wallerstein, and he concludes that all forms including the hyaline are formed from degenerated, disintegrated and metamorphosed tubular epithelium. The hyaline casts are the end stages of the process. Schlayer and Hedinger, from their study of experimental nephritis, believe that casts are formed from the tubular epithelium. Ribbert, as a result of his investigation of the excretion of carmine through the kidney, considers that the hyaline casts are derived from the albumin transuded through the glomeruli. According to him, had they come from the tubular epithelium they would have shown carmine granules instead of a diffuse coloration. Schlecht, from similar experiments, regards the granular casts as derived from the tubular epithelium, the hyaline as coming from the albumin excreted through the glomeruli. The results of unpublished studies made in the laboratory of the department of the theory and practice of physic at Harvard are in harmony with the views of Wallerstein.

Glomerular lesions have been particularly studied by Takayasu in various forms of experimental nephritis. It has been generally believed that in man there was a close association between the occurrence of glomerular lesions and albuminuria. Langhans and Friedländer believe that functional incapacity is the result of proliferative changes in the capillary tufts of the glomeruli which obstruct them as shown by the results of injections and by their emptiness of blood. Löhlein, too, thinks there is a close association between these capillary changes and the glomerular function. Ribbert and others hold the view that excretion is obstructed by the products of proliferative or exudative changes in the capsular space of the glomeruli which block the exit of fluids into the tubules. Both views are based on the study of cases of nephritis in man in which urinary excretion was diminished, but in them other influencing factors, such as associated circulatory disturbances, could not be taken into account. Takayasu, on the other hand, has studied the glomeruli in the kidneys of sixty rabbits with experimentally produced renal lesions, in which the functional changes so produced had been studied by Schlayer and Hedinger in a way to be described later. In the vascular nephritis of these authors, which results from injections of cantharidin, arsenic, and diphtheria toxin, the kidneys show marked functional disturbances, but there is surprisingly little change in the glomeruli. The capillaries are not empty of blood. An increase in glomerular nuclei does not take place though the nuclei increase in volume. The capillary walls thicken and appear more opaque with less sharp boundaries than is normal. This lesion appears early and seems to increase with the increase in the severity of the functional disturbance though they do not parallel each other. In the tubular type of nephritis, that produced by chromium, mercury and uranium, the glomerular lesions are inconstant and very slight. Though it is not fair to reason directly from lesions in rabbits of very short duration to lesions in man of longer duration, yet, by analogy, it would seem that, since in rabbits very severe functional disturbances can exist with almost no anatomically demonstrable lesion, the same may occur in man, and since the lesion more commonly associated in rabbits with decreased renal excretion lies in the glomerular capillaries, the intracapillary lesions in man best explain the functional incapacity. These lesions, however, may be an expression of the severity of the injury rather than the cause of the functional deficiency, and may not appear in some cases in which there is a marked degree of functional renal disturbance.

A purely anatomical conception of tubular and glomerular nephritis allows us still no knowledge of the functional effects of these diseases. This appears clearest from the fact that in tubular nephritis we have no guaranty that the glomeruli, in spite of their apparent anatomical intactness, are not injured. On the other hand, there is scarcely a completely pure glomerular nephritis in which the tubular epithelium is not considerably injured also. The difficulty of recognizing from the anatomical picture the functional course of nephritis has led to very different views on this subject. Clinical observation and its comparison with the anatomical picture has remained very unsatisfactory. For the most part it is difficult to diagnose during life a glomerular nephritis. Physiology shows that for the function of the kidney the blood vessels and circulation are of extreme importance, more so probably than in any other organ. Consequently it is to be expected that testing of the vascular function in acute nephritis would give us a better insight into the character of the injury and its course. The function of the renal vessels stands in close relation to the general blood pressure. On both factors diuresis depends. For a full understanding of the renal function, the renal vessels, blood pressure and diuresis must be considered. Testing of the renal vessels can be done best by observing the effect of certain stimuli upon them and comparing the effect in the injured and uninjured kidney. The renal vessels possess their own vasomotor system, which up to a high degree is independent of general blood pressure. In diuresis there is active dilatation of the renal vessels expressed in an increase in the volume of the kidney. The supporters of the theories of both Heidenhain and Ludwig, of urine secretion, make diuresis fundamentally dependent upon circulatory changes. However, dilatation does not always produce diuresis; consequently, in the studies, the amount and rapidity of secretion of urine must be noted also.

Schlayer and Hedinger as a central stimulus have used the sensory stimulus of tobacco smoke in the nose, or short suffocation. Peripheral contraction may be produced by minute doses of adrenalin. Changes in the kidney they have studied with the oncometer. Diuresis was studied by an apparatus which recorded the number of drops of secreted urine. These methods were applied to normal rabbts and to rabbits during stages of toxic nephritis. In the normal kidney sensory stimuli produce a quick, transitory rise in blood pressure, with a quick return to normal volume. One drop of a 1% solution of adrenalin in one-half cubic centimeter of normal salt produces a marked fall in volume with an enormous rise in blood pressure. An injection of 5% salt solution, 5 ccm. per kilo, produces a marked dilatation of the renal vessels with strong pulsation and immediate diuresis. Caffeine, 2 ccm. of 5% solution per 1½ kilo, produces the same effect. Phloridzin produces diuresis with glycosuria without volume change in the kidney. The application of these methods to acute toxic nephritis shows a sharp separation into two groups of functional disturbances, and on this basis they divide experimental nephritis into tubular nephritis and vascular nephritis.

Tubular nephritis follows chromium and sublimate. Weber has shown that chromium produces an intense disturbance of the epithelium of the convoluted tubules without marked demonstrable injury to the glomeruli. Hellin and Spiro have shown that diuretics would still produce an increase of diuresis after these changes. Weber has shown that only in the more severe nephritis does an anuria appear. Schlayer and Hedinger experimented on twenty-one rabbits with potassium chromate in doses from 0.03 to 0.2 gm. In the early stages there is an enormously increased diuresis before the use of any diuretics. The effect of sensory stimuli as well as adrenalin in comparison with the normal is increased. Sodium chloride injections have marked effect. Caffeine produces still more active diuresis. Phloridzin in most cases produced diuresis and glycosuria without alteration of renal volume. In the urine there are many casts of all kinds, much albumin, few blood cells. Anatomically focal necrosis of the convoluted tubules appears in the outer cortical portions up to widespread destruction with casts in the lumen, but the glomeruli appear intact. After several days of the nephritis there gradually appears a decrease in the dilatability of the kidney following diuresis stimulation. However, after caffeine, diuresis was still tolerably active. The contractibility of the kidney remained normal or slightly above normal. The same changes were present twenty to thirty hours after larger doses. Phloridzin in this stage showed varying changes. If the dilatability of the kidney and diuresis after salt and caffeine had become less, phloridzin produced hardly any diuresis and no demonstrable glycosuria. Still there was no injury to the glomeruli. After severe lesions the reaction to sensory stimuli and to adrenalin remains fairly normal. However, after diuretics there is no dilatation and little diuresis. Phloridzin produces no diuresis.

Corrosive sublimate 1% solution was given to fifteen rabbits. There is great similarity throughout to chromium nephritis except that in the early stages the polyuria is not so marked. Moreover, in the sublimate there is a deposit of lime in the tubules.

These changes in the blood vessels of the kidney do not accord with the very generally accepted theory that the blocking of the tubules by casts leads to compression of the glomeruli and decrease in excretion. It is inconceivable why the casts which are still passing in large numbers should suddenly stick. Neither anatomical nor functional study of the kidneys supports any such idea. Blood pressure remains about the normal height. The powerfully pulsating kidney increases its pulsations after diuretics and there is evidently a good circulation through it.

In sharp contrast to this group of toxic nephritis comes the second or vascular nephritis produced by cantharidin, arsenic and diphtheria. The cantharidin has been described by Browicz, Aufrecht, Dunin and Eliaschoff in its effect upon the kidney. They described the involvement of the glomeruli besides the tubular epithelium. Schlayer and Hedinger experimented on fourteen rabbits with cantharidin, using a solution of 1 to 100 in acetic ether, in doses of $\frac{1}{4}$ to 1 ccm. of the solution, that is 0.0025 to 0.01 gm. of cantharidin. In seven to eight hours after slight doses there are severe disturbances of renal function. In the early stages there is no polyuria. After four to six hours the effect of sensory stimuli and adrenalin injections is considerably less than in the normal. The dilatability of the kidney rapidly decreases and with it the diuresis. Phloridzin produces no diuresis and no glycosuria as soon as the dilatation produced by other diuretics disappears. In the urine there are numerous large, markedly swollen epithelial cells, relatively abundant granular and epithelial casts, many erythrocytes and relatively little albumin. In later stages the reaction of the kidney to sensory stimuli and adrenalin is a minimal one. After diuretics there is no trace of increase in kidney volume and no diuresis. Pulsation in the kidney develops very gradually and there appears after each stimulus to contraction a new factor. The renal volume shows a minimal decrease with an increase subsequently beyond the preceding stage. In the slighter grades the kidney sinks again slowly to its former volume, but in more severe cases it remains enlarged, and after new contraction stimuli increases further in size. In this way the renal volume reaches the height that it otherwise attains only in a maximal diuresis dilatation. This effect is shown not to be the result of mechanical stasis. Anatomically there are slight changes compared with the chromium kidneys. There is some loss of nuclei and clouding of the tubular epithelium. Casts are not very numerous; on the other hand, the glomeruli are rich in nuclei. There is desquamation of the capsular epithelium and rings of exudate. In two rabbits the tests on the function of the kidney were made, then cantharidin given subcutaneously, and after an hour functional tests were made and repeated every hour. These experiments showed a correspondence with others in relation to the same dose and time. With cantharidin after a very short time and minimal doses appears an enormous injury to the dilatation and contraction capability of the vessels of the kidney, with the disappearance of diuresis. The urine shows less changes than after chromium. After a longer time and with larger doses there is a total insufficiency of the renal vessels without there being very marked anatomical changes.

Arsenic was tried in three rabbits, 1% solution of arsenious acid. The functional changes were essentially the same as after cantharidin, and the anatomical changes even less. The one difference is that the blood pressure falls very much more quickly and lower after the arsenic. This depends either upon the more intense action on the vasomoter centers, or upon a greater extent of the peripheral capillary injury.

In diphtheria toxin renal function remains intact relatively long; is not disturbed so quickly and markedly as in cantharidin and arsenic. Up to nine hours after the injection the contractility and dilatability of the vessels is well preserved. Diuresis is slightly influenced. Phloridzin produces glycosuria with diuresis. After six hours there is a trace of albumin, no sediment in the urine; after nine hours a few hyaline casts and a few red blood corpuscles, little epithelium and rich albumin. The kidneys are tolerably large, fairly hyperemic with cloudy swelling of the tubular epithelium; glomeruli are rich in nuclei, bloody, no other change. After twelve hours there is still energetic contraction and dilatation, but the diuresis is considerably affected, and the lowering of the blood pressure shows a considerable general effect. There is cloudy swelling of the epithelium, and the cell boundaries tend to become lost. After about twenty hours tolerably suddenly the appearance of the severest renal insufficiency takes place, as in the latter stages of cantharidin and arsenic. The diphtheria toxin in its earlier stages shows much similarity to the tubular nephritis; in later stages it belongs to the vascular group. That these changes are not the result of the change in general blood pressure is shown by the fact that adrenalin fails to produce a contraction in the renal vessels while still raising the general blood pressure.

It has been impossible to produce transitions between these two types of toxic nephritis by varying the doses, though diphtheria toxin seems to represent a transition stage. The study of tubular nephritis seems to show that the albumin can arise as well from the renal epithelium as from the glomeruli, whereas in the vascular nephritis it seems evident that the albumin arises from the glomeruli. It is possible that the chemical composition of the albumin in these two varieties may differ, and the work of Cloetta and Orglmeister would indicate that there were differences in the albumin in different forms of toxic nephritis, and these differences seem to group themselves in a way to indicate that they parallel the functional differences described by Schlayer and Hedinger for tubular and vascular nephritis. The relation between diuresis and vascular injury is close. In vascular nephritis the general blood pressure gradually falls. The opposite is true of the tubular.

Many pathologists have believed that there was an essential difference between most of these experimental toxic nephritides and nephritis in man, since in them hydrops was rarely produced. Richter, however, showed that in the toxic nephritis, following the injection of uranium nitrate, hydrops was commonly produced. This fact removes one objection to deductions from experimental nephritis in animals to natural nephritis in man and offers a field for the experimental study of the mechanism of the production of nephritic hydrops.

The relation of hydrops to nephritis has been the subject of much discussion and investigation. That the study of structural changes in the human kidney has failed to yield any satisfactory explanation for the occurrence of edema in some cases of nephritis and its absence in others will, I think, be conceded by most observers at the present time. In man, an attempt has been made to study the functional relations of the kidney by means of observations on the general blood pressure, physico-chemical studies of the urine and blood, and an attempted correlation between these findings and the occurrence of diuresis and hydrops. A number of interesting studies along these general lines have been published, but the results have been more or less discordant. Particularly in regard to the salt relations in nephritis has confusion arisen. This phase of the subject has been critically reviewed recently by Georgopulos in connection with some experimental studies.

Korànyi had observed by means of determinations of the freezing point an increased molecular concentration of the blood in nephritis. He and other observers believed that in this way a hydremic plethora was produced, and, as its end result, hydrops occurred. Achard and others considered that the chlorides played a very important part in these disturbances, and with their retention osmotic changes took place which finally led to water retention and hydrops. Strauss went further and claimed that the chloride excretion was the sole factor concerned.

Beck and Glucinski showed that a kidney injured by temporarily tying the ureter excreted less salt than did the sound kidney. Lépine obtained the same result. Marischler, by comparing the chloride excretion in nephritics on a normal diet with that when salt was increased, found that in parenchymatous nephritis there was a tendency to chloride retention, but that even with a decreased water excretion the kidney might remain permeable to salt. Moreover, when both salt and water were increased in the food there was a slight increase in the amount of urine, and a retention of both salt and water in the body. If only the salt was increased there was no diuresis, but salt was not retained. This he believed to be evidence that the decreased salt excretion was the result of water retention. Nagelschmidt found in nephritics a delay in salt excretion. Steyrer obtained very similar results. Claude and Mauté found that some nephritics showed salt retention while others did not. In the latter they considered the prognosis in the disease to be better. Strauss considered that there was a very close relation between salt retention, water retention and hydrops, and his studies led him to the belief that the chloride retention was primary and the water retention secondary to it.

(To be continued.)

Reports of Societies.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Meeting of Wednesday, Dec. 11, 1907.

The President, Dr. James B. Walker, in the chair.

Symposium on Diseases of Physicians.

DISEASES OF PHYSICIANS.

Dr. Roland G. Curtin presented a résumé of his experience in the study of diseases of medical men with a tabulation of the cases and remarks upon the frequency of diseases, some of which were unusual and some more common. The probable cause was given, also the mode of life necessary to preserve health with directions tending to prolong the practitioner's life, especially in old age. The statistics given did not embrace slight ailments or any of the severe forms of disease in which Dr. Curtin had been called in consultation. His findings in regard to the drug habit among physicians differ from the conclusions of Dr. Crothers, of Connecticut. The showing of 28 deaths from angina pectoris bears out the appellation of "doctor's disease" for this affection. Only four cases of Bright's disease were noted, all of severe type. The milder ones were not mentioned. Ten cases of renal calculus were found. The cause of this large number was difficult to explain. At least half of the number were young practitioners.

A general study showed that clergymen have twice the chance to attain the age of sixty-five that the physician has. This is accounted for by the constant stress attendant upon the physician's life. The automobile was said to greatly add to the strain of the nervous system.

THE LONGEVITY OF PHYSICIANS.

Dr. Joseph P. Tunis showed that the mortality of the medical profession is higher than that of all other occupations. According to Dr. Ogle's statistics, the farmer is the longest lived, and the clergyman enjoys the greatest longevity of the learned professions. G. M. Beard, in 1866, said that "the greatest and hardest brain-workers of history have lived longer, on the average, than brain-workers of ordinary ability and industry." Beard found that the average age at death of 500 of the greatest men in recorded history was 64.2. From an insurance point of view, physicians have shown a slightly greater mortality than was anticipated. Taking them as a whole they are, however, "average risks."

MORTALITY TABLE OF PHYSICIANS AT DIFFERENT PERIODS.

Year.	No. investigated.	Investigator.	Mortality.
1834	624	Casper	56.4
1885	3,865	W. Ogle	59.3
1886	8,627	J. M. French	56.47
1907	2,000	J. P. Tunis	60.6

The author concludes that statistics prove: (1) The truth of the popular belief that all men live longer now-a-days than they did fifty years ago; (2) that the most satisfactory statistics of longevity can be secured only by selecting groups of men living under the same conditions; (3) that the diseases to which physicians are especially liable affect the cardio-vascular and nervous systems; (4) that the secret of long life would seem to lie in abstemiousness, brain work and contentment, presupposing a sound mind in a sound body.

DISEASES OF GREAT PHYSICIANS OF THE PAST.

Dr. William Pepper pointed out the difficulty in drawing conclusions as to the commonest forms of disease in the physicians whose names were mentioned, as it was only in those cases in which the men had suffered from some interesting disease that the cause of death was given. The cases are, however, classified according to certain loose groups, the most interesting group including those who have described diseases and have themselves suffered from the same disease. Another group includes those who have fallen victims to various diseases in the line of their duty.

Laennec fell a victim to a disease the nature of which he had taken pains to describe. Lancisi and Corvisart died of diseased heart. Boyle sank under the ravages of the disease of which he had been the most successful illustrator. Sir Benjamin Brodie, the great surgeon, died of cancer of his right shoulder joint. Dupuytren, the most famous surgeon of the last century, died of an empyema. Refusing to submit to an operation, he said he "would rather end his life through God's hand than that of a surgeon."

In more recent times Mikulicz who wrote on cancer of the stomach himself fell a victim to this disease. Fowler, of Brooklyn, having written on appendicitis, died of this disease.

Upon the memorial tablet of Dr. Jesse W. Lazear, who died of yellow fever, are the words: "With more than the courage and devotion of the soldier he risked and lost his life to show how a fearful pestilence is communicated and how its ravages may be prevented."

Dr. Guillotin, the inventor of the guillotine, had his own head chopped off.

A number of distinguished physicians have been great sufferers from the gout. Sydenham said, "More wise men than fools are victims of this affection."

Angina pectoris has claimed its share of the medical profession, and in this group may be mentioned the names of Sir James Y. Simpson, Sir Charles Bell and John Hunter.

Instances are cited illustrative of Osler's statement that the profession offers many examples of good work thoroughly and conscientiously carried out by men with aneurism of the aorta. Dr. Thomas King Chambers first had an aneurism in the left popliteal artery, eleven years later one in the right leg cured by pressure and finally aneurisms of the carotid arteries. Richard Bright died of the consequences of extensive and long standing ossification of the aortic valves of the heart, the exit for the blood being reduced to a mere chink. Robert Liston died of an aneurism of the aorta, which must have existed for years, and been fostered by his great physical exertions, which characterized his recreation as well as his work.

Another group is given including those having suffered from apoplexy, and still another and larger group is classified under the heading of miscellaneous.

Dr. James C. Wilson, in opening the discussion, said there were two main groups of morbid conditions to which physicians are particularly liable, — the infectious diseases of adult life, and the general diseases of the period of involution of life, diseases especially of the cardio-vascular system, of the kidneys and of the nervous system. Neurasthenia, the drug habit and alcoholism were also to be considered. These were said to be the result largely of improper living combined with inherited feebleness of organism. The man who enters upon the practice of medicine with impaired powers of resistance and lack of self-discipline is liable to become neurasthenic or fall a victim of one of the drug habits.

Dr. James M. Anders, commenting upon the frequency of cardio-vascular degenerations among physicians, thought that the experience of any single physician, or group of physicians even, could not solve the problem, since individual experiences differ widely. As pointed out by Dr. Tunis, physicians live under different conditions, pursue different lines of professional work, and their habits are equally various. He holds, however, that it is possible to accumulate a sufficiency of data on which to base valuable practical conclusions.

An analysis of 115 cases showed tuberculosis to be present in nearly 15%, while organic heart disease, gout, obesity and neurasthenia stood second in point of frequency. Angina pectoris, diabetes mellitus and nephritic colic, conditions which appeared to lead in Dr. Curtin's experience, were less common, although when compared with their incidence in general, the percentage among physicians is still abnormally large.

The cases of angina pectoris, nephritic colic and diabetes occurred among men who might be counted as brain-workers, but they also led unusually sedentary lives and were given to the pleasures of the table. Of morphinism in doctors there were 5 cases, which result agreed with Dr. Curtin's statistics rather than with those of Dr. Crothers. It is remarked, however, that morphine is often used in secret by physicians.

Dr. Anders feels strongly that an extensive statistical inquiry would reveal sufficient facts and data upon which to base valuable conclusions. The subject was said to be one bringing up the whole question of the influence of occupation as a causative factor of disease, which, whether considered in relation to the professional crisis, brain-workers in general, merchants, artisans, clerks, or laborers even, is not fully appreciated by the medical profession.

Dr. David Riesman referred to a feeling, prevalent among the laity, that physicians have no right to be ill, and regarded it as probably a relic of the superstition of the barbaric age when disease was looked upon as a demon that could be exorcised by the medicine man, who, naturally, if he could drive it out of the patient, would drive it out of his own body. Instances were cited of disease contracted in the course of the work of physicians. Whether physicians are prone to certain diseases could only be learned by statistics. Dr. Riesman's own practice shows that of some diseases there is a rather large number of cases of physicians. He has had 7 cases of appendicitis, 2 of tuberculosis of the lungs, 2 of pneumonia, 10 of neurasthenia, 4 of arteriosclerosis and a number of others, one and two of a kind. Arteriosclerosis seemed to be quite common. Two of his cases were under thirty-five years of age and were total abstainers in regard to alcohol. Loss of sleep and the use of tobacco were considered productive factors. His experience shows neurasthenia to be rather profound in the medical profession. While it cannot be said that physicians are exempt from disease, it is believed that they will work longer when handicapped than any other class of men because of their sense of responsibility and the fact that no one can take a doctor's place.

Dr. James Tyson has seen a good many physicians with enteric fever. He has very often been consulted for morphinism by physicians who realized their complete helplessness. He has also known cases in which physicians have most successfully overcome the habit. The cocaine habit in his experience has been a very frequent occurrence among physicians. This habit is much more easily overcome than morphinism. Of angina pectoris he has seen a number of cases. Two cases were cited showing the impossibility of drawing conclusions of a prognostic character from the symptoms. The presence of albuminuria and casts in the case of a physician who has been very much overworked but which pass away almost immediately upon rest was a condition falling under his observation. Neurasthenia he regarded as almost a doctor's disease, stating that, after women, doctors come in as a class of neurasthenics.

Dr. Jay F. Schamberg regarded the strain and stress under which the physician lives, and his exposure to contagious and infectious diseases as essential factors in the varying incidence of certain diseases in the medical profession, compared with the general population.

He referred to the fact that Dr. Edward Jenner was the first to call attention to the pathological cause of angina pectoris and refrained from publishing his views on the subject during the lifetime of John Hunter, because of his intimacy with his friend and teacher, and, although he made known his views to the physicians of Hunter, he was only given credit for his knowledge after Hunter's death, when these gentlemen found a calcification of the coronary arteries.

Dr. Albert R. Moulton, from his experience with cases of drug addiction, is inclined to believe that the percentages given by Dr. Crothers of the drug habit among physicians are exaggerated.

Dr. Curtin, in closing, noted that in 15 deaths from angina pectoris among physicians 5 had died suddenly after a hard day's work and a hearty meal. He suggested that the heaviest meal should not be taken at night and that the physician should rest, if tired, before and after the meal. After the age of fifty it is important that physicians gradually reduce work, avoiding night work and shortening that of the day.

Dr. Pepper, in closing, said that as the historian of the evening he would simply refer to that good old physician Roubelais who, after his study of this subject, said that: "There be more old drunkards than old physicians."

Book Reviews.

The Diagnosis and Modern Treatment of Pulmonary Consumption with Special Reference to the Early Recognition and the Permanent Arrest of the Disease. By Arthur Latham, M.A., M.D., F.R.C.P. New York: William Wood & Co. 1907.

This well written book will be of value to every general practitioner as well as to all specialists in chest disease. All aspects of the subject are considered. About one fifth of the book is devoted to diagnosis and the remainder to treatment. In this new edition considerable new matter has been added. The writer states that he has found the opsonic index without value in diagnosis. A man may be gaining steadily under sanatorium treatment and yet the opsonic index may remain as low as before improvement was noticed. He may lose the physical signs of active disease and be able to return to work and and yet the opsonic index is not increased. His concluding statement on this subject is worth quoting: "Sanatorium treatment alone, therefore, in many cases does not do anything to increase the protective substances of the blood, if it be true that the opsonic index is an index of these protective substances. Such a result is necessarily hostile to clinical experience and should make us pause before accepting the statements concerning opsonic indices at their face value."

The interesting observations of Dr. Patterson on the value of manual labor at Frimley Sanatorium are described in detail. The work of Dr. Patterson has attracted considerable attention in this country. It should be remembered that the excellent results obtained by Dr. Patterson do not prove that exercise is good treatment for tuberculosis in its active stages. Some who quote Dr. Patterson as an advocate of exercise in the treatment of tuberculosis are apparently not aware of the fact that the patients going to Frimley are carefully selected and all have had at least three months of treatment at Brompton Hospital. Dr. Patterson's patients include many day laborers. His system of graduated exercise and labor has proved of great value in enabling patients to regain their strength so that they are able once again to do heavy work. Exercise and labor are provided for two periods daily, each of two hours' duration. At first the patient is placed in grade one. Then if steady progress is made he is advanced to upper grades. Ten grades of labor have been arranged. Patients pick up fire wood; carry baskets weighing sixteen pounds or more; mow grass with a lawn mower; dig broken and unbroken ground. Latham, in this connection, warns the reader against the danger of over-exertion. He refers to Manders Smyth's account of his own case in which he relates how after months of improvement a relapse resulted from a comparatively trivial amount of tobogganing.

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SANATORIA AND OTHER ASPECTS OF THE TUBERCULOSIS QUESTION.

Dr. Bulstrode's lengthy report to the English Local Government Board on Sanatoria for Consumption, dealing also in a broad way with certain other aspects of the tuberculosis question as a whole, has attracted much attention and brought out much comment, both in the medical and lay press. This report was the result of five years' investigation and labor by a peculiarly competent chief aided by careful and painstaking collaborators. Its statements and conclusions deserve consideration and respect, whether they favor or oppose previously held theories and practices. The last fifteen or twenty years have witnessed a great revolution in regard to the methods of dealing with tuberculosis. Much good has been accomplished. It is possible that in some directions we have gone too far and that from some methods we are expecting too much. It would not be strange were it so. It would accord with what is apt to occur in most agitations and crusades. Certainly no one, and least of all members of our profession, should object to an occasional revision of the present position, whatever that may be. Least of all should those who were active in attacking and counteracting the views and practices of their predecessors, so object.

Dr. Bulstrode's report on the sanatorium treatment in England and Wales will doubtless cause a renewed and more careful scrutiny of the methods and results of that treatment, and perhaps a revision in some quarters of what may or should be expected from such institutions.

The tentative establishment of the institution at Frimley in connection with the Brompton Hospital for Consumptives in London is as legitimate as was the establishment of the first sanatoria in Germany in which rest, forced feeding and fresh air were the features. It is by the comparison of careful, painstaking observations that men arrive at facts and a just appreciation of the most suitable conclusions.

We are led to make these general remarks by some criticisms upon letters from our London and Paris correspondents in the Journal of Feb. 20 and Feb. 27, and by a letter on "Sanatoria for Tuberculosis," published on page 398 of our last issue, a letter which in itself is temperate and judicial in tone and carries the weight of the writer's experience.

It is not, however, in discussing sanatoria that the "reactionary" attitude of this report, if we may use a popular term of the day, is most manifest. The report and the comments of Dr. Bulstrode even venture to question the importance of the rôle which particles of dried sputum play as disseminators of tuberculosis. In summing up the evidence Dr. Bulstrode favors the conclusion that even in pulmonary tuberculosis in a large proportion of cases the bacilli reach the lungs not directly but by way of the alimentary canal.

We shall probably all agree that the last word has not been said in regard to tuberculosis, its prevention or its treatment. There are still many who will desire to be heard from, and even those with now firmly rooted convictions must give a patient hearing and even be prepared to modify their convictions.

We also, in this connection, are sorry to have incurred the disapproval of those interested in a bill presented to the Massachusetts Legislature for establishing instruction in the public schools as to tuberculosis, its prevention, its treatment and its remedies.[1] This bill has since become law, fortunately, in our opinion, in a modified form — the treatment and remedies being omitted. The plastic period of childhood and early youth is a great temptation to the enthusiastic educator. How much pressure will it profitably bear, and what important subjects are to be withheld? Some must be or there will be no plasticity.

CARE OF THE TEETH IN PUBLIC SCHOOLS.

In this issue of the Journal we publish papers by Dr. William R. Woodbury and Dr. L. W. Baker, on the subjects, "The People's Disease" and "Dental Caries." Judging from certain statistics which are later quoted, the appellation "people's disease" is certainly justified and worthy of far more attention than has hitherto been accorded it. To the end of furthering the general subject of dental hygiene, a committee, to be known as the Dental Hygiene Council, representing the dental societies and profession in Massachusetts, together with the Harvard and Tufts Dental Schools, has been organized. The essential object of this council is to create a public sentiment in favor of a movement for the better care of the teeth. It is designed to prosecute this work, particularly in the schools, to the end that care of the teeth and oral cavity in the early years of life may prevent the physical, and often mental, defects which are known to result from neglect of the teeth. In other words it is felt by this committee, and we are in entire agreement with it on this point, that medical inspection should include the mouth cavity and the teeth as well as other regions of the body which are now carefully investigated. A circular letter is being sent to the various superintendents of schools urging them to use their fullest power toward establishing such dental inspection.

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[1] Correspondence, p. 399, Journal, March 19.

Many years ago Professor Jessen, of Strassburg, became impressed with the indifference existing among people in the matter of care of the teeth, and has been hard at work since to rectify this condition of affairs, particularly through the treatment of children in the public schools. His ideas have gradually taken root, and he has lived to see a discussion of the treatment of children's teeth in public schools as the chief topic at the recent International Congress on School Hygiene held in London. Recent investigations into the conditions of the teeth in school children and in the army have shown that diseased teeth are the most common of abnormal conditions; that the development of children is injured by diseased teeth with detriment to the general health; that such conditions might be improved by the introduction of dentists into school and army; and that it is necessary and relatively inexpensive to establish state dental hospitals in all countries. In 1902 a dental clinic was established in Strassburg for the benefit of school children, which is now maintained by the state. The results have been most satisfactory. During the five years of its existence many thousand children have been examined and treated, either by fillings or extractions. This work has been accomplished at surprisingly small cost, the highest amount in any one year being $2,223, which in this instance gave the average cost of those treated as less than twenty-five cents each. At the present time children of from three to six years of age attending school in Strassburg are obliged to undergo dental treatment if needed. The result of this early attention has led to a striking decrease in the number of absences from school through toothache, to a general raising of the standard of work, and to an improvement in general health.

There is small reason to doubt that practically the same situation exists in the United States in connection with the teeth of children of school age. An examination of 2,200 children in the New York schools has shown that 72% were badly in need of dental treatment, and that of 1,323 there were but two who had had their teeth filled. In New York, with a population of 800,000 children of school age, and an enrollment of 650,000 pupils, there is said to be but one school dental clinic, and that less than 10% of the children of the city receive dental care.

Very slowly, and in the face of much discouragement, a reform has at last gained a foothold throughout Europe. At present 33 of the chief cities of Germany and 15 cities of other countries have adopted measures to improve the situation. In Strassburg, which has from the first been a center of the movement, the municipal government has been so impressed with the results of the system of oral hygiene there adopted that it has authorized and has in course of erection at a cost of $60,000 a building for the care of the teeth of school children.

It is apparent that, although the United States has taken a foremost place in the development of the dental practitioner, and although the profession of dentistry has occupied a much more dignified place here than on the continent of Europe, nevertheless, this country has been backward in inaugurating a widespread movement toward more adequate dental hygiene among the people at large. The enterprise now actively begun is unquestionably destined to remove this reproach, and by degrees to provide adequate care for the teeth of the populace as it has come to provide protection against various other ills and diseases. We trust the movement thus begun will receive the cordial co-operation of the entire medical profession as well as of the laity for whose benefit it is chiefly designed.

DISEASES ESPECIALLY AFFECTING PHYSICIANS.

The *British Medical Journal* (Feb. 29, 1908) observes that doctors as a class are in general more subject to illness than are other men, and that the expectancy of long life is less among us than in most other callings. These disadvantages under which the profession labors are the result of several conditions: the anxieties and responsibilities which must perforce weigh heavily on every man of right feeling, the amount and the trying nature of the work which must be done, the irregular meals and the broken rest; exposure to the elements and to infection, and last, but by no means least, the scanty remuneration which, medical work so oftentimes brings, and, it may be added, the difficulty of collecting much of what has been so hardly earned.

Certain of these conditions are so much and so constantly experienced that comment upon them were superfluous. Among the most serious of them is certainly broken sleep; and the seriousness is emphasized whenever we hear a layman who, for one reason or another, has on some rare occasion had his night's rest disturbed. Has he given a couple of hours from his bed to a sick friend; has his wife needed a little midnight nursing? Throughout the rest of his days, in and out of season, is he likely to recall to his familiars the altruism and the noble self-abnegation which he displayed. Yet such happenings are the common lot of physicians. To be called upon near dawn is not so bad. For sleep becomes progressively lighter; and after some hours of rest the awakening is not so trying. But being aroused in the first hour, when sleep is profoundest, is always a shock, and oftentimes a grave one, to the nervous system. To this cause, as much as to any other, must be attributed the diseases to which physicians are particularly liable — "angina pectoris," the "doctor's disease," neurasthenia and severe forms of neurosis.

From this and other considerations it is really not so much to be wondered at that the narcotic habit exists among physicians; to what degree, we do not know. It has been said that physicians are more addicted to opium and cocaine than are any other class of men. And this possibly may be true; in the first place, because of the peculiar stresses which medical men must endure; again, because the doctor has these drugs so easily at hand; finally, because those who are prone to use them imagine that since they are familiar with the effects and the dangers of these substances, and the extent to which the use of them should be limited, they may themselves make use of them without risk. But despite such knowledge and experience these drugs — especially cocaine — are so insidious in their influence that many a physician has had his will power so weakened by their use that he has become unable to fight them successfully. Probably every reader is acquainted with such a melancholy case among his professional friends. Alcohol, tobacco and chloral have also their victims among practitioners.

Infection is not so great a danger to the physician. And insurance companies (at least those who insure against accident and acute illness) do not, we believe, consider our profession especially hazardous in this regard. We are here not rated so badly as was that continental gentleman whose application for insurance was marked, "Occupation, king — hazardous." Those physicians who see many cases of infectious diseases rarely succumb. In hospitals devoted exclusively to such cases the internes and the nurses seldom suffer. Reasons for this are: doctors are familiar with the principles of prophylaxis which apply in the given case; they are without fear — a very potent factor tending to the contraction of infections; and they have, through constant contact with such diseases, established for themselves a comparative immunity to them. Some very sad cases of infection have occurred among physicians, as of specific disease through digital examination, and of streptococcus infection in surgical work. Nor, lest our profession seem lacking in its tragedies, should we forget how Dr. Albert B. Craig, of Philadelphia, was some two years ago summoned to a case of fulminant cerebrospinal meningitis. His sympathies being aroused by the friendlessness of the patient and his serious condition, he gave himself liberally, day and night, to the latter's service. The loss of sleep, the mental strain, the extraordinary fatigue, were such that he succumbed to the infection. When his symptoms manifested the disease, he made his own diagnosis, bravely set his affairs in order, prepared his bride of but five months for the end he expected, and to the last moment of consciousness comforted her in her affliction. "I am neither ashamed nor afraid to die," said he; and thus passed away.

Exposure to the elements is not especially life-shortening. A certain amount of struggle and stress, so long as it does not overtax a man's strength, develops him, body and soul, and makes him all the stronger. A man is hurt and has his years curtailed only when his environment becomes too hard for him to cope with.

The combined influence of the causes here enumerated too often suffices to undermine the strongest constitutions, long before the three-score-and-ten limit is reached. A comparison of statistics from different countries gives us as a profession an average of fifty-seven years at death; and that is, in these days, much too premature.

On another page (page 420) of this issue may be found a report of a meeting of the Philadelphia County Medical Society, held last December, which was devoted to a symposium on diseases of physicians. The statements there made will have an interest in comparison with those above given.

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MEDICAL NOTES.

Death of Largest Man in New Jersey.— Thomas Wells, a hotel-keeper for many years in Newark, regarded as the largest man in New Jersey, died on March 10, at the age of eighty-one years. He was 6 ft. 7 in. in height and weighed 364 lb.

Mortality from Measles.— The *Buffalo Sanitary Bulletin*, of Feb. 29, remarks: By reference to the proper table it will be noticed that measles kills more persons than scarlet fever, in some instances the ratio being nearly three times as great! — and yet people continue to say, " It's only measles."

Academy for Practical Medicine at Düsseldorf. — It is announced that for the academic year 1908–1909 courses will be offered free of charge to practising physicians by the Academy for Practical Medicine at Düsseldorf. Various subjects will be taken up in these courses, including medicine, surgery and many of the more special branches.

Rochester Public Health Association's Antituberculosis Campaign. — The Rochester, N. Y., Public Health Association proposes to hold an antituberculosis campaign from March 30 to April 6. The travelling tuberculosis exhibit of the State Department of Health will be open to inspection at Convention Hall from March 30 to April 3. There will be daily special programs of lantern lectures from 3 to 8 p.m. The campaign will be opened Monday, March 30, by an illustrated lecture from Dr. Lewis Gregory Cole on " Radiography in the Diagnosis of Tuberculosis," and by an address by Dr. John B. Huber on " The Diagnosis of Incipient Tuberculosis." On Monday evening, April 6, there will be a great tuberculosis meeting at the Lyceum Theatre which will be addressed by prominent public men from various parts of the state.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, March 25, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 60, scarlatina 73, typhoid fever 5, measles 234, tuberculosis 41, smallpox 0.

The death-rate of the reported deaths for the week ending March 25, 1908, was 21.99.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, March 21 1908, was 236, against 231 the corresponding week of last year, showing an increase of 5 deaths and making the death-rate for the week 20.19. Of this number 134 were males and 102 were females; 231 were white and 5 colored; 150 were born in the United States, 77 in foreign countries and 9 unknown; 54 were of American parentage, 152 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 67 cases and 5 deaths; scarlatina, 66 cases and 2 deaths; typhoid fever, 7 cases and 0 deaths; measles, 192 cases and 1 death; tuberculosis, 54 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 36, whooping cough 0, heart disease 15, bronchitis 3 and marasmus 4. There were 13 deaths from violent causes. The number of children who died under one year was 43; the number under five years 62. The number of persons who died over sixty years of age was 65. The deaths in public institutions were 74.

There were 4 cases and 1 death reported from cerebrospinal meningitis, during the week.

NEW YORK.

Permanent Model Milk Station. — The Park Department is erecting a permanent model milk station in Tompkins Square, the plans for which have been approved by the Municipal Art Commission. It will be a handsome octagonal structure, providing facilities for dispensing pasteurized milk, both by the glass and modified in nursing bottles for infants, and will have a consultation room where the physician in attendance may prescribe for sick babies. The square is in the midst of a dense tenement population.

Dedication of New Wing of St. John's Hospital. — More than three thousand persons, including members of military organizations and civic societies, attended the exercises in connection with the dedication of a new wing of St. John's Hospital, in Long Island City, Borough of ueens, on March 8. Vicar-General McNamara, ssisted by a number of clergy, performed the eremony of blessing, and the President of the oard of Aldermen and other officials made adresses, while a parade of religious societies preceded the dedicatory services. This addition to he hospital, which is built of brick and six stories igh, is 125 feet in length and 60 feet in width. It ost $250,000, and has accommodations for 200 atients.

A CENTENARIAN. — Mrs. Rhena Miller, said to ave been the only actual daughter of the Revoluion in the State of New York, died at her home n Mount Vernon, Westchester County, on March), at the age of one hundred years and eleven months, having been born at Stamford, Conn., n April 12, 1807. Her death was due to a fall wo days previously, resulting in fracture of the head of the femur and other injuries. She was the daughter of Colseth Webb, who served as lieutenant in the Coast Guards in the Revolutionary War. Although she is survived by only four of he twelve children she had borne, she leaves descendants to the number of 75.

STATE MORTALITY REPORTS. — During the month of January, 12,599 deaths were reported in the state, representing an annual death-rate of 18.0, as against 18.2 for the past five years. There were 88 deaths from typhoid fever, a drop of 36 from the five years' average; 145 from measles, as against 74 for the five years' average; scarlet fever, 200, as against 100; diphtheria, 302, as against 283. There were about the same number of deaths from pulmonary tuberculosis and from cancer as last year. The deaths from pneumonia numbered 1,189, as against 1,544 in January, 1907, and 1,691 for the five years' average. Deaths from other respiratory diseases showed a corresponding decrease, a result attributable largely to the mild weather of the month.

FLIES. — In an address before the food investigation committee of the Consumers' League, on March 18, Dr. John B. Huber gave the women of New York a timely warning as to the advantage of guarding as far as possible against the entrance of flies into their homes during the coming summer, as a means for the prevention of disease, especially among their children. Flies, he said, gathered up all sorts of germs in the daytime and at night got into houses to distribute infection in food. That these insects were among the most dangerous of disease conveyers was now clearly recognized, and he quoted from the report of the expert investigation recently made on the subject by Dr. Jackson, in which this fact was strikingly demonstrated. In one instance a fly, which examination showed to have been carrying over 100,000 disease bacteria on its legs, was when captured making straight for an open bottle of milk. Typhoid fever was an autumnal disease, appearing most frequently in October, and it had been shown that flies were most abundant at the time of its inception, earlier in the season.

REPORT OF HOSPITAL FOR CARE OF CRIPPLED AND DEFORMED CHILDREN. — The seventh annual report of the New York State Hospital for the Care of Crippled and Deformed Children shows that during the year 68 patients were treated, of whom 20 were new patients. Of 21 patients discharged, 10 left the hospital cured, 9 were sent home much improved, with a tolerable certainty that home care would produce a practical cure, and two were removed in opposition to the advice of the medical staff. One patient died of tubercular meningitis; 39, or about 58%, of the patients had some form of tuberculous joint disease, and the out-door, fresh-air treatment accomplished many comparatively rapid cures. Each patient has a properly applied portative apparatus, and all simple active games are permitted. An open-air pavilion is shortly to be erected, which will be of great service, especially in the winter, when the weather conditions frequently contra-indicate locomotion in the open. Encouraging reports are already being received from the earlier discharged patients. Several are engaged in suitable occupations — as cashiers, stenographers, typewriters, milliners, bookkeepers, etc.; and but for the offices of the hospital some of these would have become permanent charges upon the state. Over three hundred applications for admission were received during the year, and the report states that the demand for a modern hospital accommodating at least four hundred patients is apparent. The present building has room for only 45, although there have often been 48 in the wards. The institution is located at Haverstraw, on the Hudson. The site is excellent, and there are ample grounds for a large hospital. This report was prepared by Dr. Newton M. Shaffer, of New York, who is surgeon-in-chief and superintendent.

RIVER POLLUTION.— The bulletin of the State Department of Health for the month of February contains an instructive report on an investigation of the Mohawk River and its watershed and the efforts which have thus far been made to check and prevent pollution. At present, of all the cities on the watershed, Cohoes and West Troy are the only ones which get their drinking water from the Mohawk in its lower reaches. Diagrams have been prepared which show that while the death-rates from typhoid fever and diarrheal diseases are, on account of the constant infection, continually high (from three to six times a reasonable amount), there are times when, by reason of peculiarly virulent infection, a more general and severe epidemic has resulted. The average death-rate from typhoid fever in Cohoes for eleven years, 1896 to 1905, inclusive, is 88.6 per 100,000, or, for the population of Cohoes, about 21 lives are lost annually, of which about 17 could be prevented by the installation of a filter plant. The money value of these deaths may be conservatively estimated as follows: Seventeen lives lost annually, at $3,000 each, $51,000; 170 cases of illness, medical attendance, loss of wages, etc., at $15, $12,750; total, $63,750. It is estimated that a suitable filter plant can be built for $100,000, showing that, even with the low value assigned to the human life, the city could easily afford to build protective works to prevent repetition of such excessive death-rates. "It is impossible, moreover," the report goes on to say, "to estimate the waste of resources and the inevitable sacrifices imposed upon a community subject to such demoralization. . . . It may be that Cohoes does not appreciate the value of the lives of her citizens lost in this reckless manner, but finds it easier to secure new citizens rather than preserve the lives of those now resident; but such a policy must inevitably work ruin to the city where it is maintained." In pleasing contrast to Cohoes is Albany, which receives its water supply from the Hudson after the polluted Mohawk has emptied into it. Here, in 1896, there was a serious epidemic of typhoid, and doubtless there would have been later and more severe disturbances except for the installation of an admirable filter plant by which the safety of the water for drinking purposes is practically secured. In 1902, for example, judging by the extraordinarily high death-rate in Cohoes, the river must have been unusually contaminated, and yet Albany was not affected by it. The same was true again in 1904.

The February *Bulletin* states that the State Health Department made an investigation of an outbreak of typhoid fever of considerable proportions which occurred at Peekskill in the latter part of January, and found that the epidemic was due to pollution of the drinking water. The watershed of the New York City water supply adjoins that of the Peekskill supply, and the source of trouble was discovered in a camp of foreign laborers located on the Peekskill watershed by contractors doing engineering work on behalf of New York. This water supply was supposed to be protected by rules drawn up by the State Department of Health, but little or no attempt at their proper enforcement had been made by the local authorities. The conditions found by the representatives of the department would have been discovered and the nuisances suppressed had the local authorities performed their duties and carried out the advice of the department, and the price paid for this neglect has been a heavy one. It is to be hoped that the lesson may be heeded by other communities.

Obituary.

FARQUHAR FERGUSON, M.D.

A STRIKING illustration of what may be accomplished under the most adverse circumstances by a man of talent and heroic determination is afforded in the brilliant career of the late Dr. Farquhar Ferguson, of New York, as described in a eulogy by Dr. Hubert Arrowsmith, a former pupil and intimate associate, before the Medical Association of the Greater City of New York at its last meeting. Dr. Ferguson, who was one of the incorporators and charter members of the association, died during the past winter, after a protracted illness which had long incapacitated him from professional work. Some extracts from the address are here presented:

"Dr. Farquhar Ferguson, known to most of us as Dr. Frank Ferguson, was of Scotch descent, and was born in 1852 in Sidney, Cape Breton Island, Canada. At an age when many of us are well along in our medical studies he could speak only his mother tongue, Gaelic. He acquired by laborious effort an extraordinary command of the English language. How successful he was in this direction I leave to those who have heard him in conversation, in the lecture hall, and at professional meetings. He had the unusual faculty of expressing his thoughts in the simplest phraseology and with the most complete lucidity, and his sentences were enunciated with a fascinating burr. Coming to New York shortly after attaining his majority, his first medical training was in the New York Hospital, in the capacity of an orderly. Later, under discouraging circumstances, he matriculated at the Long Island College Hospital, whence he was graduated in 1880. In that institution, from 1883 to 1887, he occupied with distinguished success the chair of histology and pathological anatomy. From 1883 to 1888 he was pathologist to the New York Hospital, where a few years before he had been an orderly. He was also professor of pathology and clinical medicine at the New York Post-Graduate Medical School, pathologist to St. Luke's Hospital, the Chambers Street Hospital and the epartment for the insane of the New York Hospital (Bloomingdale Asylum), consulting athologist to the New York Department of Health, and attending physician to the Columbus Hospital.

“Dr. Ferguson was an indefatigable worker. He was a macroscopical pathologist and a microsopist of marked ability, and at the same time clinician of extraordinary acumen. It has lways seemed to the writer, however, that his hief claim to lasting distinction lay in his unusual alent for teaching. He was one of the chosen ew who had the ability to clearly and convincngly transfer to the student-mind the results of personal knowledge, observation and experience, nd it is one of the writer's happiest memories hat he was privileged to enjoy a close intimacy vith and instruction from this master intellect. As a man, Dr. Ferguson was clean, straightforward, honest and upright; as a friend he was most genial, sincere and charming; as a teacher he won the respect, esteem and affection of his students; as a practitioner he was conscientious, painstaking and discriminating. As an example of unwearying diligence and indomitable perseverance, in the face of what to many of us would have seemed insuperable obstacles, his life was surely an object lesson of no small significance.”

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Current Literature.

Medical Record.
Feb. 22, 1908.

1. *Knopf, S. A., and Huly, A. J. *Some Notes on the Etiology, Prophylaxis and Therapeutics of Laryngeal Tuberculosis.*
2. *Finch, F. B. *Urticaria.*
3. *McDonald, E. *Cystitis in Women. With Report of Forty-five Cases, Studied Cystopically, and Some Modifications of Treatment.*
4. Abrams, A. *The Physical Signs of Incipient Pulmonary Tuberculosis.*
5. Klemptner, L. *Carcinoma of Right Nasal Cavity and Antrum of Highmore.*
6. Worster, W. P. *Sudden Death in Pneumonia. Its Cause and Prophylaxis.*

1. Knopf and Huly discuss the etiology, prophylaxis and therapeutics of laryngeal tuberculosis. They describe several forms of local applications which can be used by the patient, as the Beverley Robinson mask and the “Patient's Laryngeal Medicator.” They report on the encouraging effect of Bier's hyperemic treatment, as obtained by Kuhn's suction mask, on six cases of laryngeal tuberculosis.

2. Finch has found that the most useful drug for the treatment of urticaria is creosote. In acute toxic cases, if seen early before the eruption is fully developed, the administration of creosote may greatly modify or even abort an attack. Four minims in elastic capsules should be given for an initial dose, followed every fifteen or twenty minutes with two minims, until an effect is produced. In chronic cases creosote may lessen frequency of attacks or cause them to cease entirely. Salol and salicylate of soda are also useful. In severe cases an emetic may entirely relieve the symptom. When emesis is contra-indicated, atropin and nitroglycerin may be used. Adrenalin used in sprays acts well in edema of mucous membranes.

3. McDonald emphasizes the importance of cystoscopic examination in cystitis in women for diagnostic purposes and to control treatment. He finds that the cystoscope can be used without discomfort to patient and without danger of sepsis or injury where properly done. He reports a series of 45 cases of cystitis, in which he made several hundred examinations without use of cocaine on urethra or bladder and without untoward results. His treatment in most cases consisted of irrigations with a bland cleansing fluid made of a dram of bicarbonate of soda to a quart of water. When there was much mucus and pus the solution was doubled in strength and sodium sulphate added. He obtained good results with bisulphate of quinine, one dram to a pint of water. In combination with hydrogen peroxide, 5% protargol acted well in chronic cystitis. The peroxide was used in one-third strength and injected alternately with the protargol, with a half ounce syringe. For local application silver nitrate was used, applied through a Kelly-Cullen cystoscope. Where a soothing application was indicated he advised a solution of Irish moss in distilled water, prepared according to his directions. The usual drugs are given by mouth, with the exception of urotropin, which the author does not advise on account of its action on the kidneys. [W. B. R.]

New York Medical Journal.
Feb. 29, 1908.

1. Peterson, F. *The After-Care of the Insane.*
2. *Cabot, F. *Conservative Prostatectomy.*
3. Fisher, L. *The Gastro-intestinal Symptoms of Middle-Ear Suppuration.*
4. Cohn, F. *Indications for Surgical Intervention in Suppurationg Middle-Ear Diseases of Infancy and Childhood.*
5. Rosenberger, R. C. *The Spirocheta Pallida: Its Biology and Etiological Relation to the Disease.*
6. Magruder, E. P. *Case of Aortic Regurgitation and Floating Liver.*
7. Nutt, J. J. *Orthopedic Therapy during the Early Stages of Acute Anterior Poliomyelitis.*
8. Dorrance, G. M. *A Case of Biliary Fistula Between the Gall Bladder and the Stomach, with a Stone in the Hepatic Duct.*

2. Cabot divides prostatics into three groups, depending upon the amount of residual urine and intensity of the symptoms. In patients of the third group, whose general health is shattered, he advises a two-stage operation. Both stages may be done under local anesthesia. A suprapubic cystotomy is done for drainage. When the condition warrants, which may be in ten days to four weeks, a suprapubic prostatectomy is done through the same incision. In general, Cabot prefers the suprapubic route in most cases. [R. I. L.]

The Journal of the American Medical Association.
Feb. 22, 1908.

1. Archibald, E. *Operative Treatment of Cancer of the Rectum.*
2. Russ, R. *The Magnesite Splint. A New Surgical Dressing.*
3. *Bulkley, L. D. *The Value of an Absolutely Vegetarian Diet in Psoriasis.*
4. Bates, J. P. *Atypical Typhoid Fever; Its Part in Preventive Medicine, and Its Differential Diagnosis from Estivo-autumnal Malaria.*
5. *Sewall, H. *Observations on the Failure of the Radial Pulse When the Arms are Elevated.*
6. Brothers, A. *Final Results of Conservative Surgery of the Tubes and Ovaries.*
7. Williams, E. G. *Report of 107 Cases of Cancer Treated with the Rœntgen Ray, with Comments Thereon.*

3. Bulkley advocates with enthusiasm the value of an absolute vegetarian diet in psoriasis. He believes that in proper cases the vegetarian diet can control the eruption and prevent its recurrence. As a rule, he excludes entirely all animal food, even strong soups, poultry, eggs and fish. He does not allow milk as a beverage. In every case he uses in addition various internal and external medications.

5. Sewall made observations on the radial pulse when the arms are elevated on 410 different persons, including normal individuals as well as those suffering from various disorders, acute and chronic. In 225 cases there was no

complete pulse failure in the elevated wrists under any condition of respiration. In 60 cases the results were variable. In the remaining 125, there was always a loss of the pulse in one or both radial arteries during a portion or the whole of the respiratory cycle.

In 66 cases the pulse failed in both arteries. In cases of heart disease, with broken compensation, the radial pulse was never found to disappear when the arms were raised. In acute febrile conditions it is extremely rare that the pulses fail when the arms are elevated. During convalescence, however, pulse failure is often detected. Excitement or emotion tends to prevent the pulse failure. In perfectly normal individuals, the radial pulse is generally maintained when the arms are raised. In debilitated individuals, pulse failure was often seen. Apparently the pulse failure does not depend upon the amount of blood volume, or on the degree of maximal arterial pressure. Mechanical abnormalities within the chest do not directly cause pulse failure. Arteriosclerosis does not seem to be a factor. He explains these facts by the view that the pulse failure in the elevated radial artery is a sign of vaso-motor activity, and belongs to the series of physiologic compensations. He presumes that the contraction of the radial arteries helps to maintain blood pressure in the more vital tissues by diverting the blood stream from less sensitive organs. [R. I. L.]

Feb. 29, 1908.

1. *Hemmeter, J. C. *Intestinal Tuberculosis: Tuberculous Intestinal Neoplasms and Tuberculous Ileocecal Tumor.*
2. *Peck, R. E., and Thompson, F. W. *Some Studies of the Endogenous Uric Acid Moiety in Pathologic Conditions.*
3. Woods, M. *Operative Procedure as a Therapeutic Measure in the Cure of Epilepsy.*
4. Courtney, J. W. *Psychasthenia: Its Semeiology and Nosologic Status among Mental Disorders.*
5. Lange, S. *The Relations of the Diaphragm as Revealed by the Rœntgen Ray.*
6. Cook, H. W. *The Choice of a Vasodilator and the Indications for Vasodilation.*
7. Rohdenburg, G. L. *Prostatic Calculi. With the Report of Two Cases.*
8. Munson, J. F. *The Heart's Action Preceding an Epileptic Seizure.*
9. Carstens, J. H. *Sterile Hands Secured by Abstinence from Infection; the Essential Factor in Successful Surgery.*
10. Lyman, D. R. *Tuberculosis and the Medical Schools.*

1. Hemmeter found in 56 personal studies of the intestines of persons dead from pulmonary tuberculosis that the intestines were diseased in all. He includes, however, enteritis of varying severity, although some of these cases did not show the histology of tuberculosis. In 6 cases the entire intestinal mucosa was intact, but tuberculosis of the mesenteric, omental or retro-peritoneal glands was found. Tuberculosis of the cecum with advanced pulmonary tuberculosis is a very rare occurrence. A tuberculous tumor of the cecum and appendix may simulate malignant disease. The distinction from appendicitis can frequently not be made. The chief danger from this condition is stenosis of the intestine.

2. Peck and Thompson found that slightly over half of 31 patients showing nervous and other symptoms had an abnormally low output of endogenous urinary purins. Some of these patients showed marked relief of symptoms by increasing the elimination of the urinary purins. Attempts to dissolve uric acid by the so-called uric acid solvents were futile. Increased excretion of uric acid seemed to be best attained by electric light baths. [R. I. L.]

The Journal of Medical Research.

February, 1908.

1. *Turck, F. B. *Experimental Studies on Round Ulcer of the Stomach and Duodenum.*
2. *Walker, E. L. *The Parasitic Amebæ of the Intestinal Tract of Man and Other Animals.*
3. Wells, H. G. *The Fats and Lipoids of Maligna Renal Hypernephromas.*
4. *Cushing, H., and Brauch, J. R. B. *Experiment and Clinical Notes on Chronic Valvular Lesions in th Dog and Their Possible Relations to a Future Surge of the Cardiac Valves.*
5. Wilson, L. B., and Andrew, H. G. *Stereo-Photog raphy of Pathological Specimens: Some Improveme in Technic, and New Apparatus.*
6. *Floyd, C., and Hawes, J. B. *The Ophthalmo Tuberculin Reaction: Some Observations.*

1. Turck reports another series of cases of round ulcer o the stomach and duodenum in dogs, produced by feeding cultures of B. coli communis in bouillon, together with an ordinary meat diet. He has been able to produce both the acute form of perforating ulcer and the chronic form by variations in the method of feeding. Where the feeding has been left off for a time and then begun again suddenly with large numbers of B. coli, the phenomenon of anaphylaxis is evident. When the resumption of feeding has been more gradual the chemotactic condition of the stage of healing is gradually developed, and a chronic ulcer is produced.

2. Walker has made a most complete study of the parasitic amebæ of the intestinal tract of man and other animals. By his method of "hanging-plate" cultures, he has been able to observe the growth and life cycle of amebæ and the process of reproduction. The article takes up every side of the subject, and contains many plates and a complete bibliography. The author has cleared up many doubtful points in the life cycle of the amebæ, and has collected and correlated the views of the authorities on the subject. The article is a most thorough piece of work and contains full directions for cultivating amebæ. It should be referred to for information on any phase of the subject.

4. Cushing and Brauch give an account of experiments on dogs in which artificial valvular lesions were produced by reaching the valves directly through the musculature of the heart. The approach to the heart was usually made through an ingenious gridiron incision to the left of the median line. For the production of insufficiency the apex of the heart was caught by five sutures, between which the valvulotome was introduced into the ventricle. For stenosis a stout ligature on a blunt-pointed curved needle was passed into the heart at about the level of the auriculo-ventricular ring. The ligature was previously dipped in boiling vaseline to prevent clotting. As yet the authors have had no permanent recoveries from the latter operation, but with the former there have been many successes. The authors had hoped to produce "bloody ascites," as it is found in dogs with a tricuspid insufficiency, but without success. The fact that the valves of the heart could be directly attacked through the heart wall with comparative safety leads the authors to hope for the future of heart surgery, especially the relief of symptoms due to mitral stenosis.

6. Floyd and Hawes relate their experiences with the ophthalmo-tuberculin reaction in some 230 cases of proved tuberculosis, of doubtful tuberculosis and of non-tuberculous normal cases. They give a description of the preparation and use of the tuberculin for this reaction, and discuss its relation to the subcutaneous use of tuberculin and the cutaneous method of v. Pirquet. They feel that the eye reaction is a valuable addition to our means of early diagnosis in tuberculosis, and though it has not proved to be as accurate as the subcutaneous method in those cases where the susceptibility to tuberculin is slight, and is subject to the limitations which apply to the use of tuberculin given in any form for diagnosis, nevertheless, on account of the great simplicity of the test, the freedom from untoward symptoms, and the general reliability of the results obtained, they believe that it will be of great service to the general practitioner in the prompt diagnosis of tuberculosis.

Deutsche Medizinische Wochenschrift. No. 4.

Jan. 23, 1908.

1. *Von Leyden, E. *Hemisystole.*
2. Bassenge, R. *An Interesting Bacteriological Property of Lecithin.*

3. *Levy, E. *Epxerience with the Kolle-Wassermann Antimeningococcus Serum.*
4. Vulpius. *Technic and Value of the Tendon Transplantation in the Treatment of Spinal Paralyses of Children.*
5. *Nordmann, O. *Intraperitoneal Rupture of the Bladder.*
6. *Freund, R. *Placenta Previa.*
7. Köllner. *The Etiology of Abducens Paralysis, Especially the Isolated Paralysis.* (Continued article.)

1. Von Leyden adds another case of hemisystole to the three he has already reported. He explains the anomaly by the myogenic theory, the foundation of the disturbance being an extreme degree of insufficiency of the mitral valve and enlargement of its orifice. As the ventricle contracts the ventricular blood is forced back into the auricle under full pressure, since the resistance on the side towards the aorta is greater than that towards the auricle. It may even be driven back into the pulmonary vein. The pulse of the arterial systole is thus very small. In the diastolic pause the blood returns to the left ventricle from the left auricle and pulmonary system. Thus the current of blood is reversed. The right ventricle contracts, but cannot overcome the congestion, and therefore the left ventricle gets no blood and does not contract. It is not until the second contraction of the heart that the arterial system receives its blood and gives a pulse wave. In these cases the left auricle is always much enlarged, while the left ventricle is hardly enlarged at all.

3. Levy reports 110 cases of epidemic cerebrospinal meningitis in Essen from Jan. 1 to Nov. 1, 1907. Of these 14 were not treated with the serum, and the mortality was 78%. In 25 cases in which the serum was given subcutaneously the mortality was 21%. In 17 cases with the serum given through lumbar puncture the mortality was only 11.75 %. He used serum produced at the Institute for Infectious Diseases at Berlin, giving 20 ccm. to a child and 30 to 40 ccm. to adults. He never had any bad effects from the serum or the lumbar puncture, even if large doses were administered. He is sure that the disease becomes greatly modified after injection of serum so as to seem comparatively mild, and the complications, if any appear, tend to run a mild course.

5. Nordmann, speaking of intraperitoneal rupture of the bladder, reviews the literature of the subject and reports a case from his own experience. The most prominent symptoms of this condition are fruitless desire to urinate and reflex stiffening of the abdominal wall. With any suspicion of rupture the bladder should be catheterized under great precautions to confirm the diagnosis. After operating a retention catheter should be left for a week, and the bladder washed out once or twice a day. Urotropin is the best medical prophylactic against cystitis.

6. For the better comprehension of the physiologic and pathologic features of childbirth, especially of placenta previa, Freund divides the uterus into three divisions, after methods which he describes in detail with diagrams. The first rule in treating placenta previa is close clinical attention with absolute rest in bed. The vagina should never be tamponed, except to transport the patient to a hospital. In profuse hemorrhage and undilated cervix the vaginal may be firmly tamponed as a last resort with moist sterile gauze for a few hours. With hemorrhage and a partly dilated cervix he never tampons, but ruptures the membranes and waits; if the membranes are out of reach and the child viable and the mother in good condition, he uses the inflated rubber bag, and awaits spontaneous delivery or does version according to the indications. The bag should never be left more than four hours, and if it fails, version should be performed. Extraction should never be done except with the os fully dilated, and then only using moderate traction with each labor pain. Cesarean section is a prophylactic measure, and should never be resorted to outside a large hospital.

[L. G. M.]

Münchener Medizinische Wochenschrift. No. 4.
Jan. 28, 1908.

1. Sauerbruch, F., and Heyde, M. *Parabiosis in Warm Blooded Animals.*
2. Liefmann, H. *Meat Poisoning and the Widal Reaction.*
3. Fornet. *A Review of Modern Serum Diagnosis, with Especial Reference to Precipitins and Opsonins.*
4. Prowazek, S. *The Etiology of Hen Plague.*
5. Gœbel, W. *Experience with the v. Pirquet Skin Tuberculin Reaction.*
6. Steinthal. *Injuries to the Duodenum Resulting from Contusions.*
7. *v. Schrötter, H. *Additions to the Symptomatology of Pleural Effusions.*
8. Lehmann, H. *The Advantages of the Vaginal over the Abdominal Route in Certain Cases.*
9. Oppenheimer, K. *The Success of the Munich "Consultation Stations" (Beratungstelle) for Mothers.*
10. Wiens and Günther. *The Ophthalmo-Reaction.*
11. *Gebele. *Bier's Hyperemic Treatment.*
12. Kirschgessner, P. *Obituary on Wilhelm Nieberding.*

7. v. Schrötter has examined several cases of pleural effusion with the bronchoscope, and describes one of these at length. In a sizable effusion a compression of the primary bronchus on the side of the effusion was easily made out, which changed somewhat with respiration. After withdrawal of some three liters of fluid from the chest the signs of compression disappeared. The esophagus in this case was pushed slightly over toward the unaffected side. The author also reports one case of bronchial stenosis caused by old adhesions, which dislocated as well as constricted the bronchus.

11. Gebele makes the following observations on the Bier treatment. In joint affections, the earlier the hyperemia is applied, the better are the results. He has had little or no success in subacute or chronic joint affections. In tuberculosis, too, the hyperemia, whether applied by cupping or bandaging, has been of very little value. In all acute joints, the patient must be carefully watched; if pus forms wide incisions should be made at once, and Bier treatment resumed later. In furuncles, carbuncles and buboes the success of the dry cup (suction) has been surprisingly good in a large number of cases. The author believes that the method of treatment with passive hyperemia is a most valuable one in a great number of acute inflammations, especially when they are circumscribed.

[R. D.]

Berliner Klinische Wochenschrift. No. 4.
Jan. 27, 1908.

1. Senator, H. *Diabetes Mellitus in Husband and Wife.*
2. Robson, A. W. Mayo. *The Relation between the Anatomy of and the Diseases of the Pancreas.* (Continued article.)
3. Salkowski, E. *A New Combination of Arsenic, Phosphorus and Iron.*
4. *Baginsky, A. *Septic Arteriitis and Aneurysm of the Aorta in a Child.*
5. *Fromme, F. *Cesarian Section without Opening the Peritoneum.*
6. Kroner, K. *The Value of the Wassermann Reaction in the Differential Diagnosis of Syphilis.*
7. Fischer, W. *Clinical Observations on Wassermann's Reaction.*
8. Rosenberg, A. *The Ophthalmo-Reaction.*
9. Vogel, J. *Purulent Affections of the Prostate.*

4. Baginsky reports the case of a seven-year-old child, who for some weeks had suffered from loss of weight, sleeplessness, pains in the limbs and headache. The physical examination was negative, but for a slight systolic murmur at the apex, and a palpable spleen; the pulse 120, the temperature ranging between 101° and 104°, with occasional chills and vomiting. From the temperature and lack of localizing signs, a general sepsis, perhaps a general miliary tuberculosis, was the most likely diagnosis. A week after admission it was found that there was no pulse at the right wrist. No cyanosis nor edema appeared. This, with the murmur in the heart, caused a change in diagnosis to acute endocarditis with embolism. Five days later a tumor to the left of the median line in the region of the naval was felt, hard and nodular, and non-pulsating. Two months later, a distinct pulsation in the tumor was made out, synchronous with the cardiac pulsation. The diagnosis was then made of aneurysm of the abdominal aorta and of the subclavian or brachial artery. A few days later the child died. The autopsy showed a small

aneurysm of the right subclavian artery, and a large aneurysm of the abdominal aorta. Microscopically there was an inflammation of the arterial wall, apparently starting in the media. Large numbers of streptococci were found in the thrombi of the aneurysmal sac, and in the infarcts of the spleen and kidneys, as well as in the heart, spleen and other organs. The case was, therefore, one of streptococcus septicemia with aneurysm formation as the result of mesarteriitis. [R. D.]

Die Therapie der Gegenwart.

December, 1907.

1. *Boas, J. *The Question of the Use of Opium in Appendicitis.*
2. Sternberg, W. *Drugs and Appetite.*
3. Koch, G. *The Treatment and Prognosis of Epidemic Cerebrospinal Meningitis.*
4. Holländer, E. *The Surgical Treatment of Tuberculosis of the Upper Air Passages, with Especial Reference to Tuberculosis of the Larynx.*
5. Müller, G. *Scoliosis in School Children.*
6. Horst, A. *Thiopinol, a New Soluble Preparation of Sulphur, and Its Use in Gynecology.*

1. Boas cites the latest experimental work on the action of opium on the intestines, and shows that the drug has little paralyzing action on the gut, the principal action being to cause a spasm at the pylorus, through which food is very slowly admitted to the duodenum, and in a much more digested form than normally. From his wide experience the author believes that opium is an extremely dangerous drug in acute appendicitis, as dangerous symptoms or rapid course may be masked by it. He believes that opium should be either not used at all, or only in the smallest doses which are sufficient to bring about a dulling of the pain. In regard to surgical treatment, early operation in the acute stage should only be resorted to when the case is rapidly advancing. [R. D.]

Miscellany.

EXHIBIT OF CONGESTION OF POPULATION.

Governor Hughes was the principal speaker at the conference held on March 9 which opened the remarkable exhibit of congestion of population in New York, without doubt the most complete of the kind ever before attempted. In the course of his remarks he said: "What does congestion mean, congestion of the sort that we here see depicted so clearly? We are accustomed to think, perhaps carelessly, that it means that some people who are very unfortunate suffer a little discomfort; that we are sorry for them; that we wish they could be better taken care of. But, after all, many people are bound to be unfortunate anyhow, so we shrug our shoulders and go about our own business as though it did not concern us. Who, then, pays the bill? The city and the state are paying for the crime, for the disease, for the wretchedness that come from these congested conditions. That is one of the things we have to learn in this country, — that no man, however he may pride himself upon his success, can get away from his brethren altogether, and he cannot afford to have plague spots in the city. You have to pay for hospitals. . . . I must say that I come to you obsessed and depressed by the facts which this exhibit makes so clear, an exhibit that is so eloquent of the wretchedness and misery which are incident to our progress. And yet, on the other hand, it is most encouraging that this exhibit has been brought together. It is another testimonial to the splendid quality of our citizenship which is represented in those who turn aside from the cares of every-day life to thoughtfully consider the needs of the community. I don't know whether these distinguished ladies and gentlemen who have given so much thought to these problems have remedies to propose, but I feel sure of one thing — that in some way or another the conditions here depicted will be remedied because they are intolerable. They cannot last."

Others who spoke were Commissioner of Charities Hebberd, Jacob A. Riis, and Consul-General Massiglia, representing the Italian ambassador. The latter expressed the opinion that the congestion in New York was largely due to the enormous immigration from Europe, and that this was also a factor in making the death-rate higher than it should be in one of the healthiest climates in the world.

A discussion of the various aspects of congestion of population, in which the best authorities participated, followed for three days. Among the speakers on March 10 were Dr. George W. Goler, health officer of Rochester, N. Y., who read a paper on "The Opportunities of a Health Officer," and Dr. Felix Adler, who contended that relief methods for the city's congestion would prove futile as long as the present rates for tenement-house rent were maintained. On the third and last day of the conference Dr. A. Jacobi discussed "Congestion and Preventable Diseases." In the course of his remarks he commented very severely on the existing conditions in the quarters on Blackwell's Island provided by the city for its tuberculosis patients, among whom the mortality, he had found, was 87%. There was plenty of fresh air on Blackwell's Island, he said, but, unfortunately, owing to the overcrowding and the lack of ventilation in the antiquated buildings, the inmates could not get it. After describing the conditions observed by him on a recent visit he continued: "It would be interesting, though embarrassing, to know the condition of the air thus accumulated — the reduction of its oxygen, the increase of its carbon dioxide, together with the emanations from the bodies of those in advanced pulmonary tuberculosis who, while poisoning their sick neighbors, accelerate their own annihilation." Dr. Jacobi also attacked the Sheridan bill relating to tenements now before the legislature, which aims to remove from the scope of the present excellent tenement-house law and the jurisdiction of the Tenement-House Department more than 23,000 houses now occupied by 68,000 families. "Such a bill, if passed," he said, "means practical anarchy. A crazy anarchist kills one, and is cursed; the Sheridan bill creates anarchistic conditions which will kill thousands slowly, but surely. Saul slew one; David Sheridan threatens to slay a thousand."

It is only fair to the municipal authorities to state that many tuberculous patients in the incipient stages of the disease, both on Blackwell's Island and in country sanitariums belonging to the ty, are enabled to get the benefits of what nounts to life in the open air. That all the nsumptives in their care have not as yet been ovided with suitable accommodations is prob- bly not the fault of any one person or depart- ent. It is only of late that the value of fresh r in tuberculosis has been really appreciated by ie public mind, and the buildings to which Dr. icobi refers, which were erected for other pur- oses and certainly are totally unfitted for their resent use, were no doubt the only ones avail- ble at the time they were so occupied, for the ery large number of tuberculous patients to be ared for.

The exhibit is being held at the American Mu- eum of Natural History. Among the reasons or it is the fact that congestion is steadily on the ncrease. About 200,000 new immigrants settled n New York in 1907, many of them to remain ermanently. Over fifty blocks in the city have a population of 3,000 to 4,000, and while a large umber of blocks in Manhattan have a density of nore than 1,000 to the acre, there are over 100,000 acres in the entire city with about three o the acre. Factories are packed by the thou- and into lower Manhattan. Playgrounds and arks are absolutely inadequate, and cannot be ecured, and Brooklyn and the Bronx are repeat- ng Manhattan's mistakes. The object of the xhibit is to depict some of the causes and condi- ions and the evils of the massing of people in New York, together with the present methods of lealing with the problems involved and the nethods, legislative and others, which should be dopted to remedy such congestion. Over thirty New York city departments and organizations re represented, as well as the cities of Buffalo, Rochester, Syracuse, Utica and Watertown, while exhibits are also loaned by the Social Museum of Harvard University, the Octavia Hill Association of Philadelphia, and a number of manufacturing companies and private individuals. In connection with the exhibit the Health Department has been making an investigation of conditions of health in congested districts, and presents the results in chart and diagram form. The exhibit has attracted much attention on the part of the public, and numerous requests have been received for its continuance beyond the date set for its closing, March 22. Requests have also come from other cities that the exhibit be sent to them as an educational factor.

On account of reports received of the excessive death-rate among Italian women and children living in New York, the Italian government has for some months past been making, at its own expense, a thorough investigation of existing conditions in some of the districts populated by natives of Italy and their families. The attention of the representatives of this government in New York was brought first to the facts which led to the inquiry by Dr. Antonio Stella, visiting physician to the Italian Hospital, who in the course of his practice had become greatly impressed with the results of the living conditions in a certain block. The governmental investigation showed that in practically all the localities examined revolting conditions from overcrowding were found, and that the death-rate among the women was sometimes nearly three times as great as that among the men. The moral conditions were indescribable and the communication of diseases alarming. In order to contrast the results of life in such neighborhoods with those observed in a healthy country town, Hammonton, N. J., was selected for comparison, and it was found that in the latter the average height of the boy of five years was 46 3-5 inches, while in "Little Italy" in New York it was only 39 3-5 inches. Dr. Gilfoy, registrar of records of the city health department, had previously ascertained by a comparison of the figures in his office that in New York the mortality from pneumonia among Italian children was seven and a half times greater than among American children.

Correspondence.

DOCTOR LOBSTER.

Boston, March 19, 1908.

Mr. Editor: In *Science and Health* there is this interesting observation and curious interpretation (1906, p. 489):

"When the unthinking lobster loses his claw, it grows again. If the science of life were understood it would be found that the senses of mind are never lost, and that matter has no sensation. Then the human limb would be replaced as readily as the lobster's claw, — not with an artificial limb, but with the genuine one."

The observation is both familiar and correct. If a lobster's large claw is seized even gently, it separates cleanly near the body. There along the "breaking plane," the shell is of a peculiar weak structure. With the prompt casting off of the claw there is a squirt of blood which quickly clots, and the wound heals somewhat like a human wound. From the center of the scar a finger-like elevation arises and is transformed into a small claw, enlarging with successive moults. The details of the process are well known, but in the reasonable hope that something more may be learned regarding them of possible advantage to us, hundreds of lobsters' claws in various stages of development are now being studied microscopically in the Harvard Medical School. Those who are studying the science of life by observing living creatures accurately do not share in the hope so confidently expressed in the passages quoted. Some of them do not even agree with Professor Morgan's guarded statement to the Harvey Society, that "if the tissues in man still possess the power to regenerate may we not hope in time so to adust their rate of regeneration that the replacement of a lost limb may be induced? I can but think that some day this may be accomplished." Although the study of regeneration in the lower animals promises much that is valuable, it is not in replacing lost human limbs. This was understood by Lowell, whose Dr. Lobster (C. S.) discussed the question with his dear young friend the perch, — a perch who had the toothache. The lobster speaks:

"'Your trouble's in the jaw, you said?
Come, let me just nip off your head,
And, when a new one comes, the pain
Will never trouble you again:
Nay, nay, fear naught; 'tis nature's law.
Four times I've lost this starboard claw;
And still, erelong, another grew,
Good as the old, — and better, too!'

"The perch consented, and next day
An osprey, marketing that way,
Picked up a fish without a head,
Floating with belly up, stone dead."

F. T. L.

RECORD OF MORTALITY

For the Week ending Saturday, March 14, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	9	5
Chicago	—	—	Waltham	9	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	6	2
Baltimore	218	46	Brookline	11	1
Cleveland	—	—	North Adams	2	—
Buffalo	—	—	Chicopee	9	7
Pittsburg	—	—	Northampton	10	1
Cincinnati	—	—	Medford	2	—
Milwaukee	—	—	Beverly	3	—
Washington	—	—	Leominster	6	3
Providence	74	25	Hyde Park	4	2
Boston	226	59	Melrose	—	—
Worcester	51	13	Newburyport	—	—
Fall River	64	21	Woburn	6	0
Cambridge	27	9	Westfield	7	1
Lowell	44	17	Marlboro	2	1
Lynn	24	8	Revere	2	—
New Bedford	33	12	Attleboro	4	1
Springfield	31	6	Peabody	—	—
Lawrence	24	11	Adams	9	2
Somerville	22	1	Clinton	5	4
Brockton	18	3	Gardner	12	5
Holyoke	9	4	Milford	3	1
Malden	7	3	Watertown	1	0
Chelsea	19	6	Plymouth	—	—
Newton	5	2	Weymouth	3	0
Salem	17	7	Framingham	4	—
Haverhill	10	4	Southbridge	7	3
Fitchburg	7	5	Wakefield	—	—
Everett	7	3	Webster	—	—
Taunton	15	3	Arlington	2	—

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MARCH 21, 1908.

Ohnesorg, K., surgeon. Detached from duty at the Naval Hospital, Philadelphia, Pa., and ordered to the Navy Yard, League Island, Pa., for duty in connection with the fitting out the "New Hampshire" and for duty on board that vessel when placed in commission.

Plummer, R. W., passed assistant surgeon. Detached from the Naval Recruiting Station, Chicago, Ill., March 30, and ordered to Washington, D. C., April 1, for examination for promotion, and then to wait orders.

Hayward, A. B., assistant surgeon. Detached from duty at the Naval Medical School, Washington, D. C., and ordered to the Naval Recruiting station, Chicago, Ill.

Rhoades, G. C., Hough, F. W. P., McGuire, L. W., Bacon, S., acting assistant surgeons. Detached from duty at the Naval Medical School, Washington, D. C., and ordered to report to the president of the Naval Examining Board, Washington, D. C., April 1, for examination for appointment as assistant surgeons, and then to wait orders.

Melhorn, K. C., Morgan, C. R., Biello, J. A., Haines, B. F., acting assistant surgeons. Detached from duty at the Naval Medical School, Washington, D. C., and ordered to report to the president of the Naval Examining Board, Washington, D. C., April , for examination for appointment as assistant surgeons, and then to wait orders.

Williams, R. B., passed assistant surgeon. Detached from the "Franklin" and ordered to the Naval Hospital, Philadelphia, Pa.

Verner, W. W., passed assistant surgeon. Detached from the Naval Training Station, San Francisco, Cal., and ordered to duty in connection with fitting out the "Wisconsin," and to duty on board that vessel when commissioned.

Snyder, J. J., passed assistant surgeon. Detached from the Naval Hospital, Philadelphia, Pa., and ordered to instruction at the Naval Medical School, Washington, D. C.

DeLancy, C. H., passed assistant surgeon. Detached from the Navy Yard, New York, N. Y., and ordered to duty in connection with fitting out the "Newark" and to duty on board that vessel when commissioned.

Miller, J. T., assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to the "Franklin."

Garrison, H. A., assistant surgeon. Detached from th Naval Medical School, Washington, D. C., and ordered to th Naval Hospital, Philadelphia, Pa.

Higgins, M. E., Holeman, C. J., assistant surgeons. D tached from the Naval Medical School, Washington, D. C., an ordered to duty at the Naval Training Station, San Francisc Cal.

SOCIETY NOTICES.

The American Proctologic Society. — The America Proctologic Society will hold its tenth annual meeting a Chicago, Ill., June 1 and 2, 1908. Place of meeting, the Palme House. The profession is cordially invited to attend a meetings.

Lewis H. Adler, Jr., M.D., *Secretary*,
Philadelphi

The Norfolk District Medical Society. — A meetin for Scientific Improvement will be held at Masonic Templ 171 Warren Street, Roxbury, on Tuesday evening, March 31 1908, at 8 o'clock. The following papers will be presented "Massage, etc.," Dr. Douglass Graham. "Some Use of th Streptococcus Vaccine in Infants," Dr. Robert M. Merrick "Ethical Therapeutics and Proprietary Medicines," Dr. Jame A. Mansfield. The Society will vote upon the followin question: "Shall the sum of $100.00 be appropriated for th use of the Milk Commission?" Light refreshments will b served.

William H. Robey, Jr., M.D.,
Secretary.

American Medico-Psychological Association. — The Sixty-fourth Annual Meeting of the American Medico-Psychological Association will be held in Cincinnati, Ohio, Tuesday, Wednesday, Thursday and Friday, May 12, 13, 14 and 15, 1908. The headquarters of the association at Cincinnati will be at the Hotel Sinton. Dr. F. W. Harmon, Superintendent, Longview Hospital, Carthage, Ohio, and Dr. F. W. Langdon, Medical Director, the Cincinnati Sanitarium, 5 Garfield Place, Cincinnati, constitute the local Committee of Arrangements.

Charles W. Pilgrim, M.D., *Secretary*,
Poughkeepsie, N. Y.

Boston Medical Library in Conjunction with the Suffolk District Medical Society. — General meeting Wednesday, April 8, 1908, at 8.15 p.m., John Ware Hall. Paper, "Opsonins and Opsonic Therapy," Dr. Nath'l Bowditch Porter, New York. "Further Experience with Bacterial Vaccines and Opsonins," Dr. Timothy Leary. Discussion by Drs. H. F. Hartwell and L. S. Medalia. Light refreshments after the meeting.

J. C. Hubbard,
R. B. Osgood,
W. H. Smith,
Committee on Medical and Social Meetings.

RECENT DEATHS.

Robert Fletcher Burleigh, M.D., M.M.S.S., died in South Braintree, March 22, 1908, aged forty-six years.

Elmer Wesley Mitchell, M.D., M.M.S.S., died in Fall River, March 5, 1908.

BOOKS AND PAMPHLETS RECEIVED.

Oxford Medical Publications. Abel's Laboratory Handbook of Bacteriology. Translated from the Tenth German Edition. By M. H. Gordon, M.A., M.D. Oxon. B.Sc. With Additions by Dr. A. C. Houston, Dr. T. J. Horder and the Translator. London: Henry Frowde; Hodder & Stoughton. 1907.

Transactions of the Thirteenth Annual Meeting of the American Laryngological, Rhinological and Otological Society. Held in New York City, May 30, 31, and June 1, 1907.

A Mind That Found Itself. An Autobiography. By Clifford Whittingham Beers. New York, London, Bombay and Calcutta: Longmans, Green & Co. 1908.

The History of the Study of Medicine in the British Isles. The Fitz-Patrick Lectures for 1905-6, Delivered before the Royal College of Physicians of London. By Norman Moore, M.D. Cantab. Oxford. 1908.

Oxford Medical Publications. Life Insurance and General Practice. By E. M. Brockbank, M.D. (Vict.). F.R.C.P. London: Henry Frowde; Hodder & Stoughton. 1908.

Oxford Medical Publications. Rotunda Midwifery for Nurses and Midwives. By G. T. Wrench, M.D. With Introduction by the Master of the Rotunda Hospital. Illustrated. London: Henry Frowde; Hodder & Stoughton. 1908.

Original Articles.

TUSSUSCEPTION: A REVIEW OF SOME RECENT LITERATURE, WITH A REPORT OF CASES.*

BY JAMES S. STONE, M.D., BOSTON.

IN 1884 Treves published his short "Manual 1 Intestinal Obstruction." But little has been lded to our knowledge of intussusception since at time. Treves wrote in regard to treatment: "In favor of laparotomy it must be rememered that the general mortality of the disease is)%, and that 80% of the patients die before the eventh day. In quite young children the morlity is terribly high. . . . In the young, therere, laparotomy, if done at all, should be perrmed within the first forty-eight hours, and if ossible within the first twenty-four hours."

Five years later Dr. Fitz published his monoraph on the "Diagnosis and Medical Treatient of Acute Intestinal Obstruction." He ollected and analyzed 93 cases of intussusception aken from the English, French and German terature from 1880 to 1888. Of the cases reorted, 51 were treated by other measures than urgical. Of these 51 the mortality was 69%. Of 6 cases treated surgically the mortality was 80%.)f the cases recorded, 34% (one third) occurred luring the first year of life. This percentage is maller than has been usually reported. Unforunately, nothing is said in the paper on the relaive mortality at different ages.

Fitz wrote little on treatment. This suggestive emark is made, however: "The mortality after urgical treatment was thus 80%, against 69% of nedical treatment," and later, "The inference is lirect that if medical treatment [injections or nflation] does not overcome the obstruction within the first two, possibly three, days, aid should be sought from the surgeon."

In 1894, in the "American Text-Book on Disease of Children," the author says that operation in cases of acute intussusception has had no effect in diminishing the death-rate. The objections to the operation are that there is a reasonable chance of recovery without it. He says further that the "few brilliant results recorded should be regarded as surgical curiosities showing what infants may sometimes safely endure, rather than as furnishing precedents for future guidance."

The latest textbooks on the diseases of children in use in this country as a rule teach that laparotomy is only to be undertaken as a last resort.

In England, and more especially in Australia, the matter has been kept alive and advances have been made. In a discussion on intussusception before the annual meeting of the British Medical Association in 1901, the general consensus of opinion was strongly against the treatment by injection. Most of those who spoke agreed that while occasionally it effected a reduction, it was an uncertain and often misleading, as well as sometimes a dangerous, procedure.

Edmund Owen expressed the opinion that it was "nothing less than a calamity that physicians have every now and then managed to chase back an intussuscepted bowel by using an enema."

Pitts, D'Arcy, Power, Eccles, Tubby, Bush and Eve in the discussion all favored, in more or less emphatic terms, an immediate laparotomy. A few, however, still advocated injection in selected cases and under absolutely definite limitations.

Hess, in the *Archives of Pediatrics*, 1905, vol. xxii, p. 655, reviews very completely the articles written up to that time.

Turner, in 1905, advocated injection as a routine measure, but he used it avowedly only as an auxiliary treatment in the bulk of his cases, and then under certain definite conditions which are, first, thorough anesthesia; and, second, if necessary, high pressure. As he puts it, "The risk of rupturing the bowel is small and you must take it. It is difficult to keep enough pressure." His third condition is, never to try irrigation but once.

The most important publication on intussusception in recent years is the monograph of Charles P. B. Clubbe, of Sydney, giving results which ought to revolutionize the statistics of the disease the world over.

Clubbe quotes Jonathan Hutchinson, and agrees with him in saying that it is absurd to compare the treatment by insufflation or injection and that by laparotomy. "The two measures are not competitive, but one is supplementary to the other. Statistical tables comparing the relative success of the two measures are a mere waste of labor." Clubbe has always consistently advocated preliminary irrigation. He maintains that "injections of warm oil should be given under an anesthetic, even in cases of long standing when we know that it is impossible to complete the reduction by these means," on the ground that "it reduces the intussusception to a certain extent and in the best and gentlest possible way; in this way it lessens the shock of the coming operation, because less manipulation of the intestines is needed." Clubbe regards it as especially useful in cases in which the intussusception is in the rectum, because if not used it may be difficult to get the fingers below the tumor to begin the reduction.

The definite limitations under which Clubbe uses irrigation are well expressed by his statement that out of 138 cases he had only sent back 16 to the ward without opening the abdomen. In 13 of them, reduction, he says, must have been complete, for there were only three recurrences. He says, "I never use an injection unless I am prepared to go on with the operation, and I am always agreeably surprised if reduction seems to have taken place." He uses warm olive oil or salt solution, with the child under full anesthesia and lying on the operating table. Inversion he finds unnecessary if the buttocks are slightly raised. In his experience, after about fifteen ounces have been injected, the fluid begins to come back, and if under these circumstances the tumor can still be felt, he operates at once. In a large number of cases the intussusception is very much reduced in size. He does not agree that it is quite easy after opening the abdomen to reduce the mass with the fingers when it reaches from the sigmoid to the cecum, but he feels sure that the manipulation required to bring about such a reduction within the abdomen gives far more shock and does more damage to the intestines than does an injection, by means of which, in a good many cases, preliminary manipulations may be avoided. The mass may thus often be pushed round from the left side so that it may be easily reached by an incision just outside or through the right rectus. In this manner prolapse of the small intestine is avoided and the handling of the bowel is reduced to a minimum. Thus Clubbe uses irrigation as a step in the operation.

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* Read before the Boston Society for Medical Improvement, Jan. 27, 1908.

The series of cases which Clubbe reports dates from 1893. In that year he operated on 1 case, which recovered. The number increased steadily until in both 1904 and 1905 he operated on 19 cases. In each of these two years he had 16 recoveries and 3 deaths. The total number of cases is 144. Of these only 14 were over a year of age, and of these fourteen 8 were under two years. Of the one hundred and forty-four 14 were reduced by injections — just under 10%. Four were moribund when seen and died without operation. Two died during the administration of chloroform before operation. This leaves 124 treated by laparotomy. Of these, 84 were cured and 40 died, a mortality slightly below one third.

The steady improvement in Clubbe's statistics is remarkable. Dividing the cases into three groups, he halved his mortality each time. In the first fifty cases he lost 50%. In the next fifty he lost 24%. In the last twenty-four he lost 12.5%. His record of cases operated upon since the publication of his paper continues the improvement.

The question at once comes up as to the reason for the wonderfully good results which Clubbe is now obtaining. First and foremost, of course, should be put the technical skill which he has acquired in the treatment of this class of cases. This should be in no way belittled. But of hardly less importance is another reason. He has educated his medical community up to a prompt recognition of the disease and to an acknowledgment of the fact that it is a surgical disease from the beginning. The importance of promptness in recognition and treatment is shown plainly by the statistics of Clubbe.

In the cases which recovered the average length of time between the onset of the symptoms and the operation was twenty-eight hours in the first fifty cases, twenty-three hours in the second fifty and seventeen hours in the last twenty-four. That is, the improvement in his results corresponded exactly with an earlier opportunity for operative treatment.

The fact that his medical consultants were recognizing the condition more promptly is further attested by the statistics of his fatal cases. In the first fifty cases the average time before op- ation was sixty-eight hours, in the next fifty was forty-eight hours and in the last twenty-f it was forty-two hours. Here, then, may, ir general way, be stated Clubbe's ability. He c cure the average case which he can treat wit seventeen hours. The average case which h gone on for forty-two hours he cannot cure.

At the Children's Hospital, in the last fi years, only 8 cases have been treated. Of th 8 only 1 recovered. He was a boy of five whom the intussusception of two days' standi was reduced by operation. It began at t splenic flexure. The record of duration in t other 7 fatal cases is as follows: Three da thirty hours, thirty hours, three days, twel hours, two days, one week. Only one of the cases was in a child over eight months old. Th child, two years and two months old, came in co lapsed, thirty hours after the onset of the sym toms. There had been prolonged tenesmus, wit the passage of blood and mucus. The intussu ception was reduced by operation, but the chil died in twelve hours of the shock.

In one baby of seven weeks reduction was possi ble after slitting the receiving bowel. Th symptoms had existed for a week.

In a baby of five months, with symptoms of tw days' standing, the mass was reduced, but resec tion was necessary because part of the bowel wa gangrenous.

In a baby of eight months, with symptoms o three days' duration, death from shock followed a reduction by laparotomy.

In a baby of four months, resection was necessary after symptoms for three days.

In one baby of six months, with an intussusception of twelve hours' standing, which was easily reduced, death occurred on the fourth day, probably from peritonitis.

Another death occurred from shock in a baby of three months where the intussusception had evidently been spontaneously reduced during the anesthesia. In this case the condition of the ascending colon showed that the trouble began there.

At the Infants' Hospital relatively few cases have been operated upon. Since 1898 there have been 8 cases, and of these there has been but one recovery. That was in a child nine months old, in whom the tumor was about as big as a goose egg, and in whom the symptoms had existed only twelve hours. The record in the other cases with one exception is the record of delay. In one case the symptoms had existed four days. The tumor was reduced, but the child, five and a half months old, died in three and one-half hours.

In 5 cases resection was necessary. The duration of the trouble in these cases was two days, thirty hours, thirty hours, three days and two days. There was one other case in which the tumor was reduced and in which there was every prospect of recovery but for peritonitis following removal of the appendix. The damaged peritoneum seemed to give an opportunity for infection.

One case of particlar interest I will report in ail:

G. T., male, five months old, of Boston, had en well until twenty-nine hours before admiss n to the hospital. At that time he was playing th his mother when, owing to a sudden jump, he l from her lap. She caught him about the ist before he reached the floor. He did not cry ecially nor seem to be hurt, but three hours er the mother noticed a red mass protruding om the anus accompanied by the passage of a uid movement with some blood. Five hours er the accident the physician called, saw thing abnormal at the anus, but the passage of ight blood continued till admission to the hostal. In the twenty-four hours before admison there had been six watery movements stained th blood. Vomiting began seven hours after e accident and continued occasionally thereter, but was not a prominent symptom.

At entrance the tumor was felt three quarters an inch inside the sphincter. The mass could sily be felt on the left side in the region of the scending colon and dipping over the brim into e pelvis. Laparotomy was performed at once. eduction was impossible. An artificial anus as made just above the obstruction. Death folwed convulsions occurring about six hours after eration. The intussusception was ileo-cecal in pe. The case is of marked interest as showing e rapidity with which the intussusception may evelop. The clearly traumatic origin is not ommon.

The results in the Children's Hospital and in the nfants' Hospital are bad, but they represent the sults in this community.

The small number of the cases treated at the wo hospitals where most of the young children ith intussusception are sent, as compared with he number treated by one man in Sydney, sugests the possibility, at least, that many cases ccurring here are overlooked. The delay in ecognition of many of the cases suggests the ame conclusion.

Kirmisson, in Paris, has recently reported reults similar to those obtained here and has made is plea for early recognition and prompt surgical reatment of the disease. Early diagnosis and rompt treatment are the only means by which ur results can be bettered. And, curiously nough, diagnosis is usually easy.

Fitz, in his article on intestinal obstruction, ays that of all the varieties of acute internal ntestinal obstruction that which most often preents the clearest clinical picture is intussusception or invagination. Pain, nausea, vomiting, loody stools, are the four symptoms practically nvariably present. Tympany and tenusmus may be added.

The clinical picture, as presented by Clubbe, is so plain that it is worth quoting: “The very sudden onset in a previously healthy baby is a peculiarity of intussusception. The child is seized quite suddenly, screams, turns pale, vomits, and in a short time seems to recover itself, only to cry again at intervals as if in pain. Soon after the first scream it may pass a normal motion. In from two to ten hours, in the majority of cases (97%), blood will be passed per rectum. The mass, which varies much in size and position, can nearly always be made out by careful palpation when the child is under an anesthetic. The child may not look ill, its pulse rate may be hardly raised, and its temperature may be normal.” Clubbe lays the utmost stress on very early diagnosis. With this history the case should be diagnosed at the first visit.

If it is not diagnosed at once, valuable time is lost and the chances of recovery are very greatly reduced. As Clubbe says: “It is easy enough to diagnose a case of intussusception when the symptoms have existed for three days. At this time the child will appear very ill, the pulse rate will be quick, the temperature will be raised. There will be the usual history of sudden onset, vomiting at frequent intervals, straining and the passing of blood and mucus instead of feces.” Then on examination the tumor will be very obvious on the left side of the abdomen or in the rectum, “but generally under such circumstances the diagnosis is useless. It is too late. The time for any hopeful treatment is swiftly passing if it has not passed. The large majority of cases, if left until they get into this condition, will die. They are already poisoned; they have no resisting power and rarely recover from the shock of a laparotomy. Yet case after case is sent to the hospital in this condition. We still get children brought into the hospital in this pitiable condition, though not nearly so frequently now as in former years; and in nearly every instance we find, on inquiry, that the child has been taken to a doctor within a few hours of the onset of symptoms, and has been ‘treated’ by him for the two or three days that have elapsed since the child was first taken ill.”

“These cases must be diagnosed early. It is hard to understand how they can be missed, if ordinary care is exercised.”

The general appearance of the child, as Clubbe says, is frequently the cause of mistakes in diagnosis. “Children in the early hours of intussusception often do not look sick. Men cannot bring themselves to believe that these healthy-looking, and perhaps laughing, babies can have intestinal obstruction. Yet such is often the case. The child at the first onset turns pale, looks very ill, and screams; but it is wonderful how quickly some of them recover themselves. They cry only at intervals, when they get the gripping pains, as the intussuscipiens makes fresh attempts to force along the intussusceptum. If you want to avoid falling into error, I advise you always to listen to the history of the mother when she comes to you with her baby. Some men discount everything told them by children's parents and attendants, and so, going entirely on the appearance of these intussusception children, are misled. We must be guided to a large extent by the history we get from the mother. In no other disease does it convey so much to those that have ears to hear. This history is nearly always something to this effect: The baby was quite well, when suddenly (often just after taking the breast or after passing a motion) it screamed or cried out, turned pale, and soon vomited. We are often told that the screaming only continued for a short time, that the pallor soon disappeared, but that the child seemed to be uneasy and got frequent attacks of pain. We find on inquiry that it passed a natural motion after the first screaming fit. When the child is first seen by the doctor, it has almost certainly been passing blood by the bowels. And it is this that has frightened the mother. In intussusceptions we almost invariably get a history of blood having been passed at a variable period (from two to ten hours) after the onset of symptoms. The mother thinks nothing of the sudden screaming of the child, or of its turning pale; perhaps she has forgotten all about it, until you remind her by your questions. Babies often scream, and get pale and vomit, and the mother thinks nothing of it. But directly she sees blood in the motion she knows something is wrong, and hurries off to a doctor as soon as possible. When you are told by a mother that her child has been passing blood, you should always ask certain questions before you send it away. If you are told that the child was quite well until a few hours ago, when it screamed, turned pale, and vomited; that it has been fretful and has vomited a few times since, and that it has just passed some blood, you can be morally certain that you have a case of intussusception to deal with; and instead of sending the child away after ordering it some castor oil, you must proceed to verify your diagnosis, by careful examination. An extraordinarily large number of cases with this perfectly clear, straightforward, definite history are missed, and so only come into hospital when the chances of their recovery are of the slenderest."

With the history before him, even without the story of any passing of blood, the doctor should strongly suspect intussusception. Cases are sometimes missed by men who have suspected intussusception and examined for it. The tumor in such cases is usually overlooked because the child is crying at the time of the examination.

A thorough bimanual examination and, in case there is any distention, or if the child resists or screams, an examination under an anesthetic is essential. If a tumor is not found upon examination without an anesthetic Clubbe insists upon giving an anesthetic if the history suggests an intussusception. It is often difficult to feel when near the hepatic flexure of the colon beneath the liver. In early cases the mass may generally be found at the right side of or in the middle of the abdomen just above the umbilicus. The abdomen should be examined systematically beginning at the cecum and following around the colon. When the mass in is the transverse colon, it is sometimes very low in the abdomen and is easily moved about. When the tumor feels very hard it often indicates that there will be considerable difficulty in completing the reduction.

In regard to the shape of the tumor Clubbe truly says that the classical sausage shape is usually not characteristic. In the early cases the mass which is felt is more rounded than oblong. This shape of the tumor means simply that the intussusception is not very long or that we can only feel the limited congested area and do not feel the most advanced portion of the entering mass. It is very seldom that the mass, when of a sausage shape, is straight; the drag of the mesentery practically always makes it concave toward the center of the abdomen. In Clubbe's cases the presence of the tumor was so constant that in only two did he open the abdomen without first feeling the mass. The appearance of the tumor in the rectum usually means that the case is so far advanced as to be almost hopeless.

It may sometimes be difficult to distinguish between intussusception and acute colitis in cases where the meso-colon is thickened and feels very like the intussusception tumor. The onset in both cases may be sudden, but in intussusception after a few hours the obstruction is generally complete; whereas in colitis there are frequent movements mixed with blood and mucus. The tumor in cases of colitis is generally much longer and less definite in outline than in intussusception.

Are there any special points in the technic of Clubbe's operations which render his results better than others? Possibly the preliminary irrigation which he employs as a routine measure may help. In only a few of the early cases does it cure. In 10% of the cases he cured by this alone. The average duration of these cases was seventeen hours. It is not as a curative measure that he advocates it, as but a preliminary step and aid to operation. He finds first that the injection often reduces the major part of the mass. Thus much handling of the intestine is avoided and shock diminished. Furthermore, by reducing all but the last portion of the intussusception the incision may be made directly over the point at which the work must be done, thereby minimizing the handling and risk of prolapse of the intestines and also rendering any manipulation more easy. One difficulty in effecting a reduction through a laparotomy wound lies in the firmness with which the splenic and hepatic flexures of the colon are bound down and cannot be readily brought into the operative field.

In spite of the fact that Clubbe's results are the best which have ever been reported it must still remain a matter for the individual surgeon to say whether or not he shall use injection as the first step in the operation. There can be no question, however, that if used at all injection should be used in this manner, and never as a preliminary procedure unless all preparations are complete for an immediate laparotomy. The incision should be on the right side, usually through the outer border of the rectus if the mass is felt on that side, but under other conditions should be in the median line.

One of the most difficult questions that can confront the surgeon often arises during the course of the operation. The tumor may be found easily and the reduction of the intussusception proceeds rapidly at first. Then when only a few inches remain further reduction is impossible.

Taxis produces rupture first of the peritoneal coat and then of the inner layers of the receiving bowel. Traction upon the entering bowel tears it. If force is used there may also be a tearing off of a segment of the bowel from its mesentery. It is very seldom that the impossibility of further reduction is due to adhesions. If this was the cause separation of the adherent layers might aid in reduction. The congestion of the entering loops of bowel and mesentery, very often complicated by marked enlargement of the mesenteric lymph nodes, prevents further progress. The parts of the bowel are so swollen and stiff that they fit together like the parts of a dissected puzzle. One usually finds under such circumstances that no actual reduction has occurred during the manipulation, but that the tumor has merely been crowded back into a shorter length of the receiving bowel.

Immediate resection is the step which at once suggests itself and there can be no question that in adults and in older children this should be done. Circumstances may determine whether it should be done through a lateral incision or by the more usual methods. In infancy, however, we are met by the fact that resection is practically always fatal. I know of but two successful cases of resection in children under a year old. Clubbe in an early case in his series, occurring in 1896, resected four inches of bowel. The child was much collapsed, but finally recovered. Frank, in the *Annals of Surgery* for 1903, also reported a successful resection of the cecum in a baby of seven months.

It seems at the present time, in view of these facts, useless to perform in infants an operation which is almost absolutely certain to prove fatal.

What alternatives are offered? The first is the formation of an artificial anus or the insertion of a tube just above the obstruction.

This seems on the whole to offer the best chance of saving life. By doing this the intestinal obstruction is relieved. The harm due to the obstruction may be prevented. The absorption from whatever fecal matter may be in the bowel is prevented. The vomiting incident to this is avoided and the exhaustion of continued vomiting is eliminated. The intussusception still remains. There is a chance that it may be cured spontaneously by sloughing of the entering part, something not uncommon in adults. There is, of course, the danger of death from peritonitis or from general sepsis during the process. But the risk is no greater than the risk from immediate resection.

While I do not know that the step has ever been taken deliberately, if the condition of the patient warrants further interference, the sloughing of the entering bowel might be assured by ligation of its mesentery just as it enters the receiving loop, as Dr. Codman has suggested. The step would be similar to that taken in resection done through an incision in the side of the receiving loop, but it could be done without any opening or further handling of the bowel. It would be a procedure intended solely to assure sloughing of the intussuscepted bowel.

Another alternative is the incision of the constricting ring of bowel just at the point of entrance. Theoretically, an incision made here through the two outer layers of bowel just at the point of entrance and on the side away from the mesentery would allow reduction of the remaining portion just as the incision of the constricting ring allows the reduction of a strangulated hernia. The practical difficulty encountered, however, is greater. The congestion of the bowel makes it very stiff and unyielding. The result is that, instead of unfolding as one would hope, the stiff and damaged, if not actually necrotic, mucous surface of the most advanced part of the mass turns itself out through the incision, infecting the entire field and leaving the damaged bowel of questionable vitality still to be dealt with. Resection then is more difficult than at first. Treatment of the entire mass outside of the abdomen offers no better chance than immediate formation of an artificial anus.

There is one other difficulty occasionally encountered. Owing to the drag of the mesentery the mass becomes so twisted that the point of entrance is practically out of reach behind a tight band of mesentery. The complication is mentioned, but it need have little influence in determining treatment. The ligature and division of the mesentery of the entering loop may, however, expose the point of entrance. Sloughing of the entering bowel, of course, must follow, unless it is resected. If this seems unwise an artificial anus may be made and the conditions are exactly as have been previously described.

Roth remarks (*Der Kinder Arzt*, April 7, 1905, xvi, no. 4, p. 73) that when disinvagination fails all other methods are practically useless. Nevertheless, at the present time this hopeless condition repeatedly confronts the surgeon. It must remain for the men in general practice not to allow the condition to go on so long as to be hopeless.

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REMARKS UPON INTUSSUSCEPTION, WITH A SUGGESTION FOR A NEW METHOD OF OPERATION UPON CASES IN WHICH REDUCTION IS NOT POSSIBLE.

BY E. A. CODMAN, M.D., BOSTON,
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I recently had the pleasure of taking part in a discussion at the Medical Improvement Society after listening to a most interesting paper on "Intussusception," by Dr. James S. Stone.

I believe that Dr. Stone has done a great service in bringing up this subject and showing that the mortality in this vicinity from this disease is much greater than it should be. He has shown us that the blame does not lie wholly with the surgeons but with the lack of the common knowledge among practitioners in general of the important early symptoms of intussusception. This disease, at any rate among infants, has such characteristic symptoms of onset that it should be almost invariably, instead of rarely, diagnosed within the first twenty-four hours. It is not appreciated how important is the difference between operating in the first twenty-four hours, when the child is not "sick," and operating on the second or third day when evidences of shock have set in. I hope that Dr. Stone's paper will lead others, as it has me, to read Clubbe's remarkable monograph on this subject. The chapter on "Diagnosis" should be read by every practitioner. If it could be widely known in the community I am sure that intussusception would be found to be a much more frequent disease than is now supposed. Clubbe has shown that 80% of those operated in 24 hours can be saved and that many cases which die undiagnosed should be saved. At the risk of repetition of Dr. Stone's paper I feel that the following quotations from Clubbe express very well the emphasis which is to be laid on the association of a sudden attack of pain followed by bloody mucus in the stools a few hours later:

"The general appearance of the child is, I feel sure, frequently the cause of mistakes in diagnosis being made by many men. Children in the early hours (six to twelve) of intussusception often do not look sick. Men cannot bring themselves to believe that these healthy-looking, and perhaps laughing, babies can have intestinal obstruction. Yet such is often the case. The child at the first onset turns pale, looks very ill, and screams; but it is wonderful how quickly some of them recover themselves. They cry only at intervals, when they get the gripping pains, as the intussuscipiens make fresh attempts to force along the intussusceptum."

"The mother thinks nothing of the sudden screaming of the child, or of its turning pale; perhaps she has forgotten all about it, until you remind her by your questions. Babies often scream and get pale and vomit, and the mother thinks nothing of it. But directly she sees blood in the motion she knows something is wrong, and hurries off to a doctor as soon as possible. When you are told by a mother that her child has been passing blood, you should always ask certain questions before you send it away. If you are told that the child was quite well until a few hours ago, when it screamed, turned pale and vomited; that it has been fretful and has vomited a few times since, and that it has just passed some blood, you can be morally certain that you have a case of intussusception to deal with; and instead of sending the child away after ordering it some castor oil, you must proceed to verify your diagnosis by careful examination. An extraordinarily large number of cases with this perfectly clear, straightforward, definite history are missed and so only come into hospital when the chances of their recovery are of the slenderest."

The subject has interested me so much that I have read over the records of the cases operated on in the last eleven years at the Massachusetts General Hospital. The accompanying tables of

Cases of Intussusception at Massachusetts General Hospital, 1897 to 1907, Inclusive.

INFANTS UNDER ONE YEAR.

No.	Date.	Initials.	Age.	Portion intestine.	Duration	Operative procedure.	Result.	Remarks.
1	Sept., '97	W. L.	7 m.	Small into large	3 days	Resection. Immediate anastomosis with Murphy button	Died at once	
2	Feb., '98	L. H.	1 m.	Small into large	2 days	Resection. Immediate anastomosis (lateral).	Died at once.	
3	July, '98	A. A.	6 m.		3 days	Reduction by enemata (?)	Recovery	Diagnosis doubtful.
4	Oct., '98	A. O'R.	5 m.	Small into large	3 days	Laparotomy. Reduction	Died at once	Very feeble.
5	July, '03	A. C.	5 m.	Large into large	24 hrs.	Laparotomy. Reduction, but coats torn	Died at once	
6	Sept., '03	J. P. B.	8 m.	Small into large	36 hrs.	Enterostomy, two-stage method	Died at once	Second stage not completed.
7	Oct., '03	F. J. N.	4 m.	Small into large	3 days	Lateral anastomosis without resection	Died at once	
8	June, '06	J. G.	7 m.	Small into large	24 hrs.	Laparotomy. Reduction	Operative. Recovery	Four weeks later operation for hernia. Death.
9	Oct., '06	A. M.	6 m.	Small into large	24 hrs.	Resection. Double enterostomy	Died at once	
10	April, '07	A. N.	10 m.	Small into large	4 days	Laparotomy. Reduced with difficulty	Died at once	
11	May, '07	F. C. G.	7 m.	Small into large	36 hrs.	Resection. Double enterostomy	Died at once	

Cases of Intussusception at Massachusetts General Hospital, 1897 to 1907, Inclusive. — *Continued.*
ADULTS AND CHILDREN OVER ONE YEAR

No.	Date.	Initials.	Age.	Portion intestine.	Duration	Operative procedure.	Result.	Remarks.
12	June, '97	J. D.	25 y.	Small into small	2 days	Appendectomy; then median incision and reduction	Recovery	One year later operation for obstruction. Death.
13	Sept. '02	H. McC.	24 y.	Small into small	3 days	Resection. Immediate end-to-end anastomosis	Recovery	
14	Mar., '03	G. B. F.	22 y.	Small into large	1 hr.	Resection. Immediate end-to-end anastomosis	Operative. Recovery	Death three weeks later. Complications.
15	April, '03	J. M.	3 y.	Small into large	Less than 24 hrs.	Laparotomy and rectal inflation with air. Reduced.	Recovery	
16	May, '03	R. F.	6 y.	Small into large	24 hrs.	Resection. Immediate end-to-end anastomosis	Died at once	
17	Sept., '03	M. A.	11 y.	Small into large	4 days	Laparotomy. Reduction had occurred under ether	Recovery	Pre-operative diagnosis, appendicitis.
18	Feb., '04	R. G.	6 y.	Small into large	12 hrs.	Laparotomy. Reduced by traction.	Recovery	Pre-operative diagnosis, appendicitis.
19	Mar., '04	M. F.	38 y.	Large into large	14 days	Resection of intussusceptum. Enterostomy	Recovery	Successful anastomosis later.
20	Mar., '05	C. L.	4 y.	Small into large	12 days	Artificial anus in two stages. Not reduced	Operative. Recovery	Lived two weeks.
21	May, '05	A. G.	3 y.	Large into large	40 hrs.	Resected. Double enterostomy.	Died fifth day.	Child does not look especially sick.
22	Dec., '05	J. W.	16 y.	Small into large	6 days	Laparotomy. Reduced. Enterostomy	Died at once	Appendix also removed.
23	June, '06	P. D. S.	13 y.	Small into small	6 days	Resected. Double enterostomy	Died at once	
24	July, '06	M. E. C.	28 y.	Large into large	3 days	Partly reduced, partly resected. Lateral anastomosis	Recovery	Both operations at once.
25	Dec., '06	A. A.	27 y.	Large into large	8 days	Resected. Double enterostomy	Died on fifth day	Death from peritonitis.
26	Dec., '07	W. T. D.	43 y.	Small into large	5 days	Mesenteric ligation. Enterostomy	Operative. Recovery	Died after secondary operation.
27	Dec., '07	A. J.	27 y.	Small into small		Resected. Double enterostomy	Recovery	Still in hospital after anastomosis.

these twenty-seven cases reinforce many of Dr. Stone's points and show that the mortality among infants under one year is as great as at the Infants' and Children's hospitals.

In reading these records I have been struck by the great difference in character between the disease as it presents itself in infants and in adults. In young children it is singularly uniform in its characteristics and the diagnosis has been perfectly clear, while in adults the symptoms are most varied and the diagnosis has seldom been made until the abdomen was opened. For instance, the classical symptom of blood in the stools was almost always present in children and absent in adults. It is interesting to see that where the child was brought in early the symptoms are similar to those described in the above quotation from Clubbe.

Case VIII. J. G. "Onset sudden with crying, vomiting, pallor and distressed look in face. Previously had been well and bowels moved regularly; twice on day before. Onset twenty-four hours before admission; bowels moved repeatedly after beginning symptoms, but only small amounts of bright red mucus came away. As distress and bloody stools continued patient was sent to the Massachusetts General Hospital for operation.

"Examination: Healthy-looking baby of seven months. Heart and lungs normal. Abdomen soft, tympanitic, no rigidity or spasm. Mass felt in left side of abdomen which had visible peristalsis. Rectal examination showed mass high up."

In most instances where the case came in late the more striking symptoms of shock and obstruction are recorded and the characteristic symptoms of the first day when the child was not "sick" are forgotten.

The case histories of H. McC., M. F. and W. T. D. illustrate the difficulty of diagnosis in adults. The absence of blood and the persistence of fluid stools are found in many adult cases. In case XIX the patient was kept in the hospital several days before operation was done.

I have separated these tables arbitrarily at one year. The change from the infant type to the adult type is by no means fixed, but it may be said that in all infants under one year the disease has a characteristic and rapid course, while in older children and adults it may or may not have a more protracted character. The influence on the prognosis and mortality is obviously great.

I think that a consideration of these tables reinforces Dr. Stone's point that we must look to the general practitioner for help, but it is obvious that even where we have received the case within 48 hours we have not much to be proud of. Although most of Clubbe's cases have been operated in the first 24 hours, he has been able to save many cases after twenty-four hours and a considerable number after forty-eight hours. Even if the general practitioner learns to recognize these cases at his first visit, many mothers will not call him on the first day and others will refuse to consider operation until the child shows serious symptoms.

The object of this paper is to consider what may be done even in very sick cases. That there is a great choice in this matter is shown by the variety of procedures that have been recorded in these 25 cases:

1.	Enemata alone,	1 case
2.	Laparotomy and taxis plus rectal distention with air,	1 ,,
3.	Laparotomy and taxis; abdomen closed,	7 cases
4.	Laparotomy and taxis; wicks to prevent recurrence,	1 case
5.	Partial reduction and partial resection,	1 ,,
6.	Resection of intussusceptum,	1 ,,
7.	Resection and immediate end-to-end anastomosis,	4 cases
8.	Resection and immediate lateral anastomosis,	2 ,,
9.	Lateral anastomosis without resection,	1 case
10.	Resection with anastomosis at second operation,	1 ,,
11.	Double-stage enterostomy without resection,	2 cases
12.	Single-stage enterostomy without resection,	1 case
13.	Resection and double enterostomy,	6 cases
14.	Enterostomy and ligation of mesentery without resection,	1 case

Besides these procedures Mikulicz has suggested stitching the intussuscipiens to the abdominal wound before opening it and resecting the intussusceptum.

Barker suggests stitching the outer coats of both portions at the neck before opening the outer coat.

Kredel suggests enterostomy and tying the mesentery in bad cases to assist nature to discharge intussusceptum per anum.

There are also other methods more or less modified from these.

Intussusception is so infrequent that each surgeon at the Massachusetts General Hospital is only likely to meet one or two cases in ten years. As the above 27 cases were operated on by fifteen different surgeons, it is not remarkable that fourteen different methods were employed. The indications of each case must vary to a certain extent, but within certain limits more uniformity of method might be reached. For instance, Clubbe employs practically the same method in all cases with far better results than we have. His method is this: A forcible oil enema under anesthesia, followed by laparotomy and taxis. Only once has this been tried at the Massachusetts General Hospital and this time it was successful. (Case XV.) Clubbe's series of successful cases entitles his method to a trial. He must not be understood as recommending enemata *versus* laparotomy. He expressly states that the enema should be given but once and then by the surgeon himself. The patient should be on the operating table with everything in readiness for immediate laparotomy. The object Clubbe hopes to attain is partial reduction which may aid him when the abdomen is opened. No time should be wasted with enemata, especially without anesthesia.

In comparing our 27 cases to Clubbe's 124 one notices at once the great disparity in the number of times resection has been performed. In 124 cases Clubbe only met with 6 which he could not reduce, while of our 27 more than half were irreducible. He evidently believes that the risk of a difficult reduction is less than that of resection, and in doubtful cases prefers to go on trying to reduce. His personal skill must also account in some part for this as well as his method. This personal skill must be discounted when we are considering what is the best method for the general surgeon to pursue in difficult cases. It is obvious that in our series the operators as a rule feared that prolonging the shock by further efforts at reduction was of greater danger than resection. Some fearing to do either simply did enterostomy and left the intussusception *in situ*. Necessarily, in any case which is not perfectly simple, the operator must reach a point at which he must decide in which of these three ways (*i. e.*, forcible effort at reduction, resection, or enterostomy) he had best tax the patient's remaining strength. When this question for decision arises it may be well to remember the procedure adopted by Dr. W. B. Conant in the following case, which he has most kindly permitted me to report:

W. T. D. Age forty-three. Dec. 9, 1907. Massachusetts General Hospital. He has never had a previous attack like this — in fact he has always been well and strong. Five days ago had a sharp attack of abdominal pain in the right lower quadrant. "Did not pay much attention to it and tried to get the best of it." Two days ago pain became very much more severe and was accompanied by persistent vomiting which to-day has been fecal. His bowels moved last night and although it was a good and free movement it was stained dark brown and he thought it contained blood.

Examination: Pale, emaciated, feeble-looking man with peritonitic facies. Abdomen greatly distended and rigid. Hyper-resonant throughout. Somewhat more tender in right lower quadrant than elsewhere. Temperature, 101°. Pulse, 120.

Operation: Took ether badly. Low right rectus incision. Free blood-stained fluid in abdomen. Mass in right iliac region which consists of ascending colon in which the cecum and an uncertain quantity of ilium is invaginated. Irreducible. Advancing point not determined. *Tight band of impacted mesentery ligated and divided.* Mixter tube tied into ilium. Seat of operation walled off with wicks so that neck of mass is practically outside of abdominal wall. Sent to ward in almost moribund condition.

Dec. 10. Improving but no drainage through enterostomy tube.

Dec. 11. Enterostomy began to drain.

Dec. 13. By careful traction the house surgeon, Dr. Burnett, withdrew 15 in. of necrotic ilium from the neck of the mass. The ends were divided in sound tissue with the cautery and enterostomy tubes tied in.

Dec. 15. Attempt made to suture ends of bowel together in the wound.

Dec. 20. Operation. Ether. Attempt made to anastomose small and large intestine.

Dec. 22. Fecal fistula, but gaining.

Jan. 17. Operation. Another attempt at anastomosis.

Jan. 18. Death.

Obviously this operation of Dr. Conant's ultimately failed, but I believe it demonstrates several extremely interesting if not important points.

Having been able to watch the case at the operation it was perfectly plain to me that the patient's wretched condition would not have permitted either resection or more forcible efforts at reduction. That enterostomy alone would not have done as well was probable, because of his improved condition on the first day, although the tube did not begin to drain until the second.

It shows that tying off the blood supply of the intussusceptum is likely to so shrink it as to allow removal by gentle traction, at least as soon as the fourth day.

My personal experience with intussusception is confined to two infants, in which I have assisted other surgeons to operatea, nd two cases, one in a child and one in an adult (No. VIII and No. XIII), on which I have operated myself. I have also been fortunate enough to see the operations on Nos. I, XVII, XIX, XX, XXV, XXVII of the cases in this series.

Although the number of these cases is small they presented a considerable variety and have given me a fair opportunity to judge of the difficulties of each method of procedure. Brief reports of my own cases follow.

Case XIII. H. McC. A man of twenty-four years was brought to the hospital on Sept. 22, 1902, by Drs. Pratt and Babcock, of Dedham. He had been well until three days before when he was seized by a sudden sharp pain in the epigastrium followed by nausea and vomiting. Pain had been very severe at intervals until the last twenty-four hours. He had vomited abundantly during the three days and vomited twice in the accident room after admission. The vomitus was dark greenish but not fecal. The bowels had moved several times but no blood had been seen. The patient was in poor condition. Temperature 101°. Pulse 134. Respiration 30. The abdomen was somewhat distended and was tender in the right lower quadrant. In the right iliac fossa could be felt an irregular indefinite mass which was dull on percussion and exactly resembled an appendix "cake." Rectal examination: Tenderness in whole pelvis, especially to right.

I had no question that the case was one of appendix abscess and operated through a Harrington incision. On opening the peritoneum blood-stained serum escaped. The mass proved to be an intussusception of the ilium with its lower end about 6 in. above the ilio-cecal valve. The mesentery was long and twisted once on itself so that the condition was practically one of volvulus as well as invagination. The mass was about one foot in length and was bent with the ends in contact and resembled a huge chocolate-colored Vienna roll.

I had very little difficulty in delivering it through the wound and excising it. I then did an end-to-end suture and closed the abdominal incision, leaving a small drain. The operation took an hour and a quarter and at its end the patient's condition was bad, with a very poor pulse of 150. His condition was very poor for several days and there was slight sepsis in the abdominal wound. Otherwise, his convalescence was normal and when heard from a year later he was perfectly well.

Case XVIII. R. G. A well developed girl of six years was brought to the hospital on the evening of Feb. 28, 1904. The mother said that in the forenoon the child began to have abdominal pain. The pain had persisted through the day. There had been a small constipated movement in the morning but no blood had been noticed. There had been no vomiting. Previously the child had always been well. Examination was negative except for the abdomen which was full but not distended. In the region of the appendix there was a definite tender mass the size of a small pear. The mass was movable and easily felt as there was no muscle spasm although considerable tenderness. Neglect of a rectal examination was probably the cause of my again making the same error in diagnosis as in the previous case.

Supposing that I was operating on an early acute appendix which was wrapped in omentum but still movable, I opened the peritoneum through a Harrington incision. The mass previously felt proved to be the upper end of an invagination in the ilio-cecal region.

Instead of reaching across the abdomen to find the lower end and pushing it backwards as most writers advise, I began milking the cecum and at the same time gently pulling the ilium out. A large amount of small intestine was thus easily reduced. Fearing that the condition might recur I left two wicks in to promote adhesions in the ilio-cecal region. Convalescence was normal except for more or less difficulty with distention. The child was seen recently and has had no recurrence.

I should be ashamed to record my mistakes in diagnosis in these cases were it not that the records of most of the adult cases show similar errors and, as I pointed out before, the absence of bloody stools is the rule in adults. The neglect of a rectal examination in this or any other acute abdominal condition is inexcusable, however. Should I again meet such a case as my first one I should feel that immediate anastomosis was unwise and should prefer to wait for a second opportunity after the obstructive symptoms had been relieved by excision and double enterostomy. There would be no question of considering Dr.

Conant's operation in such a case where excision was easily accomplished. In fact, in cases which involve the small intestine alone it would seem to me that excision and double enterostomy would always be the operation of choice unless, of course, reduction is easy. Dr. Conant's operation is particularly to be considered where the upper end of the mass is at the right iliac fossa, whether only small intestine is invaginated or whether the caput ceci is drawn in with it. In this region the blood supply is best arranged for it.

Where the large intestine alone is involved the risk of tying the mesentery would probably be greater than either resection of a portion as in case XXIV or the procedure adopted by Dr. Elliot in the following case:[1]

Case XIX. M. F., age thirty-eight. March 20, 1904. Massachusetts General Hospital. Had always been well up to two weeks ago when he began to have 10 to 20 movements a day. His bowels had previously been perfectly regular. The loose movements contained no blood. He has had constant pain in the right side of the abdomen. At times this pain would disappear for a few minutes only to reappear. It was at no time very severe. He has vomited a good deal during this period and has retained but little food. He has not vomited any blood nor passed any by rectum.

Examination: The patient is markedly emaciated but states that two weeks ago he was not. Abdomen moderately distended and exhibits considerable muscular spasm. Superficial veins distended. Lower part does not move with respiration. On left side running into flank is a visible oval tumor at about the level of the umbilicus. This seems to move up and down, apparently from peristalsis. The tumor is firm, more or less indefinite in outline, though approaching an S-shape, and rises from the left lower quadrant toward the unbilicus and then down toward flank. It seems somewhat doughy and is slightly movable up and down. The whole abdominal wall is tense but there is no area of especial tenderness. Tympanitic throughout except over this tumor. No shifting dullness. Rectal examination negative except shows intestines pushed down into pelvis. No feces in rectum.

March 21. Under free catharsis and enemata the patient's abdomen has gone down considerably. Stools are not remarkable, etc. Large bowel distended with water (capacity, 5 pints) showing on anterior abdominal wall two and one-half coils of large intestine (*i. e.*, sigmoid). Position of mass and outline to percussion are not changed by injection, and no gurgling through intestine immediately under tumor can be heard, etc.

March 24. In last day or two patient's condition is not quite so good.

March 25. Operation by Dr. J. W. Elliot. A large vertical incision over tumor. The tumor mass was incised longitudinally and found to be an intussusception. The intussusceptum was pulled out through the incision in the intussuscipiens and removed. The longitudinal incision in the latter was partly closed and the cut end of the proximal bowel partially sutured to it making a practical enterostomy with a Mixter tube.

The patient did well and gained strength rapidly so that on May 24, 1904, Dr. Elliot was able to do a successful end-to-end anastomosis.

The specimen was composed wholly of large intestine.

This procedure is practically the same as that described by Barker. It has to recommend it as against total excision the fact that in the large intestine it is mechanically easier, for tying off the mesentery of a large area of the large intestine is always difficult and dangerous and produces a good deal of shock. Also it avoids the sacrifice of the outer coat. In cases in which the large intestine alone is involved this method seems safer than Dr. Conant's. Possibly, if Dr. Conant's procedure proves successful in ilio-cecal cases it might be tried in such cases as Dr. Elliot's, but the arrangement of the blood supply does not seem so well adapted to it in the transverse colon. Cases that start in and about the ilio-cecal valve are evidently the most favorable for it.

The accompanying diagram illustrates how readily the ilio-cecal supply lends itself to ligation. If one started to tie the tense part of the mesentery of the intussusceptum, which is always felt as a distinct tight band running to the neck of the mass, he could not possibly do harm to the blood supply of the rest of the small intestine if he kept the coils to his right hand and divided the mesentery reasonably close to the bowel. The main trunk of the superior mesenteric must always be found running from its origin straight to the neck of the mass and its branches to the small intestine given off on the opposite side. The ilio-colic artery has two branches, one of which anastomoses with the colica dextra, and thus ligation of any portion of it would still leave a blood supply

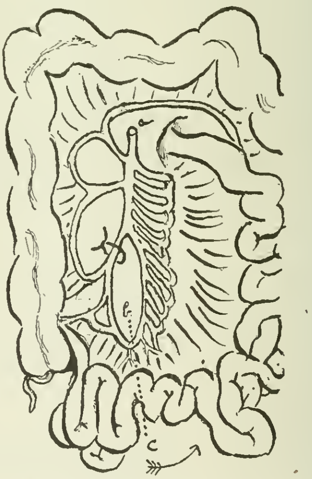

Fig. 1. Diagram illustrating main arches of blood supply of intestines. It is intended to show that one need not fear to divide the impacted mesentery. Even if the division were made as deep as the tie represented on the main trunk of the ilio-colic artery (which would be very unlikely) the anastomoses on each side would protect the rest of the bowel. In other words any division to the left of the line *a b c* would be safe even if the point *c* be carried up the small intestine in the direction shown by the arrow, which is equivalent to the disappearance of more and more small intestine into the large. The essential part to divide would be that part supplying the neck of the tumor, but it would probably be impossible to isolate this and certainly foolish to waste time in trying to. Possibly, experience with this method of operation will lead to some details which will allow the operator to pick out the important portion of the intestine to sacrifice.

The main point to which it is desired to call attention is that the operator need not fear to clamp and tie any portion of the tight band.

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[1] Annals of Surgery, July, 1905.

to the ascending colon even as far back as the cecum. Before further discussing Dr. Conant's operation, I should like to suggest the following slight modifications of it:

1st step. Division of the small intestine between clamps just above the mass.

2d step. Clamping the tight band of mesentery as close to the mass as possible.

3d step. Tying mesentery on proximal side of clamp in bundles as large as safety permits and dividing bundles between tie and clamp after the application of each tie. This process to be continued until the blood supply of the outer coat is reached.

4th step. Mixter enterostomy tube tied into proximal end of intestine and another into distal end. Both tubes connected with rubber tubing and allowed to drain over side of table.

5th step. If practicable the clamp might be removed from the distal portion of the mesentery so as to allow the venous blood to drain out and thus diminish the size of the intussusceptum.

6th step. Packing the wound in such a manner that the ends of the intestines may be readily manipulated, leaving ends of bowel long enough to try anastomosis later.

7th step. When the drainage from the intussusceptum through its lumen or through its veins have sufficiently diminished its size it may be drawn out of the intussuscipiens by gentle traction. This would occur immediately or within a few days.

8th step. When sloughed intestine is drawn out, if the patient's condition permits, an immediate anastomosis (perhaps without ether) may be considered. If not, the tubes can be tied in again.

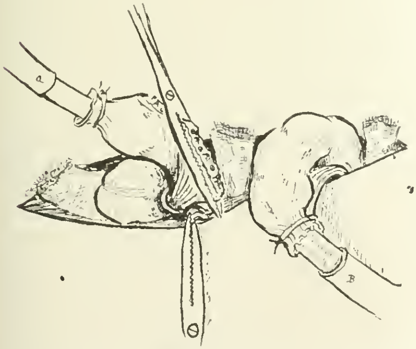

Fig. 2. Showing the arrangement of the wound at the end of the operation. a, the enterostomy tube connected with the distal portion of small intestine. B, the tube connected with the proximal end, the mesentery of which is preserved. The upper clamp holds the divided mesentery of the intussusceptum. This clamp might be loosened to allow venous bleeding, provided the retreating angle of the undivided portion of the mesentery were held by the lower clamp. The only danger of bleeding would be from the anastomosis of the colica dextra. The ends of intestine are left long to facilitate an early attempt at anastomosis, or at any rate giving an opportunity to tie in the enterostomy tubes a second and perhaps a third time. At each dressing the upper clamp can be gently pulled to see whether the intussusceptum has become softened enough to remove. The retreating angle where the small intestine and the mesenteric band disappear in the cecum is carefully walled off with gauze packing.

In considering any operation on intussusception we must first consider the factors producing the serious symptoms. These are in the order of importance: shock produced by the condition; shock produced by the operation; toxemia from fecal obstruction; absorption from septic surfaces; intra-intestinal hemorrhage.

To begin in reverse order with these, *intra-intestinal hemorrhage.* — In none of the records in this series was it even considerable. It usually consisted of blood-stained mucus rather than any real loss of blood. In selecting an operation it need not be considered, for it would be relieved by any of them.

Absorption from septic surfaces. — This may be a factor of some importance, but I doubt if it is very great for the following three reasons: First, in reading the records I found that the description of the excised specimen rarely alluded to extensive gangrene. The intussusceptum was usually hemorrhagic and occasionally showed points of beginning gangrene but never a purulent condition. Second, cases, especially children, may be in very bad condition and even die and yet have the invagination reducible and viable. Third, when nature brings about a cure the only way is by gangrene, and this takes place inside of mucous surfaces which would not absorb readily, especially in a catarrhal condition.

Toxemia from fecal absorption, in other words, the symptoms of intestinal obstruction. — Some writers believe that this factor is of great importance in this as well as in other kinds of intestinal obstruction. I think this is very doubtful even in other kinds of obstruction, for there is always the element of shock to be excluded and these patients usually keep their small intestine clear by excessive vomiting. No matter if the intestine is absolutely empty ligation or other form of complete obstruction will produce the well known acute exhaustion, and *vice versa* when obstruction is only partial as in mega-colon or severe constipation there may be only slight symptoms. In intussusception we have not only the shock from the constant efforts at peristalsis of the intestine to overcome the obstruction, but also that from the constant pulling on the mesentery of the intussusceptum.

The shock of the operation. — That this is a most important factor is shown by a glance at this series of cases, particularly among infants. Even if reduction be accomplished a large abdominal incision must be made, the intestines must be roughly handled and pulled outside the abdominal walls and the mesentery will be dragged on. The same is true of resection.

The shock of the condition. — This is really the important factor. In a child where this does not exist, much manipulation and even excision of large portions of the intestine may be successfully accomplished, but where the intestines have been struggling for days to overcome the obstruction, where each wave of peristalsis has tugged on the impacted mesentery and each wave has produced an immense spasm of pain, no wonder that even the added shock of an easy reduction occasionally produces collapse and death. If this, the shock of the condition, is the important factor, the primary object of the operation should be to relieve it, just as it is in cases of ovarian cyst with a pedicle, or torsion of any other viscus.

It seems to me that mesenteric ligation as outlined above offers a way of relieving immediately the shock of the condition and at the same time overcoming the obstruction, with a minimum amount of operative shock. It can be done in a few minutes through a comparatively small wound with perfect surgical cleanliness. It offers a hope of allowing a successful extra-abdominal anastomosis four days after the first operation.

It has three great disadvantages: (1) It sacrifices a considerable amount of small intestine and possibly a little of the cecum. (2) It necessitates a second serious operation. (3) It might lead to absorption from the gangrenous bowel before the latter could be removed.

Against these it can be contended that: (1) large portions of the small intestine can be resected without serious consequences; and at any rate, not so much is sacrificed as in resection of the whole mass; (2) a secondary intestinal anastomosis, though a serious operation, has a fair prognosis; (3) that the bowel is likely to be pulled out before dangerous absorption can take place.

These arguments and counterarguments will have to be decided by each individual surgeon in each individual case. To my mind the balance is strongly in favor of ligation when compared to resection in such cases as I, II, III, VI, VII, IX, X, XI, XVI, XX, XXI, — the last two especially.

I can see no argument in favor of simple enterostomy as in cases XX and XXI, for the condition which is causing the shock is allowed to continue although the violence of the straining is abated by relieving the obstruction. Ligation of the mesentery seems to me as important in irreducible intussusception as is ligation in cases of twisted ovarian pedicle.

On the other hand, ligation, when compared to reduction, whether or not aided by enemata, is a very different matter. In early easy cases there would be no question that reduction was preferable; in late cases if we knew they were irreducible there would be no question that ligation was preferable. The trouble is that we never know how much force we must use to bring about reduction, so that there is a large middle class of difficult but not hopeless cases where we must put our trust in one or the other. The decision must be influenced by the condition of the child. My belief is that ligation will be found to give less shock than a difficult reduction, but Clubbe's remarkable series of successes makes it almost unjustifiable to abandon his method except in evidently irreducible cases.

From my personal consideration of this subject I should feel that the following conclusions were justified:

I. All cases in infants and children, in which the diagnosis can be made and which are not already very feeble, should be given one forcible oil enema under an anesthetic on the operating table. This should be followed by laparotomy whether the tumor disappears or not.

II. Before using efforts at reduction forcible enough to cause increased shock, the surgeon should, *if he does decide on it*, make up his mind to carry out reduction up to the limit of the patient's strength.

III. If reduction is considered too doubtful, resection with double enterostomy is the choice when (*a*) the mass is wholly composed of small intestine; (*b*) when it is wholly composed of large intestine and the mechanical conditions make resection easy.

IV. If reduction is abandoned and the mass is wholly composed of large intestine and resection cannot readily be performed, excision of the intussusceptum is indicated by Barker's or Mikulicz's method.

V. *In irreducible cases in which the small intestine is invaginated into the large, simple enterostomy without resection and resection of the mass should be abandoned and replaced by ligation of the impacted mesentery and enterostomy.*

VI. In infants where there is already evidence of severe exhaustion, ligation and enterostomy could probably be done very rapidly and with less operative shock than even a successful reduction, provided the operator from the beginning abandoned any idea of reduction.

The essential object of the operation which is here suggested is to produce gangrene of the intussusceptum *in a convenient manner* so that within a few days enough softening of the constricted portion will have taken place to allow of its ready reduction by gentle traction. When the arterial supply is cut off it cannot be long before the blood and edema in the intussusceptum will be squeezed out by the peristalsis of the intussuscipiens, leaving the submucosa still strong enough to stand a gentle pull. The suggestion is offered particularly for desperate cases to replace resection and hopeless effort at reduction. *It would be easier, quicker and produce less shock than any other form of operation.*

Since writing this paper my attention has been called to an article by Kredel in the *Mittheilungen a. d. Grenzgeb. Med. u. Chir.*, Vol. 12, 1903. This author suggests ligation of a portion of the mesentery with the idea of assisting nature to pass the tumor per anum. He also does an enterostomy. The operation is identical with that of Dr. Conant, except that the result aimed at is different. The disadvantage is that it does not give the surgeon the control of the time of removing the intussusceptum, and the gangrene is allowed to go on to a much more dangerous stage. It does have the advantage, however, that in case it is successful it would leave the intestine united behind it as in cases where spontaneous gangrene has occurred, and in this way save a second operation. Kredel had only tried it once and was unsuccessful.

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After a long contest the Maryland State Senate, March 19, passed a bill preventing Christian Scientists or faith healers from practicing in Maryland without the diploma of regular physicians. — *Med. Record.*

ANOMALOUS FOLDS IN THE NASO-PHARYNX.*

BY J. PAYSON CLARK, M.D., BOSTON.

It has been my experience, recently, to see two cases which have presented such an unusual condition in the naso-pharynx as to lead me to think them of sufficient importance to report.

Case I. H. S., a boy ten years of age, was referred to me in April, 1907, by Dr. George A. Craigin, as a mouth breather. There was a history of deafness, increasing during the preceding year, also frequent head colds for a longer period and occasional sore throat. He had undergone an operation for adenoids when about six years old. Examination showed lower turbinates swollen, and small, unimportant spurs on the septum. The tonsils were small, but there was a cervical gland as large as a small bean under the left angle of the jaw. Both eardrums were dull and retracted and apparently somewhat thickened. Hearing was much diminished. As the patient was extremely gaggy, a view of the naso-pharynx could not be obtained, but a rapid exploration with the finger discovered the naso-pharynx apparently filled with adenoids. The boy was operated on the next day, Dr. D. Crosby Greene, Jr., assisting. The tonsils were removed with the tonsillotome and punch. Considerable cheesy material was found in the crypts, although the tonsils superficially gave no evidence of this condition. A rather diffuse, but not large, adenoid growth extending into the fossæ of Rosenmueller was removed with curettes. After thorough curetting there could still be felt with the finger what appeared to be folds of adenoid tissue attached to each Eustachian prominence and extending up to the vault of the pharynx. This was a condition of things which I had never met before and I was considerably puzzled to account for it. On feeling again with the finger it was evident that these folds had not the characteristic feel of adenoid tissue. They were firmer and had a smoother, more velvety surface. They were perfectly symmetrical, one being to the touch exactly like the other. They were as if the mucous membrane on the front and back of the Eustachian prominence had been continued in a fold to the vault of the pharynx, and they hung down very much like a dewlap. I asked Dr. Greene to examine the case and he agreed with me as to the probable nature of the folds and that they were not adenoid tissue. Then the questions came up, What relation had they to the deafness, and should they be removed? The latter question was decided in the negative for the time being, because it was felt that to attempt to tear them away with adenoid forceps or curettes was certainly not justifiable, and furthermore that their presence might have no relation to the deafness. But if the deafness did not improve, then these folds could be removed at a subsequent operation with a sharp cutting punch or other instrument adapted for the purpose, which would cut cleanly without tearing the mucous membrane and causing cicatricial contractions, which might be still more detrimental to hearing. The patient made an uneventful recovery from the operation. For the first few days there was no noticeable improvement in hearing, but at the end of a week, when the throat had practically healed, the hearing was much improved, and after Politzeriation became almost normal. Without going into particulars, in the next few weeks the hearing steadily improved, and at the last visit, about a month after the operation, was perfectly normal. The eardrums showed a corresponding improvement in their appearance. Consequently the extraordinary folds have been left undisturbed.

About a month later what was my surprise to stumble on the same anomaly in an adult.

Case II. Harry S., a Russian Jew, twenty-one years old, came to the throat department of the Massachusetts General Hospital, presenting an ordinary case of chronic rhinitis with acute exacerbation. On looking into the naso-pharynx, however, I was astonished to see symmetrical folds of tissue extending from the pharyngeal vault to each Eustachian prominence, suggesting two curtains drawn back to disclose the posterior nares. There was not the slightest suggestion of there having been any inflammatory process in the pharynx, and the patient had never had an operation on his throat. These folds were present without causing any symptoms. To the finger they had a similar feeling to that of the folds in the first case. A small piece was removed from the free border of one of the folds by means of a punch for microscopical examination. This was submitted to Dr. William F. Whitney, surgical pathologist of the hospital, who has made the following report: "The specimen received from you, numbered 'Throat Room 86766,' consisted of a small piece of tissue from a growth of the pharynx. Microscopical examination showed the central portion composed of loose connective tissue, the spaces of which were filled with serum. It was covered on the surface by a single layer of columnar epithelium, the surface was more or less folded, forming crypt-like recesses, and in the tissue between were accumulations of small, round cells recalling follicles. The tissue is best described as lymphoid, similar to that of the pharynx." To the sight and touch these folds appeared to be normal pharyngeal mucous membrane.

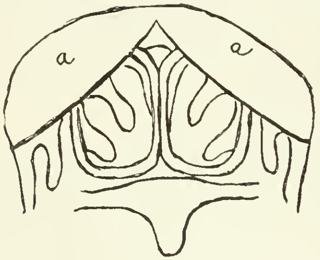

Diagram of the posterior nares, showing the folds (*aa*) in case 2.

It seemed to me that we had in these two cases a very unusual condition, but one that was probably of developmental origin. After an inquiry among some of my acquaintances who are familiar with this field. and a consultation of such works as seemed likely to contain some reference to this condition, if it had ever been observed, I was unable to find any account of a similar case. Chiari, Zarniko, Heymann and others mention small bands and cords stretching from the Eustachian prominences to the pharyngeal wall, and all of us have seen such bands not infrequently. But these bands and cords are not symmetrical, are comparatively very small and do not in any way suggest a relationship to the folds which I am describing. In order to see if embryology could throw any light on this condition, I visited the Embryological Department of the Harvard Medical School. There I saw Prof. Frederic T. Lewis, to whom I described the condition. He could give me no offhand information, but said he would be glad to look the matter up. Several days later I received a letter from him from which the following are extracts: "Professor Minot offered no suggestion as to its embryological significance, and Professor Terry . . . would like to know more exactly as to its location, particularly its relation to the pharyngeal recess (fossa of Rosenmueller) before saying that he had seen nothing of the kind. If the fold is between the auditory tube and the recess, it is in the position of the arch which lies between the first two gill clefts of the embryo (counting the spiracular cleft as the first). If it has any broad significance I should expect to find a suggestion of a similar fold in animals, and it would be easy to look for it in sheep, pigs, cattle, rabbits, cats and others. If these show no indications of the fold it is probably an adventitious development of the mucous membrane."

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* Read (by title) before the Eastern Section of the American Laryngological, Rhinological and Otological Society, Boston, Jan. 4, 1908.

The folds are situated between the auditory tube and the recess, and are consequently "in the position of the arch which lies between the first two gill clefts." What the significance of this situation may be, and whether or not that significance is a broad one, the writer must leave to the decision of the comparative anatomist, since he has not the opportunities or training for making the necessary investigations.

Whatever may be their anatomical or embryological significance, they are evidently of extremely rare occurrence in the human subject. Clinically they appear to have no great importance, except that if they occur in conjunction with adenoid growths they may, by their bulk, increase the deleterious effect of the latter or may be mistaken for them, and an attempt to tear them away with adenoid forceps or curettes might do serious damage to the Eustachian tube and prominence. Before closing, I wish to express my thanks to Dr. W. F. Whitney and Dr. F. T. Lewis for their interest and assistance, and to Dr. D. A. Heffernan for looking up the literature.

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Zarniko: Die Krankheiten des Nase und des Nasenrachens, p. 277.
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It is intended to establish an institute for tropical medicine at Townsville, in Northern Queensland. The general management will be undertaken by the three Australian Universities having medical schools — Sydney, Melbourne and Adelaide. The federal government of Australia has agreed to subsidize the work at the rate of £450 per annum, and the government of Queensland will give £250; and these sums will be increased by private subscriptions. The managers of the Townsville Hospital will set aside a building for a laboratory, free of charge.—*Science.*

Boston City Hospital.

CLINICAL MEETING OF THE MEDICAL BOARD, DEC. 19, 1908.

I. PRIMARY CLINICAL DIAGNOSIS: PNEUMONIA, CHOLELITHIASIS. SUBSEQUENT CLINICAL HISTORY AND ANATOMICAL DIAGNOSIS; APPENDICITIS, PERFORATION, PERITONITIS ABSCESS, MESENTERIC THROMBOSIS (SUPERIOR MESENTERIC VEIN).

II. ACUTE LYMPHATIC LEUKEMIA.

BY GEORGE B. SHATTUCK, M.D.

I. PRIMARY CLINICAL DIAGNOSIS: PNEUMONIA, CHOLELITHIASIS. SUBSEQUENT CLINICAL HISTORY AND ANATOMICAL DIAGNOSIS: APPENDICITIS, PERFORATION, PERITONITIS ABSCESS, MESENTERIC THROMBOSIS (SUPERIOR MESENTERIC VEIN).

T. R., thirty-eight, married. Scrubbing.

Family history negative.

Patient states that she has always been well. Denies venereal and alcoholism.

She entered the hospital first on Nov. 9, 1907, with a diagnosis of pneumonia, giving a history of having chills, vomiting and severe pain in the right side of chest six days before entrance.

Physical examination showed a very large woman, slightly dyspneic. Lungs showed slight dullness in right lower front and axilla with a few moist râles. Heart was somewhat enlarged but action was regular, and there was a slight systolic murmur at the apex. Abdomen was protuberant, distinctly tender on right side, more marked over McBurney's point and in right hypochondrium. Some spasm on right side. No masses made out. She was seen by Dr. Henry Jackson who agreed in the diagnosis.

For the first four days after entrance temperature remained elevated and breathing became so difficult that oxygen was necessary. Patient was passing clay-colored stools and high colored urine containing bile pigments. During the second four days after entrance her temperature began to fall and dyspnea was less marked. Patient still complained of pain in right hypochondrium. She was seen in consultation by Surgical Service, Dr. H. A. Lothrop, who decided the conditions did not indicate surgical interference.

From Nov. 21, she began to improve and, complaining of no symptoms, was discharged on Nov. 27.

On Dec. 6 patient re-entered hospital stating that four days after discharge she had an attack of slight pain in left lower abdomen. She took salts and castor oil with considerable relief for two days. Six days after discharge, was seized with sharp shooting pains throughout the abdomen. Poultices gave some relief. On the next day pain grew worse, she vomited frequently and had some diarrhea.

Physical examination showed nothing abnormal in her lungs; heart showed a faint systolic murmur at the apex. Pulse was not obtainable at the radials. Abdomen was protuberant and there was definite tenderness and pain in left iliac region extending from pubes to about the middle of the left lumbar region. Slight edema of legs. She was given 1-60 gr. of strychnia and rallied somewhat Was seen next day by Surgical Service who advised transfer for operation.

Operation performed Dec. 7, by Dr. F. B. Lund. An incision 4-5 in. long was made from umbilicus to pubes. Seropurulent fluid was found in the peritoneal cavity.

Lying in front of the left kidney, embedded in fresh adhesions, was a single coil of ileum, bright red in color, greatly thickened and having a thick board-like edematous mesentery. It looked like an acutely inflamed appendix in color and consistency. On the mesentery were two gray spots. The intestine was opened and blood escaped. A Mixter tube was tied in the opened intestine and wound closed up, as patient's condition did not warrant anything further.

On the night following operation pulse rose to 170. She had several movements of the bowels and large amounts of intestinal contents escaped through drainage tube. She was given vigorous stimulation to which she responded fairly well. Her condition remained about same until Dec. 11 when pulse became feeble and respiration increased. Patient failed rapidly, lapsed into unconsciousness and died at 9.30 P.M. Autopsy performed Dec. 12, by Drs. Rhea and Bosworth.

Peritoneal cavity contained a large amount of thin, brownish, purulent fluid which had a distinctly fecal odor. There was an acute yellowish exudate on the peritoneal surfaces. Appendix was gangrenous and showed a small perforation at the tip. The distal end of the appendix laid in a retroperitoneal abscess cavity, 5 cm. in diameter, and filled with a thick, brownish, very foul-smelling material. Just below this cavity and separated from it by a thin layer of semi-necrotic tissue there was another cavity, 8 cm. in diameter, containing a foul material similar to that in cavity above. These two cavities were connected by an opening about 1 cm. in diameter. Myocardium showed a distinctly yellowish tinge. The lungs were soggy, most marked in lower lobes posteriorly.

The gastro-intestinal tract showed a perforation of the small intestine at the border opposite the mesenteric attachment. This was the opening in which the tube had been tied. There was a thrombus found in the superior mesenteric vein, extending from a point 2 cm. from the beginning of this vessel and involving the finest branches. The mesentery supplied by the superior mesenteric vein was markedly indurated and quite firm. The small intestines contained various amounts of acute exudate on their peritoneal surfaces.

The perforation in the small intestine, referred to above, measured 1 cm. in diameter. Its edges were thickened and covered with thick yellowish exudate. The adjacent intestine for 3 cm. on each side of this opening was of a very deep-red color and the walls were thickened and edematous. This reddening and edematous condition gradually faded away into the more normal intestine.

The affected portion of the intestine was opened, and a careful search for ulcers or any condition which might have accounted for the thrombus in the superior mesenteric vein was made, but none were found.

The gall bladder was found bound to the duodenum and the surrounding tissues by a loose fibrinous exudate. The gall bladder was markedly distended and the external surface was markedly congested. Its cavity was filled with a thick, yellowish, purulent material. There were three stones in the gall bladder, two of which measured 1.5 cm. in diameter and one 3 mm. in diameter.

In this case the thrombosis of the mesentery was undoubtedly secondary to a perforation of the appendix with abscess. It is interesting that at time of the operation there was nothing to call attention to the region of the appendix, where the abscess was found at autopsy. The woman was enormously obese, a perfect mountain of flesh, and the mass in the left iliac region due to the thickened loop of intestine and its thrombosed mesentery, this mass being tender and spasm of the muscle being present over it, was the only tangible condition at which operative attacks could be directed. Her obesity and condition, when this loop had been cut down upon, rendered further investigation at the time unadvisable. The autopsy alone could have cleared up, as it did, the extremely complicated conditions.

II. ACUTE LYMPHATIC LEUKEMIA.

C. F. Forty, married. Freight handler by occupation.

Family history shows nothing of importance. Had typhoid twenty years ago, rheumatism ten years ago. There is a history of chancroid twenty years ago. Drinks ale in moderation.

Was first seen by Dr. F. W. White in the out-patient department and at that time gave the following history: He stated that he had been taken ill, suddenly, six weeks before, after having slept all night in a freight house. He woke up the next day feeling badly and he has since tried in many ways to shake off the "cold" which he thought he had. He did not give up work till four weeks before coming for treatment, when he was obliged to give up on account of steadily increasing dyspnea and weakness. Had no pain. Had noticed increasing pallor and he stated that his gums had bled on different occasions.

Patient was advised to enter hospital which he did on Dec. 13, 1907. Physical examination showed a well developed man, but with marked pallor. No general glandular enlargement was noticed on entrance. Heart was slightly enlarged to the left and showed a faint systolic murmur at the apex. Spleen was barely palpable. There was a peculiar vegetative growth nearly encircling the penis at the corona. A blood count four days previous to entrance showed the following: Hemoglobin, 40%; red blood count, 1,958,000; white blood count, 13,000. Differential count of 200 white cells: basophiles, 87%; myelocytes, 5%; neutrophiles, 5%; unidentified, 3%.

Patient on entrance was put on Fowler's solution, five drops three times a day, increasing one drop daily, three times a day. For the first few days after entrance he held his own and showed no untoward symptoms from the use of Fowler's solution. A week after entrance a few enlarged glands could be felt in the axillæ, neck and in the groins. Five days after entrance blood picture was as follows: Hemoglobin, 50%; white blood count, 22,000; red blood count, 2,464,000. Differential count of 200 white cells: large lymphocytes, 80%; small lymphocytes, 14%; neutrophiles, 6%.

One week after entrance patient began to fail, pallor increased and he had occasional fainting spells. On two occasions the temperature rose to 103.2°. Twelve days after entrance the patient was given the mixed toxins of erysipelas and the Bacillus prodigiosus (Coley) on Dr. R. C. Larrabee's suggestion; ¼ ccm. of the toxins were injected subcutaneously. The blood picture on that day was: Hemoglobin, 21%; red blood count, 1,076,000; white blood count, 19,500. Differential count of 238 white corpuscles: neutrophiles, 18.9%; lymphocytes, 16.8%; large mononuclears, 64.2%.

The injections of Coley's toxins were gradually increased in strength but the patient was rapidly growing weaker. Shortly after the sixth injection the patient had a chill with a slight rise of temperature. He soon became unable to eat and lost ground rapidly, and on Jan. 5, 1908, in spite of stimulation, died. No autopsy was obtained.

This case ran its course in from three to four months, and was practically uninfluenced by treatment.

I. ACUTE SUPPURATIVE APPENDICITIS WITH PRIMARY CARCINOMA OF APPENDIX.

II. PERINEAL FISTULA PERSISTING AFTER EXTERNAL URETHROTOMY.

BY BOWARD A. LOTHROP, M.D.

I. ACUTE SUPPURATIVE APPENDICITIS WITH PRIMARY CARCINOMA OF THE APPENDIX IN A CHILD OF NINE YEARS.

THIS patient is a little girl nine years of age. Other than children's diseases in her first years, she has been perfectly well until about one month ago. Since that time she has complained of some general abdominal pain which was never very definitely localized and caused her no particular disability. About two days ago she experienced pain in the epigastrium and on the following day this was referred particularly to the right lower quadrant of the abdomen. This latter region became tender and her symptoms were accompanied by some rise in pulse and temperature. She was admitted to the hospital with the diagnosis of acute appendicitis. Examination showed we had to do with a young girl who was pale and rather emaciated, and her general appearance was attributed to poor hygienic conditions. Pulse and temperature were elevated and she complained of considerable pain and tenderness over the region of the appendix. Here could be felt a mass about the size of a hen's egg which was diagnosed as an appendix abscess. Operation showed that her signs were due to an attack of acute appendicitis with peri-appendiceal abscess walled off from the general abdominal cavity. The appendix presented a patch of gangrene in which was a perforation. In gross nothing further was observed in the appendix at the time of operation. The wound was closed except for a small wick left for drainage and the convalescence has been uninterrupted. Subsequent pathological examination of this appendix showed that in its center were changes which were diagnosed by Dr. Mallory as primary carcinoma of the appendix. There would seem to be no reason for attributing any of her signs or symptoms to the presence of this carcinoma. Her general appearance must have been due to her poor surroundings and inadequate diet and her acute symptoms, for which she was operated, could be attributed only to her suppurative appendicitis.

The case is of interest solely because of the occurrence of primary carcinoma in the appendix of one so young. There have been reported in literature a few cases of primary carcinoma of the appendix in adults.

II. OPERATION FOR PERINEAL FISTULA PERSISTING AFTER EXTERNAL URETHROTOMY FOR STRICTURE OF URETHRA.

THIS man is about fifty-five years of age. Two years ago a perineal section was done for the relief of a stricture of the urethra. At that time catheter drainage was left in for three days, and after removal of the catheter sounds were passed for a time at irregular intervals. Since then patient has traveled about a great deal and has attempted to pass sounds himself. Meanwhile, this perineal opening never closed and practically all urine has been voided *via* the perineum for two years. He entered the hospital recently for relief of this fistula. Examination shows we have to deal with a man in good health. Prior to operation small bougies passed through the urethra appeared at the fistula but could not be made to enter the bladder.

Operation. — Ether; lithotomy position. A small, oval incision was made around the opening of the fistula in the perineum and, after raising the edges of the skin, a heavy silk ligature was passed through this oval mass so as to act as a retractor. By means of traction on this mass and retraction of the lateral edges, the fistulous tract was carefully dissected out down to the urethra. At no time was the tract entered although the dissection was kept as close to it as possible. The amount of hemorrhage was very slight owing to the fact that for the most part only cicatricial tissue was cut. On reaching the urethra the fistulous tract was slit open along its upper surface and all of it removed except a small flap which could be turned up so as to cover the opening into the urethra. It was discovered that there was a small stricture just anterior to the entrance to the urethra. This was incised. A No. 26 French, soft rubber catheter was introduced into the bladder from the meatus urinarius and left for permanent drainage. Then the flap of fistulous tract was turned up so as to cover the opening into the urethra and was held in approximation by fine catgut sutures in such a way as to completely close the perineal opening into the urethra. The wound in the perineum was closed with buried catgut sutures and that in the skin with silkworm-gut sutures, except for a very narrow passage in which was left a small wick of iodoform gauze. This went down to the urethra. Patient made an uninterrupted convalescence. The catheter was not removed until the thirteenth day. Meanwhile, the perineal wick had been changed and the wound had become closed except for a small superficial granulating area. After removal of catheter all urine passed through the urethra and there was never any perineal leakage. In another week the external wounds were healed and complete cure was accomplished.

CASE III. A Method of Obtaining Extension for Fractures in the Upper Two Thirds of the Humerus. Published in the BOSTON MEDICAL AND SURGICAL JOURNAL, vol. clviii, p. 51, 1908.

PNEUMONIA COMPLICATING PREGNANCY.

BY NATHANIEL R. MASON, M.D.

MRS. A. K., thirty-two years old, born in Ireland. Housewife.

Present illness: Patient entered the hospital on the afternoon of Oct. 3, 1907, with the history that twenty hours previously she had been taken sick with fever, chills, vomiting, pains in the extremities, back and head.

Previous history: Always well. Had enjoyed excellent health during her present pregnancy.

Obstetric history: One full term child, delivered by instruments fifteen months ago. One miscarriage at six weeks two years ago.

Physical examination: Well developed and well nourished woman, cyanotic and suffering from orthopnea. Bilateral dullness at the apex of both scapulæ where there is bronchial breathing and increased fremitus. Heart normal. Abdomen enlarged by the pregnant uterus of nearly full term size. Fetal heart 140 heard in left lower quadrant. Marked venous varicosity of the introitus. Os closed with soft edge. Vertex presenting. Pulse 148, of poor quality. Temperature 100.2°. Respirations 60. White blood count 20,000.

Owing to the grave condition of the mother, permission from the husband of the patient was obtained for a post-mortem Cesarean section in case of her sudden death in order, if possible, to save the child.

Throughout the night her condition remained essentially the same, except that considerable abdominal distention developed in spite of repeated efforts to move the bowels. During the day, her general condition became worse. Respirations became more difficult and the abdominal distention increased, all attempts at moving the bowels proving unsuccessful. By evening she was showing distinct evidence of impending collapse. Her pulse was 160, of poor quality, and the fetal heart was becoming weak and irregular.

For the sake of the fetal life it was deemed advisable to empty the uterus at once. The patient was etherized and rapid manual dilatation of the os was carried out. On rupturing the membranes, it was found that a condition of hydramnois existed. The escaping liquor washed the cord down in front of the head, but this was easily replaced. High forceps extraction of O. L. A. without difficulty. Baby slightly asphyxiated, but easily resuscitated. During the operation, condition of mother was serious, her pulse ranging between 180 and 200 and barely perceptible at the wrist. As soon as she was delivered, her general condition became better, and she continued to make steady improvement until she was discharged well from the hospital on the thirty-first day after delivery.

The baby progressed well for one week, when it had a sudden hemorrhage from the mouth, vagina and rectum and died in fifteen minutes.

The case illustrates very forcibly the advisability of delivering all cases of pneumonia with marked respiratory embarrassment in women late in pregnancy or at a stage in pregnancy when the fetus is viable. The indication for this procedure is rational for the purpose of saving the life of both mother and child.

CARCINOMA OF THE STOMACH: EXCISION.

BY F. B. LUND, M.D.

The patient, H. M. S., aged forty-eight years, produce dealer, had suffered for four years from distress after eating followed by pain which came on gradually, and about three weeks ago the pain became very severe. At that time vomiting began and he could retain practically no food on the stomach. One week before entrance he had been in bed on account of weakness and general malaise. About a month ago he was treated, for two weeks, at the out-patient department of another large hospital in this city and a diagnosis was made of gastric neurosis. The loss of weight had been very great. He was very much emaciated, poorly nourished and abdomen contracted but soft and lax; no tumor could be felt. The stomach contents showed no free hydrochloric acid but some residue. On Aug. 7, a median incision was made above the umbilicus showing a large indurated ulcer 2½ by 2 in., found to occupy the lesser curvature of the stomach, half a dozen enlarged glands in epigastrium. A V-shaped excision was made between clamps, of the lesser curvature with the ulcer and the glands between long clamps, so applied as to reach within three quarters of an inch of the greater curvature. The excised ulcer was immediately reported by Dr. Mallory on microscopic examination, to be a carcinoma. Accordingly, about one quarter of an inch more of the stomach was excised on the upper side where the line of section had gone rather close to the ulcer. The opening in the stomach was then brought together and sutured transversely. The two rows of sutures in the posterior surface of the stomach were put in by making an opening through the great omentum and turning up stomach, starting in from below carrying them up to the lesser curvature. The anterior sutures were then put in and the two were tied together at lesser curvature. When the operation was completed the abdomen was washed out as there had been a little leakage, but the intestines had been carefully protected as far as possible with wet pads. There was very little shock from the operation. Liquids were begun by mouth, on the following day. Convalescence was prolonged by a very troublesome cough but the patient was out of bed in two weeks, though he did not leave the hospital for nearly a month. He returned for observation a little more than three months after the operation having gained between forty and fifty pounds, in splendid condition and eating well.

He has been examined by Dr. Franklin W. White in the out-patient department for the purpose of finding out why he has slight diarrhea of which he complains. Dr. White states that he is eating very coarse food such as pork, potato, beans and sauerkraut, and he thinks that the diarrhea is due to the irritation of some of this food which passes through the stomach into the intestines in an undigested form.

An interesting point about this case is the fact that the operator could not determine at the operation by the physical appearances whether the tumor were benign or malignant. He believes, however, that excision was proper in that case, but if he had been certain that the tumor was malignant he would probably have excised primarily the pylorus and the pyloric portion of the stomach. As it was, the glands along the lesser curvature were removed together with a good margin around the tumor. The rapid increase in weight of the patient is a point indicating sufficient removal to recovery. The writer believes that having begun the operation with a V-shaped excision that if he had changed to the more radical procedure after having waited for the pathological report the delay might have been fatal to the patient.

KIDNEY LACERATED BY BULLET AND CORSET STEEL: NEPHRECTOMY; RECOVERY.

BY L. R. G. CRANDON, M.D.

This woman, of twenty-six years, came to the hospital about an hour after being shot in the left back with a thirty-eight caliber pistol. Examination showed her to be without much discomfort, pulse 90, respiration 22. No cough. Had vomited once, material said to be cocoa. Protruding just behind the left posterior axillary line, between tenth and eleventh rib, was two inches of flattened wire.

She was given ether and the wound was enlarged. The wire could not be extricated easily. It was followed down and found to be embedded in a solid organ. In getting it out with all possible care it was found to be doubled on itself and the extraction was followed by a brisk venous hemorrhage. The wound was packed deeply and then enlarged. The eleventh rib had suffered comminution and was therefore removed. The wound was then enlarged until it was practically the para-peritoneal incision of Watson, one part being in and parallel to the posterior axillary line, the other at right angles to it extending in between tenth and twelfth ribs. A hand then introduced could easily grasp the injured viscus, the left kidney, and perfectly control its pedicle.

Detailed examination showed the wound about one and one-half inches from the upper pole of the kidney, going down into the pelvis and dividing apparently a prime tributary to the renal vein. The pelvis of the kidney lay wide open.

In view of this extensive injury nephrectomy seemed to be best and was done. The bullet was not found. An exploratory celiotomy was done and no signs of abdominal injury were found. The patient made an uninterrupted recovery.

The lesson to me from the case was that the left kidney could, in this case at least, be removed through a wound through the space left by the resected left eleventh rib with the advantage that the renal pedicle was in full view and readily accessible, that the upper pole of the kidney could be freely inspected and the pleura in no way injured.

Medical Progress.

PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE.

BY HENRY A. CHRISTIAN, M.D., BOSTON.

EXPERIMENTAL NEPHRITIS.

(Concluded from No. 13, p. 420.)

Widal showed that in cases of parenchymatous nephritis with a deficient salt secreting power, an addition of salt to the diet produced edema, whereas a decrease in salt would cause its disappearance. Other French observers made similar observations which may be summarized as follows: Cases of acute, subacute and chronic parenchymatous nephritis frequently show a disturbance of chloride secretion. This is much more infrequently observed in interstitial nephritis, and for the most part only when there are acute inflammatory exacerbations. The chloride secretion does not run parallel with that of other inorganic and organic constituents of the urine. With the disturbance in chloride secretion ordinarily there is a disturbance in water secretion. Widal divides the cases into two periods, the first which is expressed in an increased body weight, the pre-edema stage, and the second in which there is demonstrable edema. In nephritics with decreased chloride secretion an addition of ten to twenty grams of salt is eliminated through the kidneys, not in twenty-four to forty-eight hours as is the rule for the normal, but in a much longer time. In very severe cases the entire amount of salt is retained. Between the two there are all possible transitions. With the retention of salt, water is retained and there is edema or increase in body weight. If a salt-poor diet is given, proportionate salt excretion is increased and edema and body weight are apt to decrease. In other cases on a salt-poor diet there is no change in body weight and in edema, since the amount of excreted salt decreases with the decrease in urine.

However, observations have shown that there are many exceptions to these rules, and the increase or decrease in body weight by no means parallels the increased or decreased excretion of salt. In some cases of interstitial nephritis there is a marked decrease in salt excretion while the amount of urine remains normal or is even increased, and an increased amount of salt in the diet has no effect on the body weight, and the same is true for a decreased salt content. Ambard and Beaujard speak of this as a dry salt retention. One group of authors (Strauss, Widal, Claude, Mauté, Moog) believe that the chloride retention is due to a decreased permeability of the kidney, whereas another group (Achard, Loeper, Castaigne) think that there is a primary retention in the tissues.

The assumption that there is a decreased permeability in the kidney is the natural one, since there is a lesion known to exist in the kidney; and moreover it is supported by the observations of Albarran, Bernard and others in which they have found by use of ureteral catheters in individuals with unilateral kidney lesions a lower chloride content in the urine coming from the diseased kidney. The especial association of chloride retention with parenchymatous inflammations and its increase with exacerbations of epithelial changes observed by Strauss favors the theory of a lack of permeability in the kidney.

There is evidence, however, for a primary tissue retention. Achard and Loeper claim that there is a chloride retention in acute febrile diseases without renal complications. However, it was pointed out by Strauss that renal lesions are probable in these conditions and may be the cause of the deficiency in excretion. Castaigne has advanced the best evidence for the extra-renal hypothesis. He had found in healthy dogs and in dogs with experimental nephritis, which show a decrease in chloride secretion, that, if one liter of a saline solution was injected into the renal artery, the amount of chloride secreted in the urine was almost the same in the sound and diseased animals. Further, if sound and diseased animals were bled, and then a liter of saline solution was injected into the femoral vein, and very soon thereafter 200 ccm. of blood withdrawn from the renal artery, the blood of the nephritic animal contained less salt. These experiments speak for a retention of chlorides in the tissue and not for a defective permeability in the kidney.

A number of authors, Strauss, Widal, Halpern, Ambard and others, regard the chloride retention as a cause of the water retention. As almost all of these authors agree that the chloride content of the blood serum in the nephritics with decreased chloride secretion shows very little if any increase, then a wandering of the chloride from the blood to the tissues must be assumed, and this they regard as the cause of the edema. The increased molecular concentration of the blood is the cause of the salt leaving the blood, according to Widal. Achard regards the retention of salt in the tissues as a protective agency, an attempt to maintain a constant composition of the body fluids, but he believes that other retained substances besides the salt play a part. Dufour thinks that the bad effects of a salt-rich diet depend upon epithelial changes in the kidney. Corin believes that the salt in the blood injures the walls of the vessels. Kovési and Roth-

Schultz consider that the very frequent coincidence of water and chloride retention is due to the fact that both substances are secreted in the same place in the kidney, that is, in the glomeruli, and that a lesion affecting them affects both substances. Richter, on an experimental basis, has advanced arguments against the salt theory. With uranium nitrate he succeeded in producing nephritis with hydrops, whereas nephritis without hydrops is produced by other toxic substances. After uranium injections greater hydrops appear if the animals are given salt. Yet only on a water-rich diet does considerable edema and effusion appear, and Richter believes that salt is effective largely because with it goes a large amount of water. The salt without water is not in a position to increase the hydrops, and animals receiving 50 ccm. of water containing a gram of salt daily showed no considerable difference in the hydrops as compared with those receiving no salt. Moreover, chloride retention takes place in the other forms of acute toxic experimental nephritis in which there is no hydrops. Consequently he believes that the water retention is a more important factor than the salt.

Friedrich Müller, who has noted the frequent coincidence of salt and water retention with edema formation, the unfavorable influence of salt-rich diet and the favorable influence of salt-poor diet, speaks, however, with reserve as to the etiological relations of these facts. He believes that the oliguria may be the result as well as the cause of the edema formation. He and other observers have observed a similar effect of salt on the edema formation in heart disease and cirrhosis of the liver, and so the decrease of the saline excretion is no peculiarity of nephritis with hydrops. Müller believes that the salt theory is not a sufficient explanation for the production of renal hydrops, and that other factors must be concerned, most probably increased permeability of the blood vessels produced by toxic substances.

A critical review of the whole subject of the salt theory, according to Georgopulos, seems to show that it is insufficiently supported, and that its supporters have been inclined to emphasize the facts favorable to their argument; but not always do they pay attention to the facts against their argument. There is no known fact which undoubtedly proves a causal relation between salt retention and hydrops. That the water retention is caused by the salt retention is not in accord with the observations on certain cases of interstitial nephritis in which with strong decrease in salt excretion there is a normal or even increased water secretion. A more satisfactory explanation would be that the same renal elements are concerned in the secretion of salt and water. If this is the case, it is not to be wondered at that in pathological conditions a decrease in the secretion of both should take place; and the fact that the decrease in the chloride excretion usually comes first is to be explained by the fact that with a decrease in the permeability of the secretory apparatus the excretion of solids usually suffers first. In pathological processes which have progressed slowly, as in the granular kidney, it is possible that the disturbance of the solid secretion may persist for a long time before the excretion of water is disturbed, whereas in the acute or chronic parenchymatous nephritis a disturbance in both excretions may come closer together. The ill effects of salt-rich diet, according to Georgopulos, is no proof of the salt theory, from the fact that an excess of that substance works detrimentally to an already existing pathological process, and does not allow of the conclusion that this substance, which belongs to the normal constituents of the body, stands in a direct pathogenetic relation to the process in question. It is recognized that salt is not a harmless substance. Bunge has shown that it is injurious to the kidneys. Stockvis and Levi described renal changes produced by feeding and infusing saline. Leopold has obtained renal lesions by feeding rabbits chlorides and phosphates. Torrindo has demonstrated that a diseased kidney is further injured by a salt-rich diet. Castaigne and Rathery have shown *in vitro* and *in vivo* in rabbits the harmful influence of salt upon the kidneys, and regard the injurious effects as due to osmotic changes. Then as salt is capable of injuring sound kidneys, it is probable that it will exert a bad effect on injured kidneys, and so cause hydrops because it increases the renal lesion.

On a similar basis the favorable effect of salt-poor diet may be explained, and Castaigne and Rathery have found that the injection of normal saline in sound rabbits produces no injury to the kidney, while in rabbits with injured kidneys the albuminuria is increased, showing that in nephritis salt in normal concentration may be injurious. A kidney will be less irritated with a decrease in the salt, and so an improvement in the pathological condition expressed as an increase of water and saline excretion may follow a salt-poor diet. The salt-rich diet is usually accompanied by an increase of thirst, and this may act to increase the edema. Salt may also have a direct influence as a lymphagogue of the second order, as shown by Heidenhain, increasing the stream of lymph.

The critical point in the theory of salt retention is the fact of a salt retention in the tissues which has not been demonstrated. Whether decreased chloride secretion is really brought about by a retention of chloride in the tissues can be proven only by exact quantitative analysis of the body organs, the blood, the hydropic fluid and the urine. Such quantitations have been made in human nephritis, but, since conditions cannot be fully controlled and the normal is not sufficiently known, there are many chances for error in this method. Experimental nephritis, on the other hand, offers a possibility of controlling more accurately the conditions of the experiment and of an exact analysis of tissues, blood, etc., at varying times during the course of the disease. Such analysis Georgopulos has undertaken on thirty rabbits.

The result of this work may be summarized as follows: Between the amount of water excreted through the kidney and amount of chloride there is no constant parallelism. In the course of cantharidin and uranium nephritis more water than salt is retained, which leads to a decrease in the chloride content of the blood. It follows from this that the water retention cannot be made dependent upon the chloride retention. It depends much more upon a primary disturbance of the water-secreting capacity of the kidney. A passage of chlorides into the tissues, which, in addition to the water retention in the blood, would lead to a reduction in the chloride concentration in the blood cannot be demonstrated in the nephritis with or without hydrops. Without hydrops the chloride content of the organs shows no increase, even a decrease. Schirokauer obtained the same results. With the hydrops there appears an increase of the chloride salts in the organs, which, however, arises from the chloride-rich fluid transuded into the tissue spaces. This, like the fluid collected in the serous cavities, contains about the same amount of chloride as the blood serum. By transudation the same amount of water and chloride is removed from the blood which naturally does not affect the percentage of the chloride in the blood. In transudation, water and chloride leave the blood at the same time. The result of these experiments does not support the primary salt retention theory.

However, water retention in the blood stream is an important factor in the production of hydrops. This, however, is not sufficient to produce it, since hydrops does not occur in cantharidin rabbits, though there is water retention. Other factors must be active in the production of hydrops. It would seem that a combination of renal lesion and increased permeability of the peripheral blood vessels is needed. The latter may be the result of the action of injurious agents or it may result from an increased secretory activity of the capillary endothelium.

The view that a peripheral vascular lesion was necessary to the formation of edema was supported by the earlier work of Cohnheim and Lichtheim who showed that subcutaneous edema followed large intravenous injections of normal saline, if they irritated the skin in various ways. Magnus has shown that the same results if the animals are poisoned by various substances like arsenic, chloroform, etc. Heineke found that the injection of blood serum from animals with uranium nitrate nephritis into rabbits whose kidneys had been injured by chromium produced edema, whereas without such serum injections no edema followed the use of chromium. Minute details of these experiments were not reported. Blanck has made similar experiments, injecting blood serum from uranium rabbits subcutaneously into potassium chromate rabbits. Of seven rabbits three showed no edema after this treatment, three gave slight edema, and only one agreed fully with the results of Heineke. These were controlled by negative findings after the use of serum from a normal rabbit and an aloin rabbit. The earlier experiments of Heineke have been continued by Heineke and Meyerstein, but the later results are by no means so constant as those obtained earlier. Serum from uranium nephritis did not always produce edema in chromium rabbits, and serum from normal rabbits or salt solution almost as often gave edema though usually it was less marked. They believed that salt played a part, but injury to vessel walls was an important factor. Histological study, however, showed no renal or vascular lesions to account for a difference between toxic nephritis with edema and that without. When salt is given animals with renal lesions, the salt content of the serum they found above the normal, and in these animals the salt content of the hydropic fluid was much higher than that of the serum. They believe that salt retention precedes water retention. The salt increases in the serum because the renal lesion prevents its excretion. When it exceeds a certain amount, transudation takes place. So both salt retention and the action of toxic substances on the walls of blood vessels play a part in the formation of edema. One time one factor and one time the other is more active and this variation in the influence of the causative factors explains the different clinical results which have been obtained on edema from changing the salt content of the diet.

The studies of Schlayer and Hedinger of the functional changes of the kidney in experimental nephritis have been continued by Schlayer, Hedinger and Takayasu in a second paper which deals with the functional changes produced by uranium nitrate and their relation to nephritic hydrops. In these experiments they have used thirty-five rabbits. They have found that the uranium nitrate nephritis, as well in its beginning as in its last stages, shows no difference from the chromium and sublimate nephritis; in other words, is a typical tubular nephritis. The kidney, however, in the early stages, is more markedly enlarged. Uranium nephritis, however, differs from the other in its intermediate stages, and in none of the other tubular or the vascular nephritides have similar changes been noted, except once with diphtheria toxin. After thirty-six to forty-eight hours following intoxication with 1 to 1½ ccm. of a 2% uranium nitrate solution, the following changes appear: There is no anasarca or hydrops. The urine is decreased in amount as compared with the increased amount of the earlier stage. The urine contains very numerous casts, few blood cells, much albumin. To contraction stimuli there is a strong reaction. The intravenous injection of a few cubic centimeters of a 5% salt solution causes, as normally, strong dilatation of the kidney with an increase in the pulsations. Diuresis, however, shows no corresponding relation. As compared with the normal animal in which there is always an increased diuresis, suddenly diuresis ceases and no urine is excreted. After a pause a few drops of urine are excreted. After twenty minutes or more there is no improvement in the urinary excretion, and, in comparison with the other tubular nephritides, the volume of the kidney does not sink quickly again to the normal, but falls gradually to only about half as low a level as that preceding the injection. Injection of caffeine raises the volume to its maximal height, as after salt. There is only a moderate diuresis, which, in comparison with the normal caffeine diuresis, is prolonged, and the kidney does not return to its normal volume. Phloridzin does not cause diuresis and glycosuria unless it follows the caffeine, and this is only moderate. Bleeding and sensory stimuli cause rapid decrease in the volume of the kidney. Blood pressure shows no changes. The uranium nephritis then offers in this stage a striking peculiarity in function. With completely normal contractility and dilatability of the renal vessels after salt solution, instead of the expected increase in diuresis, there is a sudden cessation. If the caffeine is injected first and the salt later, each produces the same changes as described above. Five per cent solutions of urea, grape sugar and sodium sulphate do not produce a diuresis in these animals similar to that of caffeine, though they produce a dilatation like that of salt. Three tenths per cent salt solution will produce dilatation of the vessels but no marked diuresis, though a delayed slight diuresis may appear. Caffeine seems to be the only diuretic which has any effect in this stage of uranium nephritis.

The question arises whether these changes are the result of extrarenal effects or intrarenal lesions. As extrarenal effects may be considered an increased permeability of the cutaneous vessels, and those osmotic changes between the blood and the tissues which result particularly from salt retention. Schlayer and his associates think that the increased permeability of the vessels of the skin cannot be a factor concerned during the stage of uranium nephritis in which increased water leads to decreased function, since in this stage animals show no trace of hydrops, and even thorough irrigation of the peripheral vessels with salt solution produces none. The possibility of salt retention being the cause of these functional disturbances at this stage cannot be seriously considered, since immediately preceding this marked functional disturbance urine secretion has been approximately normal, and it cannot be assumed that an addition of a half a gram of salt in 10 ccm. of water can suddenly increase the salt in the organism enough to bind the added water so that a diuresis no longer can take place. One might assume that at the beginning of the experiment the body had almost reached its limitations of salt fixation and that an addition would increase this beyond the normal and lead to changes. Against this, however, is the fact that three hundredths of a gram of salt produces about as much decrease in diuresis as did the half gram, which would not be the case if the above supposition was true. The authors, therefore, believe that the cause lies primarily within the kidney, and the changes in the contractility and dilatability of the renal vessels shown by changes in the volume of the kidney indicate this. The injured kidney reacts towards diuretics differently from the normal, and an increased amount of salt has the opposite effect to the usual one and decreases diuresis.

Uranium nephritis in its beginning and end is like the other tubular nephritides. It differs only in the intermediate stage. Uranium nephritis shows a great tendency to edema formation, and this difference is probably in harmony with the difference in functional relations. If after uranium nitrate rabbits are given salt solution, diuresis decreases more rapidly than if they are not given salt. If they receive salt and water, there is edema; if not, no edema is produced. This hydrops only appears in the rabbits which survive for a fairly long time. In these rabbits there is extensive injury to the tubular epithelium. However, a study of human kidneys does not indicate that epithelial injury is closely related to edema formation. The coincidence of the two in uranium nitrate nephritis does not prove a causal relation, and other forms of experimental nephritis with as marked a tubular lesion do not show edema. The evidence from human nephritis is more in favor of the edema being related to glomerular vascular changes, and in the uranium nitrate nephritis there is certainly a close relation between the functional renal vascular disturbance and the edema. The renal vessels become impermeable early and there is a marked retention of water and salt. Edema, however, is only produced after the renal vessels lose their power to dilate when called upon to do more work. Then the cutaneous vessels become permeable and edema results. Both of these changes indicate injury to the walls of the blood vessels. Consequently, it would seem that two factors are concerned in the production of edema in uranium nephritis. First, a salt and water retention as the result of the renal lesion; second, an injury to the cutaneous vessels. If either one of these factors fail, then there is no edema. The existence of both conditions seems necessary to the production of edema, and both probably are toxic in origin.

Schlayer points out that the stage in uranium nephritis, in which there is no diuresis after salt injections, though there is an active dilatation of the kidney, furnishes evidence against the simple filtration theory of urine excretion and is more in favor of the active secretory theory. Further, the fact that caffeine at this time still produces diuresis suggests some action on the part of the wall of the glomerular tuft closely analogous to the process of secretion.

As has already been pointed out, experimental chronic nephritis has been less studied than the acute forms. Various observers have found that aloin, cantharidin, potassium chlorate, chromic acid, lead and other substances not infrequently produce interstitial changes. However, in most cases the experiments were not systematically continued for a long enough period to get definite chronic results, and there has been more or less discrepancy in the results. Following the changes of acute toxic nephritis, such as have been already described, quite active proliferative changes take place in the tubular epithelium. Thorel and others have studied these and find mitotic figures as evidence of proliferation, even very early after the action of the toxic substance.

Apparently very extensive repair can take place, and this regenerative power on the part of the epithelium possibly renders difficult the production in animals of chronic interstitial lesions. Our own results at Harvard have confirmed this, and have suggested that a very severe lesion from which the animal just survives is necessary in order to produce any chronic interstitial lesion as the result of the action of that group of substances which have been largely used in the production of acute experimental toxic nephritis. However, other substances appear to be capable of producing more chronic, slowly developing interstitial lesions, and Ophüls has succeeded in producing in guinea pigs and dogs by long continued, small doses of carbonate or acetate of lead proliferative interstitial changes quite analogous to those occurring in chronic interstitial nephritis of man. As a result of his experiments Ophüls believes that the interstitial change is not secondary to the primary degenerative process in the tubular epithelium, but that both lesions take place coincidently and are the effect of the same cause acting simultaneously on different tissues with different vulnerability and different reaction time so far as the visible changes are concerned. Passler and Heineke have made interesting experiments with the view of determining how much of the changes associated with chronic interstitial nephritis in man are due to the simple loss of kidney substance. In dogs they have by repeated operation removed considerable portions of the renal substance and have succeeded in keeping a certain number of animals alive for four weeks or more with only a small kidney stump remaining. A considerable proportion of these animals showed definite hypertrophy of the left ventricle of the heart, with increased blood pressure and a urine increased in amount and of decreased specific gravity, conditions quite analogous to those of chronic interstitial nephritis in man. Some of their animals did not show heart hypertrophy but these showed polyuria, showing that the polyuria might develop independently of the heart hypertrophy. Orth claims to have been successful in the production of chronic interstitial lesions in rabbits merely through manual subcutaneous crushing of the organ, but these experiments have not yet been reported in detail.

A review of some of the recent work on experimental nephritis shows that a distinct advance has been made in our knowledge of nephritis. Many problems remain unsolved, but it would not seem improbable that a solution can be obtained for many of these from a study of experimental nephritis. Purely anatomical studies evidently cannot solve the problem. Function rather than form is concerned. Definite proof of the existence of marked functional disturbances without demonstrable changes in form is an important contribution of recent experimental studies and must lead to an essential change in the usual anatomical conception of nephritis. The inadequacy of the anatomical conception has been long evident to the bedside clinician, but a functional conception has slowly developed to replace it. Firm support for the latter may, I think, be anticipated from the types of investigation of nephritis at present being made in the laboratory and at the bedside.

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*No attempt at a complete bibliography is made. A very large number of papers have been published in recent years on various phases of nephritis. The question of salt excretion has been particularly discussed and from the clinical side very voluminously by French clinicians. The French point of view on this may be obtained from numerous papers and discussions in Société Médecine des Hôpitaux for 1902, 1903 and 1904. In connection with different papers here cited an extensive bibliography covering the various phases of the subject can be found.

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Book Reviews.

Surgical Applied Anatomy. By Sir Frederick Treves, Bart., F.R.C.S., Sergeant-Surgeon to H. M. the King; Late Lecturer on Anatomy at the London Hospital. Fifth edition, revised by Arthur Keith, M.D., F.R.C.S., Lecturer on and Senior Demonstrator of Anatomy at the London Hospital. Illustrated. 640 pp. Philadelphia: Lea Brothers & Co. 1907.

This widely known book is an authoritative epitome of the practical subject with which it deals. It is an admirable small manual, always a difficult thing to write. This fifth edition is improved over its predecessors, particularly in the addition of certain illustrations and the use of colors in some of them. The book has long filled a distinct place among textbooks and unquestionably will continue to do so, if adequately revised to keep pace with the extension of knowledge.

Tropical Diseases. A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, K. C.M.G., M.D., LL.D. (Aberd.); Fellow of the Royal College of Physicians, London; Fellow of the Royal Society; Foreign Associate of the Académie de Médecine, France; Honorary Member of the Société de Médecine de Sand; Physician to the Seamen's Hospital Society; Lecturer on Tropical Diseases at St. George's Hospital, Charing Cross Hospital Medical Schools; Lecturer in the London School of Tropical Medicine; Medical Adviser to the Colonial Office and to the Crown Agents for the Colonies. With illustrations and colored plates. Fourth edition. New York: William Wood & Co. 1907.

The fourth edition of Dr. Manson's Manual of the Diseases of Warm Climates has increased in bulk with the marked addition to our knowledge of tropical diseases since his first modest volume of nine years ago. But the present edition is still a handy book of reference. It is interesting in reading the successive editions of this book to note how the increasing knowledge of tropical diseases and the extra corporeal phases in the life history of the infecting parasitic organisms has extended our field of investigation for diseases not confined within the tropics, as shown by the inclusion in this volume of the spotted or "tick" fever of the Rocky Mountains. The volume throughout is written in Dr. Manson's well-known interesting and lucid style, and is a most useful as well as interesting addition to the general practitioner's library. The press work of the volume is satisfactory.

Diseases of the Nervous System. Edited by Archibald Church, M.D. An authorized translation from "Die deutsche Klinik." 8vo, pp. xxi, 1205. With 195 illustrations in the text and 5 colored plates. New York and London: D. Appleton & Co. 1908.

The various articles which have appeared in "Die deutsche Klinik" in recent years are doubtless familiar to many neurologists, but both the neurologist and the general practitioner should be grateful to have them collected in one volume and put into English. Among these articles may be noted one by Wernicke on aphasia, one by Erb on Tabes, articles by Schultze on spinal tumors, syringomyelia and muscular atrophy, by Zieher on hysteria, by Edinger on headache and migraine, by Quincke on lumbar puncture, by Schuster on diagnosis and methods of examination and on the traumatic neurosis, by Bernhardt on peripheral paralysis, and by Cassirer on neuritis and vasomotor neurosis, beside many others. The volume has certain inevitable defects, the chief of which is that it contains hardly anything upon diseases of the brain, and also that some of the articles were written a number of years ago, and so are not fully up-to-date. Even so, the collection contains much of extreme value. In spite of the recent teachings of Marie, Wernicke's masterly monograph, a fit sequel to his earlier work, must be taken into account by every student of aphasia, and, although the present volume does not cover the whole field of neurology, it contains much that will repay the student. The translation is readable and the mechanical production satisfactory.

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TYPHOID CARRIERS.

One of the most significant and far-reaching researches of the past few years is the positive demonstration that healthy persons are capable of carrying virulent typhoid bacilli whereby the disease is spread. Not many years ago, after the demonstration of the usual method of dissemination of typhoid by water or milk, it was not infrequently said that an epidemic of typhoid must hereafter be regarded as a positive reproach to the medical profession and to health authorities in general. This radical standpoint must evidently be modified in view of more recent study. The demonstration by Richardson and others of the long persistence of active bacilli in the urine of typhoid patients and the later, still more startling, proof of the persistence of bacilli in the gastro-intestinal tract has revealed a new danger, and one manifestly very difficult to meet.

It will be remembered that some months ago a case was reported in New York of a cook whose presence in a house was invariably associated with the appearance of typhoid, a coincidence that finally led to an examination of the excreta which demonstrated active bacilli, although she was at the time in perfect health and had long been so, following an attack of typhoid fever several years before. The further this research has been carried the more apparent has it become that there is nothing inimical to the life of the bacilli after the disease itself has run its course and the patient has been restored to health. Many instances, some of the most interesting of which relate to the discovery of bacilli in the gall bladder at operation and in concretions formed possibly with bacilli as a nucleus, have been observed.

Very recently a most careful study of this question has been made in England, under the auspices of the Home Office, with particular reference to a mysterious outbreak of typhoid fever occurring in an inebriate reformatory, and reported editorially in the *British Medical Journal* for March 21. At the institution in question 28 cases occurred between September, 1906, and November, 1907. Cases appeared irregularly and always several at about the same time. This intermittency was a definite characteristic. Having demonstrated the impossibility of outside human sources of contamination, the milk supply was naturally investigated, with the general result that the milk was held responsible. Sterilization of the milk was found to be faultless, and it finally became evident that contamination must have occurred subsequent to sterilization. This led to the search for a human carrier, who was finally found in the person of a dairymaid, who had undergone an attack of typhoid six years before. A pure culture of the typhoid bacillus was finally obtained from the excreta, and it became apparent that this woman was the sole cause of the outbreak. Her work with the milk led to its contamination. Our contemporary reports several other interesting cases bearing on the general question. For example, in Glasgow within a few months a milk-borne epidemic has likewise been attributed to a milker, who had had typhoid sixteen years before, and was still carrying the germs of the disease. The curious irregularity in the appearance of the disease, as observed in this Glasgow epidemic, is explained by the fact that the earlier cases were directly attributable to the chronic carrier. From him one of the persons concerned in the distribution of milk derived his disease, which was thereafter spread in epidemic form through the milk, which he secondarily contaminated. In general, it may be said that sporadic cases are attributable to chronic carriers, whereas, very naturally, epidemics must be referred to a more general source of infection, usually milk.

Many other instances are now appearing in medical literature of this method of spreading typhoid. One case has been reported of a typhoid carrier who had had the disease twenty-nine years before. An instructive investigation has also been made of an insane hospital in Scotland, in which again typhoid carriers were responsible for the appearance of the disease. One patient, who had been in this asylum for upwards of ten years and who presented no record of ever having had typhoid, was the host of enormous numbers of bacilli. In Germany, also, Kayser, in 1906, reported the spread of typhoid fever through a woman who kept a bakery, in which new employees almost invariably became ill with typhoidal symptoms.

It must, therefore, in general be acknowledged that the dissemination of typhoid through carriers of the bacilli, otherwise healthy, is a distinct and constant menace, and one against which it is exceedingly difficult to take precautions. Still more disturbing is the situation, if it can be widely demonstrated, as in one case to which we allude above, that the typhoid bacilli may appear and multiply in the intestinal tract of persons who have never had the disease. There can at the present time be little question that sporadic cases, from which we are never wholly free, are due to the presence of these so-called carriers who are themselves quite unconscious of the danger to which their presence exposes the community. Even after the discovery of these persons who, we may presume, are not numerous, their treatment becomes a matter of extreme difficulty. To isolate indefinitely a perfectly healthy person is neither a simple nor a humane thing to do. To allow such a person freedom is manifestly unfair to the community. It is to be hoped that some treatment may forthwith be devised through which the virulence of the bacilli may be destroyed. In the meantime we have a more satisfactory explanation than ever before of the appearance of sporadic cases of typhoid fever, in spite of apparently adequate hygiene and prophylaxis.

FLORENCE NIGHTINGALE.

It is not a common experience that the inaugurator of a great and beneficent movement lives to see its fruition. This, however, has been the lot of Florence Nightingale, whose name is absolutely identified with the beginning of skilled nursing of the sick. Through more than fifty years she has had the satisfaction of witnessing the results of her early endeavors toward the alleviation of sickness at a time and under circumstances when hospital régime had reached a definite crisis. To those who have lived through the past fifty years the story is an old one, but it is not improbable that, although Miss Nightingale is still living, many of the coming generation, even among those seeking a medical career, are quite ignorant of the extent and character of the service she rendered. We quote in part an editorial in the London *Lancet* of March 21, wherein is graphically described the extraordinary situation which prevailed when Miss Nightingale first came before the public eye.

> "On Monday the City of London did itself honor by adding to its roll of Freemen the name of Miss Florence Nightingale, and we doubt whether the impartial historian in future days will find in that notable list of princes, generals and statesmen one more worthy of commemoration than that of the lady who brought order into the hideous chaos of the Crimean hospitals and left behind her as an imperishable monument her just title to be called the founder of modern institutions for the training of nurses. It is probably impossible for those of the present generation to realize the full horrors which prevailed in the charnel-houses called hospitals, which were attached to the British Army in the first stages of the Crimean War. Even those veterans who took part in the struggle must have their memories of its terrors dimmed by time. Yet the bare recital of facts points to a state of things that seems incredible. In one hospital some three thousand sick and wounded were huddled together. Order was non-existent, cleanliness was neglected, filth and infection reigned supreme and uncombated. One half of all cases admitted died and of those who underwent amputations 80% succumbed to hospital gangrene. Surgeons were sent out at last in adequate, even more than adequate, numbers, but they were hampered at every step by the bonds of routine so dear to the heart of incompetent officialdom. A futile commission was sent to report, and meanwhile the men died in their thousands. Stores were sent in abundance, but they lay in the ships at anchor in the harbor or moldered in heaps on the beach; no transport was provided to carry them to the places where they were so sorely needed. Of intelligent management in the transport and hospital department every vestige was apparently at an end. Only the advent of some new force from without, capable of bursting through the strangling coils of routine, could save a situation that seemed already desperate."

The opportunity which such a deplorable state of affairs offered is manifest. That a person appeared who was capable of rising to the situation unquestionably stimulated an interest in the problem of nursing throughout the world, which a less distressing situation would not have been able to excite. In the fifty odd years which have supervened since the Crimean War professional nursing has become an established factor in the management of illness of whatsoever sort. In this great modern development, which at times bids fair to overreach itself, we may certainly see the results of one woman's courage, and rightly attribute our modern conception of the position of the nurse to the initiative of Miss Nightingale, who, now approaching her hundredth year, has recently been signally honored by her country.

A CONTAGIOUS HOSPITAL DECISION IN DETROIT.

A legal decision of importance, we believe the first of its kind in this country, has recently been rendered by the Judge of the Circuit Court for the County of Wayne, Michigan, permitting the establishment of a hospital for contagious diseases, other than smallpox, in a residential quarter of the City of Detroit. The diseases indicated would include scarlet fever, measles, diphtheria and erysipelas.

In 1905 the city of Detroit appropriated $100,000 to the board of health with which to buy a site and erect a hospital for the care of such diseases. A site was purchased in the immediate neighborhood of other hospitals, but at the same time in a well settled part of the city. The usual opposition on the part of the neighbors sprang up in a determined form, and an injunction was secured restraining the board from erecting the hospital on that site. A long and bitter contest ensued. The complainants avowed that the placing of such a hospital on the proposed site would cause them irreparable damage, (1) in that it would seriously depreciate the value of their property holdings; (2) in that it would constitute a positive and constant menace to the health of themselves, their families and their tenants; this to be effected by (*a*) aërial transmission of the germs of the various contagious diseases, by (*b*) transmission by domestic animals such as dogs and cats, or by rats, mice and insects, by (*c*) transmission through actual contagion between doctors, nurses, attendants and helpers about the institution and the residents in the immediate neighborhood. The board of health in rebuttal offered much excellent testimony to the effect that such an institution could easily be conducted upon the site selected without in the least affecting injuriously the health of the immediate surrounding community. Among other such testimony was the deposition of Dr. J. H. McCollom, of the South Department of the Boston City Hospital, and the testimony of Dr. Thos. B. Cooley, for some years assistant resident physician of that institution. This testimony was in accordance with the facts published by Dr. McCollom about ten years ago (1897) after the first year of the existence of the contagious department of the Boston City Hospital, and with the results of the investigations made about that time by the London Fever Hospital in England. In accordance with this testimony the Court reached its decision, the important features of which we reproduce elsewhere (page 465) in abstract from the March issue of the Detroit *Medical Journal.* We believe this decision to be good law and good sense and in accordance with the facts. Of course, the sentimental objection to the propinquity of such institutions will probably continue to exist, yielding but slowly, if at all, to a calm consideration of the facts, and as long as this is the case a depreciation in value of neighboring property is liable to result.

MEDICAL NOTES.

Labor Union Hospitals. — A movement is on foot on the part of the National Union Labor Hospital Association to build hospitals for members of labor unions in the large cities of the country. One of these hospitals, with accommodations for three hundred and fifty to four hundred patients, is about to be built in Denver, Colo., at an estimated cost of $200,000.

Suppression of Opium Smoking. — According to the *Australasian Medical Gazette,* on the fifteenth of the eighth moon there was a burning of opium pipes on the city hill of Hangchow. Several months ago public-spirited citizens formed two societies to aid in suppressing opium smoking. They offered to buy pipes if given up before the seventh moon; offered medicine and the services of physicians to those breaking off the habit; opened an industrial school to teach trades to waiters in opium dens; offered to lend four dollars to those who wanted capital for trade. A large number of pipes and other utensils used in smoking were brought in and redeemed, so a day was set for the public burning of these trophies of reform, and a large crowd assembled to witness the sight. First an address was made to the assembly, then a piece of music was performed on an organ, then the fire was applied to the pile of 5,000 opium pipes and other utensils and the services were closed with another address.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 1, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 54, scarlatina 66, typhoid fever 10, measles 190, tuberculosis 69, smallpox 0.

The death-rate of the reported deaths for the week ending April 1, 1908, was 21.56.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, March 28, 1908, was 281, against 234 the corresponding week of last year, showing an increase of 47 deaths and making the death-rate for the week 24.05. Of this number 148 were males and 133 were females; 280 were white and 1 colored; 176 were born in the United States, 97 in foreign countries and 8 unknown; 66 were of American parentage, 188 of foreign parentage and 27 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 61 cases and 4 deaths; scarlatina, 75 cases and 2 deaths; typhoid fever, 7 cases and 1 death; measles, 233 cases and 4 deaths; tuberculosis, 55 cases and 39 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 47, whooping cough 1, heart disease 27, bronchitis 3, and marasmus 6. There were 15 deaths from violent causes. The number of children who died under one year was 56; the number under five years 84. The number of persons who died over sixty years of age was 69. The deaths in public institutions were 106.

There were 3 cases and 3 deaths reported from cerebrospinal meningitis during the week.

Prof. Theobald Smith Honored. — Dr. Theobald Smith, Professor of Comparative Pathology in Harvard University, has been elected Honorary Fellow of the London Society of Tropical Medicine and Hygiene, and also Honorary Member Société de Pathologie Exotique, Institut Pasteur, Paris.

Appointment for Hospital Work in Panama. — It is announced that Dr. Francis P. McCarthy, a recent graduate of the Tufts Medical School, who has devoted much time to tuberculosis, has sailed for Panama to prosecute his work in connection with the government hospitals at Ancon and Colon.

Bequest to Maine General Hospital. — It is reported that William Deering, of Evanston, Ill., formerly a resident of Portland, Me., has given the sum of $25,000 unconditionally to the Maine General Hospital at Portland. Mr. Deering was a member of the original Board of Trustees of the Hospital, and, although it was understood that money was to be left by will, he has only recently determined to make the gift during his life.

NEW YORK.

Verdict in Favor of a Nurse. — Miss Adeline Hunt, a New York trained nurse who, while going to attend a patient at a country-house near Great Neck, Long Island, in June, 1905, was run over by a train at the Great Neck station, has been awarded a verdict of $25,000 damages in the New York Supreme Court in Brooklyn. She had both her legs cut off and sued for the sum of $150,000.

The Amputation Bulletin. — The latest thing in specialized journalism is *The Amputation Bulletin*, which has recently been started in New York by an enterprising Chicagoan. This is nothing more or less than an organ for the benefit of "ambulance chasers," furnishing the names and addresses of persons whose limbs have been amputated, and it is issued three times a week at a cost of $5 a month, or $50 a year. Reputable lawyers are protesting vigorously against this innovation, as there is already far too much of the ambulance-chasing business going on; but it would seem that it is a matter which can hardly be taken up by the police authorities.

Hearing on Vivisection. — On March 25, there was a hearing at Albany, before the judiciary committees of both houses of the legislature on the proposed bills for the further restriction of vivisection in the state. Arguments in favor of the bills were offered by representatives of the New York Anti-Vivisection Society and other bodies, and in opposition the medical profession, which considers such legislation as the first step towards the absolute prohibition of vivisection, was ably represented by a number of prominent physicians and surgeons and by James Taylor Lewis, Council of the State Medical Society. The first speaker was Dr. Thomas Darlington, President of the New York City Board of Health, who presented resolutions adopted by his department opposing the bills; and among others who spoke were Drs. Edward G. Janeway, representing the New York Academy of Medicine and Bellevue Hospital, John G. Curtis and George E. Brewer, of the medical department of Columbia University, Egbert Le Fevre, of Cornell University Medical College, Charles Jewett, of the Long Island College Hospital, Robert Abbe, of St. Luke's Hospital, and Simon Flexner, of the Rockefeller Institute. Perhaps the most telling effect was produced by Dr. Adrian Lambert, of the visiting staff of Bellevue and Lincoln Hospitals, who related how his infant daughter, when only five days old, had recently been saved from impending death by transfusion of blood. This was performed by Dr. Alexis Carrel, of the Rockefeller Institute, and Dr. Lambert himself supplied the blood for the purpose. "If Dr. Garrel," he said, "had not first practiced that delicate operation on thousands of cats, he would not have been able to save the life of my only child." It is believed that transfusion has never before been performed upon so young a subject.

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Current Literature.

New York Medical Journal.
March 7, 1908.

1. *Jacoby, G. W. *Psychiatric Expert Evidence in Criminal Proceedings — Its Imperfection and Remedy.*
2. Armstrong, S. T. *The Need of Care for the Convalescent from the Hospital Standpoint.*
3. Wolbarst, A. L. *A Brief Study of the Prostate with Reference to the Curability of Gonorrhea.*
4. Stein, A. *The Operative Tendencies in Modern Obstetrics.*
5. Hawkes, F. *Gallstone Disease and Its Surgical Aspect.*
6. Brav, H. A. *Diagnosis and Treatment of Benign Tumors of the Rectum.*
7. Le Roy, B. R. *Colorimetric Analysis of the Saliva, with Clinical Significance.*

1. As a remedy for the present imperfections in psychiatric expert evidence in criminal proceedings, Jacoby suggests a class of forensic physicians. These physicians should have special training, and should preferably be appointed by the State. Their testimony in court should be given only upon the call of the Court itself. He believes that in doubtful cases of insanity it would be of great value to commit the accused for observation to an insane asylum. [R. I. L.]

The Journal of the American Medical Association.
March 7, 1908.

1. Brown, P. K. *Symptomatology and Diagnosis of Acute Articular Rheumatism.*
2. Lambert, A. *Cardiac Complications of Acute Rheumatism.*
3. Butler, W. J. *The Vaccine Treatment of Gonorrheal Vulvovaginitis in Children.*
4. Fossume, F. L. *The Common Ground of Medicine and Dentistry.*
5. Eisendrath, D. N. *Subphrenic Abscess as a Complication of Appendicitis.*
6. *Cook, F. R. *The X-ray and High-Frequency Treatment of Exophthalmic Goiter.*
7. Fremont-Smith, F. *Local Arteriosclerosis.*
8. Horsley, J. S. *Perinephritic Abscess Following Parturition.*

6. Cook treated 5 cases of exophthalmic goiter with x-ray and high-frequency current. Two of the cases did not continue treatment but apparently improved. In 3 of the cases there seemed to be entire relief of symptoms. In all the cases there was marked reduction in the pulse rate. The exophthalmos and struma were diminished but were still present. In all the cases there was considerable rather unpleasant reaction after the first few treatments. [R. I. L.]

The Archives of Internal Medicine.
February, 1908.

1. *Peabody, F. W. *The Diagnosis of Typhoid Fever by Cultures from the Blood of the Ear.*
2. *Edsall, D. L. *The Bearing of Metabolism Studies on Clinical Medicine.*
3. *Ewing, J. *Cancer Problems.*
4. Hart, T. S. *A Contribution to Our Knowledge of the Acetone Bodies, with a Clinical Method for the Quantitative Estimation of Diacetic Acid and Acetone.*
5. *Sweet, J. E., and Pemberton, R. *Experimental Observations on Secretin, with Special Reference to Diabetes and Malnutrition.*
6. Wells, H. G. *The Present Status of Our Knowledge of the Chemistry of the Processes of Immunity.*

1. Peabody describes a new modification of the Conradi method for obtaining blood cultures in typhoid fever, which has the advantage of greater simplicity with equally good results. He uses the ear as the source of blood. One or 2 ccm. of blood are withdrawn into a test tube in which there is about 5 ccm. of ox bile. The tube of bile and blood is incubated for fifteen hours, then a few loopfuls transferred to blood serum and incubated again for from three to five hours. At the end of this time motile bacilli can be found in the water of condensation of the blood serum. In his series motile bacilli when present were always either typhoid or paratyphoid. Where doubt still exists the ordinary differential tests may be applied. His results compare favorably with those of cultures from veins, and no elaborate technic is needed. He avoids using differential media. As blood cultures are positive as a rule several days before the agglutination, or Widal reaction, he suggests this simple method of obtaining blood cultures, as a means of diagnosis to the general practitioner in conjunction with the public laboratories.

2. Edsall feels that the tendency of clinicians and medical scientists is to neglect the practical guiding principles that may be derived from exact investigation. He has taken up the consideration of the bearing of metabolism studies on clinical medicine, as these studies show how important it is to stick to principles and not be carried away by details, and as they are perhaps a more fruitful source of clinical principles than any other form of investigation. He shows how, when the fundamental principle of the balance of intake and output, that is, the relation of ingested food to excretion, is recognized, that the ideas built up on so many examinations of excretory products in the urine without regard to ingested food cannot exist in the light of the studies of metabolism. As an instance, he cites the uric acid diathesis. In the same way the recognition of phosphaturia or oxaluria as a definite diseased condition has gradually been given up. The studies in metabolism are helping to put dietetics on as rational a basis as therapeutics, for having determined the amount of nutrient material a food contains we can gauge our doses according to the needs of the individual patient. As to specific diets for different diseases, these studies have shown that they are not justified, for we know almost nothing of any actually specific alterations of general nutrition that may occur in specific diseases, and we know comparatively little of the specific effects of different food stuffs on normal nutrition. But if we can start from the standpoint of learning the general type of the condition that we are dieting, and can then apply the general principles of our knowledge of metabolism and of food stuffs to this, the question of details will afterwards become comparatively easy, and will simply depend on the general elaboration of one's skill in details.

Metabolism has a new field to work in in the studies of "tissue ferments," and the conception of the protein complex, the meaning of the changes in protein that occur in digestion and metabolism and their bearing on the breakdown and synthesis of tissue. That the action of these tissue ferments depends on the conditions in which they act, whether this action shall be constructive or destructive, affords a wide field of work. That we can control the action of these ferments to some extent already, the management of cases of acidosis seems to show.

The conception of the "protein complex" is that proteins of different species differ, not in the total amount of primary substances, but in the arrangement of these substances, and when digestion of these proteins occurs there is fragmentation of these complex substances into simpler substances, and these latter are again put together in different amounts, and to some extent different kinds, to reconstruct the variety of protein required by the organism. In the abnormalities of this process of fragmentation and reconstruction we shall find the causes of some nutritional disorders. The study of metabolism of inorganic substances is another new field which promises new clinical principles. Loeb's famous experiments, Taylor's investigations of the salt-free diet, and Melzer's work on the marvelous effects of the antagonism of calcium and magnesia have made these studies of intense and immediate importance. The bearing of these metabolism studies on clinical medicine is becoming more and more plain, as we discover the underlying principles of these living processes; and their application to diagnosis and treatment, though slight at the present time, will be more and more directly available in practice if the proper principles are followed, even though obscurity still surrounds most of the details; and at any rate, broad conceptions that lead to a general line of action are, all in all, more valuable to the clinician than a few detailed additions to our direct diagnostic and therapeutic methods, even though these additions accomplish their special purposes very effectually.

3. Ewing gives an exhaustive review of the status of cancer research to-day. He divides the work up into three distinct fields: that on the parasitic theory; that on the theory of cell autonomy, and the modern biologic and biochemic study of tumors. As to the parasitic origin of cancer he can find no conclusive evidence. As to the theory of cell autonomy he has much to say concerning its history and gradual formation from the combined work of many investigators, and its explanation of the neoplastic growth of predisposed cells, on the broad basis of embryonal misplacements, developmental history, and suppressed potencies. He explains the conception of tissue tension, which includes all those forces which control the multiplication of tissue cells, and maintain the tissue in a physiologic condition. He shows how this theory of cell autonomy helps to explain many points in the cancer problem. Then he takes up the modern biologic and biochemic study of tumors, and gives a detailed account of the work that has been done in the transplantation of tumors in lower animals and in the chemical nature of tumors. He also reports on the immunity against tumors which these experiments on the lower animals seem to show. He believes the situation is encouraging in the present fixed determination to acquire more facts, in which field the experimental method is truly epochmaking, and cancer research may justly be stimulated, now more than ever before, by the reflection that a vast practical importance may at any moment attach to the new facts that are being gathered.

5. Sweet and Pemberton report on their work on secretin, which was done with especial reference to diabetes and malnutrition. The authors come to the following conclusions from their work: (1) There would seem to be some factor which makes the preparation of secretin from human intestines more difficult than from the intestines of some animals; (2) this factor may depend on the relatively great abundance of membrane in these animals and consequently greater amount of pro-secretin; (3) the abundance of mucosa may be, in fact, a provision of nature in order that the strongly acid chyme of some animals may meet with a quantity of pancreatic juice sufficient to neutralize it and effect digestion; (4) active preparations of secretin can be made with hydrochloric acid of widely varying strengths, and activity, *in vivo*, is apparently not dependent on the peculiar acidity of the chyme in any particular animal; (5) dieting and fasting seem to have no appreciable effect on the activity of the extract; (6) time elapsed between death and the preparation of the extract (within limits) does not seem to be a factor; (7) caution should be exercised in basing conclusions on work not thoroughly controlled, as the demonstration of secretin may be prevented by many factors not easy of determination; (8) in investigating for its presence, the normal flow and exacerbations should be measured carefully by means of some accurate gauge, such as the rate of flow through an accurately spaced canula, or by the recording of time drops with a tambour; (9) the evidence so far adduced that secretin is absent in some varieties of diabetes does not seem conclusive; (10) the specific absence or deficiency of secretin in marasmus seems to remain as yet unproven.

Deutsche Medizinische Wochenschrift. No. 5. Jan. 30, 1908.

1. Kossel, H. *The Tuberculosis Question and the Work of the English Commission.*
2. Stadelmann and Wolff-Eisner, A. *Cutaneous and Conjunctival Reactions to Tuberculin.*
3. Ruppel, W. G. *New Tuberculin (Tuberculin T. R.).*
4. *Köhler, A. *Skiagrams of the Heart.*
5. *Citron, H. *Technic and Diagnostic Value of the Analysis of Feces for Blood.*
6. *Orthmann, E. G. *The Choice of the Vaginal or Abdominal Route in Tubal Pregnancies.*
7. Kollner. *Etiology of Abducens Paralysis, Especially Isolated Paralysis.* (Concluded.)
8. Leuwer, C. *To Prevent Clouding the Laryngeal Mirror.*
9. Yakimoff, W. L. *Deterioration of Atoxyl.*
10. *Pulawski, W. *Statistics of the Serum Treatment of Scarlet Fever.*

4. Köhler states that a skiagram, taken at a distance of 5 to 6 ft. from the heart, eliminates the tangential rays, and thus makes the diagnosis of abnormal breadth of the heart more certain. Some sixteen skiagrams taken at this distance accompany the article.

5. Citron, in examination of the stools for occult blood, says that a considerable amount of the stool must be used and not a minute scrap. The benzidin test, with an etherglacial acetic acid extract of the stool, is best and most sensitive, but is conclusive only with a milk and vegetable diet. A positive result means a destructive or atrophic process. Repeated negative findings exclude cancer with almost absolute certainty. The main point in the diagnostic value of the test is that one must be sure that all meat has been excluded from the diet for two days previous to the test.

6. Orthmann claims that the vaginal route is to be preferred in operations for tubal pregnancy, because it eliminates shock and all its dangers, it allows freer access to the bleeding point, since tubes rupture near the uterus as a rule, and when the tube is drawn down the uterus acts as a plug and tends to stop further hemorrhage, and also because blood poured out in this region does not obscure the field of operation as in the abdominal method. The mortality of 1,176 abdominal sections in different clinics was 8%, in 135 operations by the vaginal route, including 57 patients of his own, it was only 1.7%. His mortality with 39 patients operated upon by abdominal section was 12.8%.

10. Pulawski has treated 103 cases of scarlet fever since 1904 with a serum prepared by injecting a horse with streptococci from a severe scarlet fever case. He used very small doses and only one case was injected three times. His results were roughly three times as good as in those treated by the ordinary measures. There were no bad results from the serum. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 5. Feb. 4, 1908.

1. Volhard, F. *Artificial Respiration Applied through the Trachea.*
2. Bacmeister. *The Precipitation of Cholesterin in Bile and Its Importance for the Pathogenesis of Gallstones.* (Continued article.)
3. *Moro, E. *The Diagnostic Value of Inunction with Tuberculin Salve.*
4. Junker, F. *v. Pirquet's Reaction in Adults.*
5. *Kehrer, E. *Treatment of Gonorrheal Vaginitis by Yeast.*
6. Geigel, R. *On Yawning.*
7. Harnack, E. *Further Studies on Skin Electricity and Skin Magnetism in Man.* (Continued article.)
8. *Hartleib. *The Action of Trapacocaine Lumbar Anesthesia on the Kidneys.*
9. Zacharias, P. *Two Cases of Tetanus Following Gynecologic Operations, Treated with Anti-Tetanus Serum.*
10. *Heddaeus, A. *Tetanus after Subcutaneous Gelatin Injections.*
11. Fiedler, L. *Primary Acute Osteomyelitis of the Ribs.*
12. Jessen, F. *Combating Tuberculosis.*
13. Geissler. *A New Instrument Table.*
14. Spitzy. *Obituary on Albert Hoffa.*
15. Vulpius, O. *Orthopedics as a Specialty.*

3. Moro has used a salve of lanolin with 50% tuberculin (T-O) as a diagnostic aid in tuberculosis in children. The procedure is to rub a small bit of the salve on abdomen or chest; if positive, a more or less severe papular rash appears at the site of inunction He finds the results in

68 cases to be even more reliable than Pirquet's reaction, and after numerous control experiments, the author is sure that it is absolutely specific. There are no constitutional symptoms and no danger is attached to its use.

5. Kehrer has used preparations of yeast in gonorrheal vaginitis since 1901. After four to six days of treatment in acute cases, the condition is cleared up, and the gonococci cannot be found in the discharge. Also in erosions and cervical endometritis a distinct improvement is seen. In chronic cases, as a rule, the results are not so good, and if no results are obtained in four days, the treatment should be changed. The author feels sure that the applications of solutions of yeast in gonorrheal vaginitis is the most valuable prophylactic method we have to prevent upward extension of the infection.

10. Heddaeus describes two cases of tetanus following subcutaneous injection of gelatin for hemorrhage. He considers gelatin as by far the most effective hemostatic we have, and thinks it is indicated in all cases where the source of bleeding cannot be reached. At least 2 gms. of gelatin should be injected. The best preparation now to be obtained is the 10% solution of Merck, "Gelatina sterilisata." Local dealers, as a rule, cannot be sure that their solutions of gelatin are sterile. When given by mouth or rectum, it is, of course, unnecessary to use the sterilized form, unless ulcerations are present. [R. D.]

Berliner Klinische Wochenschrift. No. 5.
Feb. 3, 1908.

(*Dedicated to James Israel on his Sixtieth Birthday.*)

1. *Karewski, F. *Surgical Syphilis.*
2. Grünewald, J. *Hystero-Traumatic Paralyses.*
3. Feilchenfeld, L. *Increase in Symptoms in Tabes and General Paresis after Accidents.*
4. Rosenbaum, A. *Review of Israel's Private Clinic during Twenty Years.*
5. Adler. *Surgical Aspects of Certain Hysterical Conditions.*
6. Holländer, E. *Dynamic-Mechanical Principles Bearing on Appendicitis.*
7. *Maass, H. *Further Communications on Radical Operations for Hernia in Children.*
8. Ruben, G. *Diagnosis and Treatment of Fistulæ of the Large Intestine.*
9. Zondek, M. *I. Remarks on Tracheal Tumors. II. A Tumor of the Carotid Gland.*
10. *Steiner. *The Surgical Treatment of Chronic Ulcerative Colitis.*
11. Wolff, B. *Researches on the Influence of Removal of the Kidneys on the Osmotic Pressure of Amniotic Fluid and Blood Serum in Animals.*
12. Helling, C. *A Case of Congenital Rotation Dislocation of Both Knees.*
13. Katzenstein, M. *The Injuries to the Semicircular Ligaments in the Knee Joint and Their Treatment.*
14. Wulff, P. *The Surgery of Tuberculosis of and Stone in the Kidney.*
15. *Caro, L. *Report on the Anesthesias in Professor Israel's Private Clinic, 1895–1907.*
16. Rosenstein, P. *The Treatment of Vesical Tuberculosis after the Method of Rovsing.*
17. Schlesinger, A. *Peri-articular Diseases of the Shoulder.*
18. Röder, P. *Metastasis in the Suprarenal of a Prostatic Tumor.*
19. Newhauser, K. *A Case of Inflammation of the Kidney Resembling Hypernephroma.*
20. Baum, R. *Further Remarks on Actinomycosis.*
21. Lewill, E. *Angioma of the Parotid.*
22. Levi, S. *The New Methods of Recognizing Tuberculosis.*
23. Samson, J. W. *Leukemia and Infectious Diseases, Especially the Acute Infections.*
24. Arinkin, M., and Schneider, C. *Opsonins and Their Diagnostic Value.*
25. Holländer, E. *Stone in the Bladder.*

1. Karewski points out the necessity of a searching examination for present or pre-existing syphilis in a great number of cases. He believes that the Wassermann reaction will be of great value in many cases, especially to the surgeon. He describes at some length the ulcerative skin lesions, as the ulcers of the foot, also affections of the mucous membranes, muscles, bone and cartilage. He believes that in many of these conditions prompt and energetic surgical treatment, combined with general medical treatment, will give the best results.

7. Maass adds the results of 176 operations for hernia in children over one year to those already reported. In this series he has had no deaths, and up to the present time no recurrence of the rupture has occurred. He believes that infants under a year should only be operated on when immediate interference is necessary. The mortality in this class of cases is 16%.

10. Steiner reports two cases of chronic ulcerative colitis treated by him. A large artificial anus was made in the region of the ileo-cecal valve, and through this opening repeated warm lavages of the colon were carried on. Then washing of the colon with dilute iodine, or protargol solutions. After the ulcers were healed and it was proved that the large gut had regained its functionating power, the artificial anus was closed. A cure was obtained in both cases.

15. Caro, reviewing a series of 1,448 anesthesias given during the last twelve years in Professor Israel's private clinic, finds chloroform and ether, with morphine administered before the anesthesia is begun, to be the best method of general surgical anesthesia. The drop method is to be preferred to all others. Lumbar anesthesia is to be preferred for any operation below the costal margin. Vomiting will occur in 30% of these cases, but no other unpleasant dangerous symptoms. The scopalamin morphine narcosis is by no means a safe one, and should be used with great care. Even when no heart lesion is present, untoward effects may arise from the use of this drug. [R. D.]

Archiv für Klinische Chirurgie.
Band 83. Heft 1.

1. Berger. *Abdominal Injuries Caused by Blunt Violence.*
2. *Jordan, M. *Ligature of the Common Carotid Artery.*
3. Jensen, J. *Fracture of the Tibial Tuberosity.*
4. Deutschländer, C. *The Dislocation-Fracture of the Scaphoid Bone of the Foot, and its Sequelæ.*
5. Wenglowski, R. J. *The Anatomical Basis for the Operative Treatment of Inguinal Hernia.*
6. *Kausch, W. *The Treatment of Contracted Bladder by a Plastic from the Intestine.*
7. *Bockenheimer, P. *The Influence of Operation on the Bactericidal Powers of Human Serum for the Colon Bacillus.*
8. Bardenheuer. *The Treatment of Fractures of the Upper and Lower Ends of the Femur by Extension.*
9. *Doering, H. *Intestinal Polyps and their Relation to Cancerous Degeneration.*
10. *Mertens, V. E. *Stab Wounds of the Lung: Suture; Recovery.*
11. *Busse, O. *The Method or Origin of Tuberculous Strictures of the Intestine.*
12. Adler. *Torsion of the Great Omentum.*
13. *Frangenheim, P. *Spontaneous Separation of the Upsilon-shaped Cartilaginous Suture of the Acetabulum.*
14. *Jenckel, A. *Injury to the Cord (Heterotopic) without Involvement of the Spine.*
15. Tobiásek, S. *A New Plastic Operation for Phimosis.*
16. *Hofmann, M. *Transverse Suprahyoid Pharyngotomy as a Preliminary Operation to the Removal of Tumors of the Posterior Nares.*
17. Küster. *An Aid to the Speedy Performance of Craniotomy.*
18. Schanz, A. *The Treatment of Fracture of the Neck of the Femur.*

2. In view of the fact that the statistics of the results of ligation of the carotid show about 24% of cerebral disturbances and 9% of deaths, Jordan advises a preliminary constriction of the carotid by either the clamps of Crile, or some easily removable ligature before the artery is definitely tied; this is best done under local anesthesia. Such temporary ligation has been allowed to remain in place forty-eight hours, without causing thrombosis.

6. Kausch describes the case of a man, nineteen years of age, suffering from marked contraction of the bladder.

This was so obstinate that he finally made a plastic from a piece of the ileum. The operation was done in three stages and consisted of isolation of the bowel with subsequent union of it with the top of the bladder. Following this operation, the bladder was able to retain 200 ccm. of urine, which was voided not oftener than once in two hours.

7. Bockenheimer has demonstrated the influence of surgical operation on the bactericidal power of human serum for the colon bacillus. He finds that where this power is low before operation, the patient is apt to stand the procedure poorly. As regards major surgical interventions, all influences must be avoided, previous to the operation, which lower the natural resistance; these have been found to be fatigue, cooling of the body, hunger, thirst and psychic disturbances. If the bactericidal power of the serum is found to be low, this may be increased by various methods, especially by the injection of normal salt solution or of nucleic acid. It is suggested that these substances act by increasing the alkalinity of the blood. It would seem that if the serum of the patient were investigated in every instance before operation, a number of cases might be saved, which otherwise would succumb unexpectedly to the operative procedure. Further work of this nature on other organisms than the colon bacillus is to be desired.

9. Doering describes a case of cancer of the rectum which followed six years after the removal of polyps. He finds that this condition is most often found between the ages of ten and forty. The duration of the process is usually several years, the longest being given as fifteen, during which time rectal polyps were gradually becoming malignant. The most frequent early symptom is intestinal catarrh with tenesmus. Of 50 patients suffering from intestinal polyps, 37 died, the cause of death in 31 being cancer. Operative treatment should always be employed, as soon as the condition is recognized.

10. Mertens describes the case of a man twenty-five years old, suffering from a stab wound of the lung, on the left side in the fourth intercostal space, just inside the mammary line. Operation was undertaken one and a half hours after the injury. A large flap was turned down and the pericardium found to be uninvolved. The injury in the pleura was about 1.5 cm. long, through which blood spurted freely. The lung was dragged into this incision, and the wound in it being found, the edges were sewn to the parietal pleura. Deep stitches surrounding this whole area and uniting it to the parietal pleura succeeded in controlling the hemorrhage. The flap was replaced, and the wound closed with a small drain. Convalescence was uninterrupted, except for emphysema of the skin, lasting about four days.

11. Busse believes that tuberculous strictures of the intestines are not the result of simple tuberculous ulcers which have become caseous, but that they are due to a destruction of the longitudinal fibers and a contraction of the circular ones, this destruction being primarily due to interference of the blood supply in the intestinal wall.

13. Frangenheim reports the case of a girl, five and a half years old, who showed a dislocation of the hip. This dislocation was caused by a complete separation of the innominate bone, due to a suppurating osteomyelitis. The osteomyelitis apparently started in the head of the femur and destroyed the upsilon-shaped cartilage in the acetabulum. The head of the femur, slipping upward, pressed the completely movable pubic portion of the pelvis inward. The shortening of the leg could be corrected by simple traction, the head of the bone slipping over the edge of the separated acetabulum.

14. Jenckel calls attention to the fact that following severe trauma to the cervical spine, there can occur direct violence to nerve roots and subsequent changes in the cord, without any involvement of the bones or ligaments of the spine and without any hemorrhage. In the case reported, the symptoms were those of a transverse lesion of the cord and were followed by death.

16. By performing a suprahyoid transverse pharyngotomy, Hofmann has been able to gain easy access to tumors of the posterior nares and upper pharynx. The pharynx is opened and the tongue retracted out of the way, and the soft and part of the hard palate split. Tumors may thus be radically removed under complete control of the eye, and without the usual danger of severe or uncontrollable hemorrhage. Aspiration of blood is controlled easily by inserting a rubber tube into the larynx through which the anesthetic is administered. The operation is done in the Rose position. [W. C. Q.]

Revue de Chirurgie.
March, 1908.

1. *Delbet, P., and Mocquot. *Experimental Investigations on Injections of Gas into the Veins.*
2. *Guisez. *The Cure of Serious Cicotricial Constrictions by Esophagoscopic Methods (Study Based on Twenty Personal Observations).*
3. Uteau, R. *Treatment of Anuria.* (Continued article.)
4. *Sauvé, L. *Pancreatectomies, Especially Cephalic Pancreatectomy.* (Concluded.)

1. Attempts to treat internal saphenous varicosis by venous anastomosis suggested the problem of the causes and risks of air embolism. Theoretically, the action of air in the veins should depend on the rate and place of its introduction, and the amount of blood traversed by it before reaching the heart. To determine these questions experimentally, the authors injected air and oxygen intravenously into dogs and found that the liability of fatal result varies, not with the amount of gas introduced, but inversely with the ratio of this amount to the duration of injection and to the weight of the animal. This ratio they term the co-efficient of danger, which varies with the absorbability of the gas by the blood. In the case of oxygen, this co-efficient is so high that they believe intravenous injections of oxygen might safely be used in the treatment of asphyxia.

2. Guisez reports very favorable results in the treatment of 20 cases of traumatic or congenital esophageal strictures, impassable or undilatable with ordinary means, by direct esophagoscopic passage of bougies or by internal esophagotomy, with and without previous gastrostomy. He describes minutely the instruments and technic employed in his procedures, and emphasizes the greater efficacy and safety of these procedures when practiced under the guidance of actual vision.

4. Continuing his study of pancreatic surgery, Sauvé reviews the anatomy and relations of the pancreas, whose head in human subjects is so intimately associated with the duodenum that he believes one cannot be removed without the other. Hence he recommends and describes an operation of cephalic duodeno-pancreatectomy with gastro-jejunostomy and cholecystenterostomy, a procedure which he considers indicated in trauma, tuberculosis, early cancer, and other neoplasms involving the head of the pancreas. He collects a series of 12 such operations hitherto performed, showing an operative mortality of about 50%, palliation of 30%, cure of 20%. Whatever its future possibilities, cephalic pancreatectomy is obviously still a procedure of great severity and danger, whose advisability may be seriously questioned,

[R. M. G.]

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Miscellany.

JUDGE BROOKE'S DECISION IN A CONTAGIOUS HOSPITAL SUIT.

In this case the bill of complaint is filed by Richard Rowland and many others as co-complainants against the Board of Health of the City of Detroit and the City of Detroit, the sole purpose of the bill being to enjoin the defendants from erecting a contagious disease hospital. . . .

To support the contention of the complainant, much testimony, mostly of a professional character, was offered. A great many doctors were sworn who testified with great positiveness that real danger would be entailed upon the complainants if the building should be erected and operated as contemplated.

With reference to the first two sources of danger [aërial transmission of germs, transmission by animals or insects] urged by the complainants, I need only say that I am of the opinion that they require no attention. The possibility of danger from either of them, according to the complainants' testimony even, is so extremely remote and improbable as to require no consideration.

The last source urged, that of contagion through nurses, doctors and employees, is sufficiently obvious and deserves attention. It is unquestionably true that if the cooks, the scrub-women, the nurses and doctors are permitted to enter the zone of contagion within the hospital and leave that zone without being properly disinfected and freely mingle with the surrounding neighbors, that very obvious and real danger would follow. That such a condition of affairs would be for a moment tolerated in any institutions of the character of this one, conducted by the present Board of Health and its health officer, is not to be conceived. Neither is it to be supposed that in the future successive boards of health and their executive officers would be less likely to adopt and enforce stringent rules for the retention of the disease treated within the walls of the institution.

The defendants offered a great deal of testimony, much of it by the best qualified physicians in the United States to speak upon the subject, to the effect that such an institution could with the greatest ease be conducted upon the site selected by the board, without in the slightest degree affecting injuriously the health of the immediate surrounding community. . . .

This testimony . . . in the case on the part of the defendants absolutely convinces me that it is easily possible to conduct this institution so as to render it absolutely harmless to the neighborhood. It may be and doubtless is true, that careless management and insubordination among the employees of the proposed hospital would involve danger, but I have grave doubts as to the propriety of permitting this, to me, remote contingency to act as a controlling factor upon judicial action. It must be borne in mind that great strides have been made in the science of medicine in the past few years, and new discoveries for the safe isolation and the prevention of the spread of contagious diseases are constantly being made, so that it is certain in the future that the danger, if any exists, will tend to diminish rather than to increase.

A noteworthy fact appears in the testimony. Every physician, I think, without exception, testified to the absolute necessity of the establishment of such an institution somewhere in the city in order that the public health may the better be preserved, and the spread of those highly dangerous diseases stayed. If we concede this then a basic principle in the case, we are met with this problem: the Board of Health is empowered and enjoined by its creators to establish such an institution. In its own opinion, and in the opinion of the entire medical profession, such an institution is a necessity; and it may be stated, I think without the possibility of contradiction, that this hospital could not be located anywhere within the territorial limits of the City of Detroit without an earnest effort being made by those in its vicinity to prevent its erection. It is doubtless true that sites could be selected where fewer people would have a right to object; but the rights of one man are as sacred in the eye of the law as are the rights of a hundred, and as much entitled to the protection of the law. The institution must, therefore, be located somewhere. Wherever located it will meet with opposition. That it will tend in some nature to depreciate the value of surrounding property is, in my opinion, unquestioned; but this element of damage alone has been repeatedly held to be no ground for the granting of equitable relief by way of injunction. Many governmental activities cannot be exercised without some injury to some individual; but the rights of the few must give way for the safety of the many. And while this may seem at first blush to entail hardship upon those who do suffer, this result is a penalty imposed upon those who reside in urban communities, and which must be by them accepted as one of the penalties of such residence.

I have therefore reached the conclusion that the defendants, the Board of Health, and the City of Detroit, are acting clearly within their rights, and in the just exercise of the police power, in erecting a contagious disease hospital within the city, and I have been forced to the conclusion that in the exercise of this power, the discretion exercised by the board in the selection of its site is not a matter subject to judicial review. In any event it seems to be absolutely clear that these complainants are not at this time entitled to relief, even though it should prove that in the future the hospital should become a nuisance. The complainants have taken timely action in the matter and the defendants have due notice of their claims. The defendants urge, and I believe with reason, that there is no danger of a nuisance arising from such an institution, properly conducted. In the event that it should prove to be a dangerous nuisance, the defendants, having proceeded at their peril in its erection, could unquestionably be enjoined.

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REPORT OF NEW YORK STATE DEPARTMENT OF HEALTH.

In the recent 28th annual report of the New York State Department of Health, for the year 1907, much attention is devoted to the subject of tuberculosis. What can be done at hospitals for incipient cases, the report says, has been demonstrated at the state sanitarium at Raybrook, in the Adirondacks, where, out of a total of 267 cases, 219 apparently recovered, 37 were arrested and only one died. Even among those moderately advanced, 145 in all, 32 apparently recovered, while 89 were arrested. An interesting table is presented which shows the reported mortality from tuberculosis and the percentage of deaths due to this cause in the state in the years from 1885 to 1907, inclusive. This also gives the population, the total deaths from all causes and the total death-rate. In the year 1885, when the general death-rate was only 14.6, 203.0 deaths per 100,000 of the population, were due to tuberculosis, giving a percentage of 14.0 of all deaths as due to tuberculosis. In 1907, when the general death-rate was 17.5, the deaths per 100,000 of the population which were due to tuberculosis had become reduced to 171.7, giving a percentage of all deaths which were due to tuberculosis of 9.8. In 1886 this percentage was 13.7 and after that it was ten and a fraction until 1899, when it reached 11.0. In two subsequent years, 1904 and 1906, it was exactly 10; but in no previous year did it fall below 10, as in 1907.

The work of the department during the year included a series of inspections of summer resorts, but, owing to lack of adequate engineering assistance, this investigation was only partially completed. The information thus secured, however, was at once utilized and notices were sent to all offending parties that the sanitary conditions (which in a number of instances were found to be very bad) must be remedied before the opening of the next season. The second appropriation made for the work of the State Hygienic Laboratory, while larger than for the first year, was still too small to allow of the undertaking of all the lines of investigations in chemistry and bacteriology which it is deemed the Department should engage in at the earliest possible moment. The work of this laboratory during 1907 could be divided into four general parts: (1) The investigation of municipal and other water supplies and sewage disposal plants, including the investigation of typhoid fever epidemics; (2) the laboratory diagnosis of various infectious diseases, together with field investigations of outbreaks of such diseases; (3) the special investigation of foods and illuminating oils and other special investigations; (4) educational work, in connection with the State Sanitary Institute, in all of the above three lines of investigation. The work of the Antitoxin Laboratory increased very materially during the year, the distribution of diphtheria antitoxin being nearly one half larger than last year. "It is well known that the most important factor in the treatment and prevention of diphtheria," says the report, "is the administration immediately after exposure or at the earliest possible moment after the onset of the disease, of suitably large doses of antitoxin. This is possible under State production and distribution of the remedy. Only three conditions are necessary for the entire suppression of this disease: (1) A knowledge on the part of the general public as to the preventive and curative properties of antitoxin, if promptly administered in sufficient quantity; (2) immediate action on the part of the guardians of the exposed and the attending physician in the administration of proper doses of antitoxin; (3) an unlimited supply of state antitoxin put up in proper syringes and available for all citizens irrespective of their financial condition." In speaking of typhoid fever the report says that new interest in the causation and diffusion of the disease was awakened during the year by the discovery of chronic carriers of the disease, the matter being one which gives occasion for the consideration of a new factor in the investigation of epidemics of typhoid.

Correspondence.

CHANGES PROVIDED FOR RECEIVING LATE CULTURES AT THE BOSTON BACTERIOLOGICAL LABORATORY.

Boston, March 28, 1908.

Mr. Editor: We desire to call the attention of the medical profession of Boston to certain changes in the provisions made for the receiving of cultures taken too late to reach our laboratory before closing time (6 P.M.).

The building in which the laboratory is situated is open and the elevator running until 9 P.M. As in the past cultures brought to the laboratory before that time can be dropped directly into an incubator through the chute provided for the purpose in one of the laboratory doors on the fifth floor.

After 9 P.M., it has heretofore been necessary to ring the night watchman's bell and wait for from one to ten minutes for his appearance, according to the part of the building in which he happened to be. Hereafter, a properly marked box will be attached to the outside door of the building at 9 P.M. to receive all cultures coming after that hour and up to midnight at which time the box will be removed from the door. Cultures that cannot be sent so as to reach the building before midnight should be held until the following morning.

The box spoken of is in no sense an incubator, cultures being transferred at least once an hour. The arrangement is intended solely for the convenience of the physicians.

Very truly yours,
Burt R. Rickards, S. B.,
Director, Bacteriological Laboratory, Boston Board of Health.

CERTIFIED MILK.

Boston, March 28, 1908.

Mr. Editor: The Milk Commission of the Suffolk District Medical Society is at present certifying the milk from two farms, "The Warelands," at Highland Lake, and the farm of the Massachusetts State Agricultural College in Amherst.

"The Warelands" now has its own delivery wagon and delivers milk daily. Orders may be given them through the Women's Educational and Industrial Union. They are furnishing two grades of milk, one containing 4% of fat and the other containing more than 4%. The 4% milk is intended primarily for babies and is sold at 15 cents a quart. The richer milk is sold at 20 cents a quart.

The milk from the farm of the Massachusetts State Agricultural College is sold and delivered by D. Whiting & Sons, at 16 cents a quart. They are at present furnishing milk of only one grade and strength.

Yours very truly,
John Lovett Morse,
Chairman of the Milk Commission of the
Suffolk District Medical Society.

A CORRECTION.

Providence, R. I., March 28, 1908.

Mr. Editor: In your symposium on vaccine therapy, Jan. 2, 1908, I should have stated (page 16, column 1) that disinfection before inoculation was by rubbing the skin with cotton dipped in pure lysol and by using hot (120°C.) sweet oil for the needle.

Very truly yours,
Helen C. Putnam, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, March 14, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	9	5
Chicago	—	—	Waltham	9	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	6	2
Baltimore	218	46	Brookline	11	1
Cleveland	—	—	North Adams	2	—
Buffalo	—	—	Chicopee	9	7
Pittsburg	—	—	Northampton	10	1
Cincinnati	—	—	Medford	2	—
Milwaukee	—	—	Beverly	3	—
Washington	—	—	Leominster	6	3
Providence	74	25	Hyde Park	4	2
Boston	226	59	Melrose	—	—
Worcester	51	13	Newburyport	—	—
Fall River	64	21	Woburn	6	0
Cambridge	27	9	Westfield	7	1
Lowell	44	17	Marlboro	2	1
Lynn	24	8	Revere	2	—
New Bedford	33	12	Attleboro	4	1
Springfield	31	6	Peabody	—	—
Lawrence	24	11	Adams	9	2
Somerville	22	1	Clinton	5	4
Brockton	18	3	Gardner	12	5
Holyoke	9	4	Milford	3	1
Malden	7	3	Watertown	1	0
Chelsea	19	6	Plymouth	—	—
Newton	5	2	Weymouth	3	0
Salem	17	7	Framingham	4	—
Haverhill	10	4	Southbridge	7	3
Fitchburg	7	5	Wakefield	—	—
Everett	7	3	Webster	—	—
Taunton	15	3	Arlington	2	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED MARCH 18, 1908.

White, J. H., surgeon. Directed to proceed to Puerto Barrios, Guatemala, for special temporary duty, upon completion of which to rejoin station. March 11, 1908.

White, J. H., surgeon. Granted leave of absence for 7 days. March 12, 1908.

Rosenau, M. J., surgeon. Detailed to represent the Service at Meeting of the American Association of Pathologists and Bacteriologists at Ann Arbor, Mich., on April 17 and 18, 1908. March 14, 1908.

Sprague, E. K., passed assistant surgeon. Leave of absence granted Passed Assistant Surgeon Sprague for 10 days from Feb. 11, 1908, revoked, and leave of absence granted for 10 days from March 20, 1908. March 18, 1908.

Amesse, J. W., passed assistant surgeon. Granted leave of absence for 10 days from March 19, 1908. March 16, 1908.

McCoy, G. W., passed assistant surgeon. Relieved from duty in the Hygienic Laboratory, and directed to proceed to San Francisco, Cal., reporting to Passed Assistant Surgeon Blue for special temporary duty. March 11, 1908.

McCoy, G. W., passed assistant surgeon. Granted leave of absence for 3 days. March 13, 1908.

Bahrenburg, L. P. H., passed assistant surgeon. Granted extension of leave of absence for 14 days from March 15, 1908. March 12, 1908.

Scofield, R. B., assistant surgeon. Granted leave of absence for 17 days from April 1, 1908. March 17, 1908.

Stiles, C. W., Chief Division Zoölogy, Hygienic Laboratory. Detailed to represent the Service at Annual Meeting of the Alabama State Medical Association, Montgomery, Ala., April 21, 1908. March 14, 1908.

Cleaves, F. H., acting assistant surgeon. Granted leave of absence for 1 day, March 13, 1908, on account of sickness. March 17, 1908.

Blount, B. B., acting assistant surgeon. Excused from duty without pay for a period of ten days from March 16, 1908. March 14, 1908.

Brown, S. E., acting assistant surgeon. Granted leave of absence for 14 days from March 15, 1908. March 16, 1908.

Safford, M. V., acting assistant surgeon. Directed to proceed to Portland, Me., for special temporary duty, rejoining station upon completion of same. March 13, 1908.

Goodman, F. S., pharmacist. Directed to proceed to Tampa, Fla., not oftener than once in each month, for special temporary duty. March 12, 1908.

APPOINTMENT.

Dr. Eugene W. Hill appointed an acting assistant surgeon for duty at Malone, N. Y., March 14, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at Seattle, Wash., March 16, 1908, to examine an immigrant reported to be afflicted with trachoma. Detail for the board: Passed Assistant Surgeon M. W. Glover, Chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon F. R. Underwood, Recorder.

SOCIETY NOTICES.

Annual Meeting of the Association of American Physicians. — The twenty-third annual meeting of the Association of American Physicians will be held in Washington, D. C., May 12 and 13, 1908.

New England Electro-Therapeutic Association. — The twentieth regular meeting will be held in the Auditorium, (third floor), Edison Building, 39 Boylston Street, Boston, Mass., Friday, April 10, 1908, at 8 p.m. The following papers will be read and discussed: "The treatment by electricity of uterine fibroids and allied conditions," Fred H. Morse, M.D., Melrose, Mass. "Neurasthenia and occupation neuroses: their treatment by electricity," Walter H. White, M.D., Boston. At the meeting on May 8, the following papers will be read: "Hyperæmia treatment of chronic affections," E. H. Bradford, M.D., Boston. "The removal of superfluous hair by the x-ray," Frederick A. Bardwell, M.D., Boston.

Samuel J. Harris, M.D.,
Secretary.

The Boston Society of Medical Sciences. — The next meeting will be held in the Amphitheater of Building B of the Harvard Medical School on Tuesday, April 7, 1908, at 8.15 p.m. Please notice that the place of meeting is in the Anatomical Building, entrance third door on the left from Longwood Avenue. The evening will be given up to the presentations of work from the Department of Comparative Anatomy. Papers will be presented as follows: Dr. E. B. Meigs: "Histological differences between relaxed and contracted smooth muscle fibers." Dr. L. W. Williams: "The notochordal origin and the histogenesis of the nucleus pulposus (of the intervertebral discs)." Dr. V. E. Emmel: "Studies in growth and regeneration." Mr. E. E. Scammon: "The accessory chromosome as a determinant of sex." Dr. F. W. Thyng: "The development of the pancreas." Dr. F. T. Lewis: "Diverticula of the intestinal epithelium in embryos." Dr. J. L. Bremer: "Aberrant roots and branches of the abducent and hypoglossal nerves in human embryos." The embryological collection, especially recently added series, showing the maturation and fertilization of the eggs of the axolotl, together with demonstrations illustrating the papers presented, will be exhibited at the close of the meeting.

C. L. Alsberg, *Secretary.*

RECENT DEATHS.

Albert Brown Robinson, M.D., M.M.S.S., died in Roxbury, March 29, 1908, aged seventy-three years.

Edward Gilead Morse, M.D., M.M.S.S., of Roxbury, died March 24, 1908, aged fifty-nine years.

Dr. Bryant Sloat Fassett died at the Roosevelt Hospital on March 24, at the age of twenty-eight years. He was a son of the Hon. J. Sloat Fassett, of Elmira, N. Y., and was graduated from the medical department of Columbia University in 1903. Dr. Fassett practiced both in New York and at Larchmont, on Long Island Sound, and at the time of his death was surgeon to the out-patient department of Roosevelt Hospital.

Dr. James Redmond Healy, of New York, died on March 29. He was graduated from Bellevue Hospital Medical College in 1870, and had practiced for many years in Harlem.

BOOKS AND PAMPHLETS RECEIVED.

Oxford Medical Publications. Clinical Lectures and Addresses on Surgery. By C. B. Lockwood. Illustrated. London: Henry Frowde; Hodder & Stoughton. 1907.

Oxford Medical Publications. Medical Lectures and Aphorisms. By Samuel Gee, M.D. London: Henry Frowde; Hodder & Stoughton. 1908.

A Text-Book of Surgical Anatomy. By William Francis Campbell, M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

Original Articles.

ON THE SIGNIFICANCE OF CLINICAL HISTORIES BEFORE AND AFTER OPERATIVE DEMONSTRATION OF THE REAL LESION.*

BY MAURICE H. RICHARDSON, M.D.,
Moseley Professor of Surgery, Harvard University.

Osler, at the close of his book on "The Diagnosis of Abdominal Tumors," says (page 191):

"Amid many pleasant memories of Berlin, just twenty years ago this session, none recur more persistently than those associated with that true Asclepiad, Ludwig Traube, who, adding *probity* to learning, sagacity and humanity, reached the full stature of the Hippocratean physician. When acknowledging some error he would say often in a soft, meditative manner, as if gently reproaching himself, 'Have we carefully observed all the facts of the case? Yes. Did the art permit of a judgment on the facts under consideration? Yes. Did we reason correctly upon the data before us? No. *Wir haben nicht richtig gedacht.*"

I was much impressed by this closing paragraph, and I have had occasion many times in my lectures at the Medical School to recall it. I have asked myself a thousand times, "Have I observed carefully all the facts in this case?" My reply has been, "Yes; I have carefully observed what I take to be facts." But, unfortunately, what I supposed to be truth and certainty was in reality error and doubt. I have many times been obliged reluctantly to admit that my carefully observed facts were not facts — they were erroneous observations, and my deductions, though correctly made, were consequently erroneous. Indeed, the chief error in diagnosis is not in wrong deductions from right observations, but in right deductions from wrong observations; if the observations are right, the diagnosis will be right; if the observations are wrong, the diagnosis will be wrong. In the present communication I shall endeavor to bring out the truth of the premises, after demonstrating the truth of the conclusion. In this way I hope to prove that precision in diagnosis depends chiefly upon correctness of observations. Granted certain premises, the conclusion is inevitable — in a logical mind no error is possible.

In the days when abdominal lesions were studied, diagnosticated and treated without operative demonstration of their exact nature and extent, control of diagnosis depended upon an occasional autopsy. In most instances of death no autopsy was allowed, and lesions of slow growth, even if studied at autopsy, lacked the vivid histories of their early manifestations. Early anatomical changes in many cases produced symptoms quite different from those of the later disease. Often the subjective and objective signs of the original lesion were wholly lost in the final and later fatal complications. Hence, the limitation of clinical knowledge of many diseases which now at their very inception are thoroughly understood. The multiplication of surgical operations for all sorts of abdominal lesions and the recent custom of systematic examination of abdominal viscera whenever practicable have given the surgeon extraordinary opportunities for observing not only the connection between the lesion for which he operates and its symptoms, but between lesions which he unexpectedly discovers and symptoms which either attracted little attention or were not understood.

The vast number of operative demonstrations has made abdominal diagnosis at the bedside singularly accurate, especially in the hands of the abdominal surgeon. He has learned to interpret subjective signs with great precision, and with his fingers to recognize, almost beyond a doubt, the objective signs. The diagnosis of appendicitis, gallstone lesions, diseases of the pylorus, and abdominal tumors, especially in typical cases, is possible almost beyond question; and yet, even when the evidence is the plainest, there are not a few instances in which the diagnosis is wrong, and in which, upon a wrong diagnosis, are based false indications, untrustworthy prognoses, illogical or unnecessary operations, or, worse than all, palliative and useless medical treatment.

Certain lesions, owing to their situation, are necessarily difficult of detection; some are impossible, for unless they in themselves cause symptoms, they cannot even be suspected, until by their situation alone they begin to interfere with the physiological functions. A beginning cancer of the pylorus undoubtedly causes no symptoms beyond perhaps pain or discomfort until it affects the general health by its evil qualities, or the digestion by interfering with the physiological action of the stomach. In the beginning, pyloric cancer is comparable to cancer of the lip, which in its inception would never be for a moment suspected were it not so situated that it cannot possibly be overlooked, but which if imperceptible would first be detected when by ulceration into the mouth it had caused the sanious discharge of its later stages, with involvement of the neck, tongue and jaw. Were only the subjective signs of cancer given, no attention whatever would be called to the mouth until the ulceration had become sufficient to cause pain with certain foods; and the infiltration enough to cause, through pressure upon the gustatory nerve, pain in the ear, or the involvement of the muscles of the tongue enough to cause interference with speech.

Before an examination of the mouth had been made, cancer of the tongue would nevertheless be immediately suspected upon a history of pain in the ear and difficult and painful mastication, especially with certain acid fruits and foods. Unfortunately, by this time, the surgeon would expect to find serious, if not hopeless, involvement of the tongue.

Similarly in malignant growths, say of the stomach, symptoms in the beginning do not exist. Even when they are strongly suspected or positively diagnosticated, signs perceptible to the touch may be wanting. The growths may sometimes attain great dimensions before characteristic signs are developed. Hence, the many fruitless explorations in gastric cancer, and the gloomy results after even the completed operation. Were it possible to make as early a diagnosis in gastric and intestinal cancer as in cancer of the lip, the immediate and the end results would be encouraging, whereas they are now discouraging. In benign lesions likewise the signs are not characteristic enough to bring the patient to the physician at the early date when operative relief is easy and safe.

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* Read at a meeting of the Surgical section, Suffolk District Medical Society in Conjunction with the Boston Medical Library, Jan. 2, 1907.

Progress in internal diagnosis, as well as in treatment, can be made only by the study of diseases in their earliest manifestations. This study is now possible through the frequent demonstration of the lesion in the course of abdominal operations; and it is to this subject particularly that I wish to call attention to-night.

But in accounting for symptoms by lesions it is essential that the observer use only that evidence which is indisputable, otherwise he spreads rather than checks error. When, for example, the surgeon, relying wholly upon his sense of touch, reports the enlargements, irregularities, indurations or other physical attributes which he feels, as positive proof of structural changes, he goes farther than physical possibilities allow, and accounts for symptoms by assumptions rather than by facts. I have reported several cases as chronic pancreatitis because there were certain conditions in the pancreas which seemed to me abnormal, and which, therefore, seemed adequate to cause the symptoms. I dare say they were sufficient to cause the jaundice, pain and what not; but there was never any better proof of real anatomical change than I could detect with my finger tips. I would, therefore, exclude from all considerations of scientific accuracy my own cases at least of so-called chronic pancreatitis, for their existence has never been proved by section, by microscope or by autopsy. All the patients have recovered after cholecystostomy and temporary drainage of the biliary tract. In the discussion of symptoms based upon facts, we must be absolutely sure of the facts, and use no evidence that is not indisputable. Hence, in the following pages no material is used in which there can be a reasonable doubt.

To express what may be admitted as a fact, and what may not, let me refer again to changes in the pancreas. At a recent autopsy I made use of the opportunity to examine manually the pancreas, hoping thus to account for a rather inexplicable complication following a gallstone operation. The operator was of one opinion, others were of other opinions, as to the probable mechanical condition which caused a biliary fistula. With the pancreas in my hand I felt enlargements, indurations and irregularities which in other cases I have reported as sufficient to establish the diagnosis of chronic pancreatitis. Dr. Wright thereupon demonstrated that there was nothing whatever abnormal in the pancreas!

It is essential, in trying to raise the art of diagnosis to a science, that we make use only of truth; and that we consider as truth only observations which cannot in the slightest be questioned.

There is plenty of use for such observations as I have made upon the pancreas. An enlarged, lumpy pancreas, with jaundice and other symptoms, may, for all we know, be the cause of these symptoms, especially as they have — so far in my experience — disappeared permanently under cholecystostomy and drainage; but we have no right to say that the symptoms are dependent upon pathological or mechanical changes until these changes have been demonstrated beyond any possible doubt.

But before considering further the connection between lesion and symptom, let me say a word about that interesting and inspiriting example of deductive reasoning broadly called medical diagnosis, and about the great value of admitted and explained errors as aids to the betterment of diagnosis.

Diagnosis before operation, controlled by operation and by laboratory investigation, cultivated by assiduous study before and after operation, corrected by errors and stimulated by successes, affords the most valuable and most refreshing means of high intellectual effort which the medical profession affords.

The successful application of the principles and methods of diagnosis to obscure medical and surgical cases is the result of keen mental processes accurately employed. For success in diagnosis and in treatment, especially when time presses, one must keep his wits about him, and the mental act must proceed with swiftness and precision. We must be wide awake. "The millions are awake enough for physical action, but only one in a million is awake enough for effective intellectual exertion." (Thoreau: "Walden," page 100.) We are all awake enough for physical action (exploratory laparotomy); very few awake enough for effective intellectual exertion (accurate diagnosis). . . .

Accuracy in diagnosis means correctness in observation and logic in deduction. Accuracy in diagnosis means, with reference to histories and subjective symptoms, the emphasizing of some statements, the simple acceptance of some, the minimizing of some, and the absolute rejection of some. In a word, the accurate observer must separate the wheat from the chaff; the significant from the insignificant; the real from the imaginary; the symptoms dependent upon a major lesion from those dependent upon a minor one. He must, moreover, in order that he may gauge its significance, give each symptom its proper weight. Having taken the history and learned the present complaint, he must exercise his powers of observation through sight, touch, hearing, and sometimes smell. With his data thus collected, he must, by giving each sign its real weight, make from them all a logical deduction. The whole process is an intellectual discipline of the highest merit. Through the control afforded by operation it gives to the diagnosis of surgical cases the interest in medical cases intensified only through death and an occasional autopsy. It gives the surgeon an opportunity of testing the accuracy of his observations, the truth of his histories, the precision of his deductions. It gives him unbounded satisfaction when, through the application of medicine or surgery to the disease which he has correctly interpreted, pain is relieved and health restored.

A source of error in diagnosis, I am convinced, is that too great reliance is sometimes placed upon new and insufficiently proved methods of investigation, while too little is placed upon old and trusty ones; in the language of the "gridiron," too much faith is put in trick play and too little in straight foot-ball. Not that every means that tends toward scientific accuracy should not be utilized to the full extent of its real worth, but the observer must be sure to realize its true value. I can recall many cases of fatal error from allowing a single observation, based upon some new and not sufficiently established method of laboratory study, to outweigh bedside evidence that has stood the test of years. I have seen a diagnosis of non-peritonitis made because there was no increase in the white count, when the patient had every major symptom of a fatal and advanced infection, and was indeed dying. Furthermore, in my early experience with leucocytosis, relying upon the absence of that symptom, I have let pass the only favorable moment available for a successful appendectomy. I have seen a diagnosis of syphilis of the tongue based upon I know not what new and insufficiently proved observation, when the patient's very "Good morning, doctor" showed an interference with the motions of the tongue which was almost pathognomonic of cancer.

Far be it from me to belittle the value of new methods of observation; they should have their proper weight studied and determined. The diagnostician's real reliance, however, must be placed upon an intelligent selection of the significant facts of a truthful history, and upon the eye, the ear, and especially the *tactus eruditus*.

Before new methods of observation and study are allowed to influence greatly a refined diagnosis, the importance of such evidence should be accurately gauged by giving it more and more weight as experience at the bedside and at the operating table justifies. For example, before leucocytosis was given the importance with which thousands of observations have now credited it, it was unwise, and led to many a fatal error, to let it compete effectively with time-honored methods of diagnosis. Even to-day, the white count should not be allowed to prevail in evidence when it is disputed by the ordinary bedside observations of an experienced clinician.

Another thing that I wish to emphasize is the educational value of error, and our duty to ourselves and to our art of publishing our mistakes for the enrichment of medical literature, and through medical literature for the benefit of medical workers throughout the world, and through them for the benefit of all mankind — the ultimate effort of all medical research.

It is not always an easy task — it is never an agreeable one — to publish our mistakes broadcast, and it is not always necessary to do so, especially if others besides ourselves will thereby suffer. Errors, even most glaring and inexcusable, can, however, in some way be brought to the attention of the profession — if in no other way, anonymously. The reluctance to do these things is, of course, natural; and it is increased by the advantage which is sometimes taken of one's candor — when, for example, a prospective patient's attention is called to some blunder that her surgeon has had the courage to publish.

I would rather emphasize, even at the cost of my own reputation, certain mistakes occurring in my own experience, than, by concealing them, fail in that warning to students and beginners which they must otherwise receive through their own mistakes. It is hard enough to make the inexperienced heed the warnings of the experienced, even when these warnings are vividly impressed upon them by precept and example. What the beginner would do if no warnings were even attempted, it is not difficult to conjecture.

In Bassini's operation for hernia I had for years called attention to the danger of wounding the external iliac vein in sewing the conjoined tendon to Poupart's ligament. This was, I thought, a theoretical danger, for I had never seen the vein wounded. I have since been informed that the accident has occurred twice in Boston; and thus vividly impressed upon the beginner — fact upon theory — the possibility becomes one against which every operator should be put upon his guard.

Progress in diagnosis can be made in no surer or better way than by giving publicity to error. It is indisputable that in all human affairs every one must occasionally err. Indeed, he who makes no mistakes is superhuman. If no errors were made in diagnosis, there would be few in treatment. I would rather admit making a wrong diagnosis than decline to make any.

In my experience there is in surgery nothing to compare in pleasure, satisfaction and importance, with internal diagnosis, in a community like this, of congenial, friendly, appreciative and considerate colleagues, all of whom are actuated by the same enthusiasm for medical and surgical improvement and are not only willing but eager to promote the cause by admitting an occasional defeat.

That we as a profession need an occasional spur to self-improvement through confession is shown by Osler's recent remarks at the Southern Surgical and Gynecological Association in Baltimore, in introducing the subject of abdominal aneurism and its diagnosis. In substance he said: "If every surgeon in this room would candidly search his conscience, it would probably appear that there have been two or three cases at least in which abdominal aneurisms have been opened under a mistaken diagnosis as to the nature of an abdominal tumor." I trust that no such experience had ever befallen a member of that association; but the duty of publishing this and all similar errors is one which we must not shirk.

Many errors in diagnosis are the result of haste, of insufficient or incorrect observations upon which we base wrong diagnoses, whether logical or illogical. These errors may be without injury to patient or anybody else, as when, for example (S. H. R., vol. lxiii, p. 49), a large, irregular liver has been diagnosticated as cirrhosis instead of cancer with gallstones. Had the diagnosis been simple gallstones and this patient operated upon, the operation would have been a surgical mistake and very possibly fatal. It is quite different when, in the presence of gall-bladder disease, the diagnosis of cancer is made and the patient is allowed to drift into hopeless inoperability, into morphinism, or into a condition in which operation is extra-hazardous (O. R., vol. 40, p. 24), or when, after the correct diagnosis of gallstones and their removal, the real lesion — cancer of the jejunum — is regarded as a neurosis, and, before successful operation, the patient is brought to death's door.

In the first instance, a man of seventy-eight, after a history pointing to gallstones and lasting over twenty years, developed dyspnea and general constitutional weakness. He had a loud mitral regurgitant murmur, edema of the feet, free fluid in the abdominal cavity, a large, irregular liver, and marked cachexia. Without the least question the case was one of cancer of the liver. The disease had, however, been pronounced a cirrhosis, which, although perhaps no less fatal than cancer, implied a probable habit which reflected to a certain degree upon his method of living, and which, in fact, did not exist.

In the second case (O. R., vol. 40, p. 24), a woman of forty-three was operated upon by an extremely good surgeon who, however, failed to complete the operation on the ground that the depths of the gall bladder were malignant. This patient's sufferings continued, and she was rapidly getting into the habit of taking morphine. At operation I found a perfectly remediable cause for her suffering — the remains of a contracted gall bladder. The diagnosis of malignancy was an error of observation made during the excitement and haste of operation, and it depended upon the sense of touch alone. Such errors cannot always be avoided, even by the most educated hand.

In the third case, that of a woman of thirty-nine (S. H. R., vol. lxii, p. 57), the diagnosis of gallstones was made by the attending physician. I concurred in this diagnosis, and removed a few gallstones from the gall bladder. The chief symptom — spasmodic pain in the epigastrium — continued. This pain became more severe, and was accompanied by visible gastric spasms. There was constant vomiting of bile. In spite of these significant facts, I persisted in the opinion that the trouble was a neurosis accompanying or secondary to the gallstones. The real lesion proved to be a malignant stricture of the jejunum which I resected. The patient later underwent a successful extirpation of double multilocular ovarian cyst.

In this case the error in diagnosis was my refusal to admit the significance of perfectly obvious symptoms. There was no haste, or want of care, for I had the patient under daily observation for weeks. The error was due to the influence of preconceived ideas. What could have been of greater meaning than the intermittent gastric spasms with vomiting of the contents of the duodenum and with loss of weight? The extraordinary thing is that we did not think of jejunal stricture sooner; but so rare a disease would immediately be excluded by its rarity alone. Indeed, soon after the operation I asked a friend, an experienced pathologist, to select, in twenty possibilities, the lesion that we found; and he was unable to do so.

With that inexplicable occurrence of unusual cases in twos and threes, the past three weeks have brought to my observation no less than four demonstrated perforated duodenal ulcers and one perforated gastric ulcer, perhaps two. These cases present varying difficulties of diagnosis, and by their result illustrate well what remains to be desired, on my part at least, in internal diagnosis.

P.G., a man of sixty-two (S. H. R., vol. lxii, p. 94), I saw, with Dr. Stevens and Dr. Horace Marion, Oct. 26, 1906. The essential features of the case were these: A strong, vigorous, active business man, who had gone to bed as well as ever, was waked in the night by pain of a rather colicky character. The next morning Dr. Stevens found a tense abdomen, without tenderness. There was some distention and there were a few slight, colicky pains of peristalsis. The temperature was 99.5%; pulse 80. During the night the patient had vomited. There was nowhere any tenderness. Rectal examination was negative. That night the temperature was 101°; the pulse 90. During the night there were two small movements of the bowels. The patient did not look very sick. The white count was 38,000 that night. The urine was of high specific gravity and contained a slight trace of albumin, but nothing else abnormal. The pain was insufficient to require an opiate. After small doses of calomel there were two or three small, watery movements. The bowels became less tense; the slight colicky pains continued. It hurt the patient to turn over in bed. He went on without change; the temperature remained in the vicinity of 99°. Four days later there were several movements of the bowels. The urine was passed without difficulty. On the fifth day he sat up without orders, came downstairs four or five times, and walked out on the street. He had a bad night following this indiscretion. In the early morning of the sixth day he had a similar attack of pain, but it was more severe. He was up and down in bed, and vomited bile and mucus. Three eighths of a grain of morphine produced sleep. There was no increase in temperature. On Monday morning — at the end of a week of illness — the temperature was 99.8°; the pulse 80. The abdomen was distended without tenderness. The patient was much the same all day. There were colicky pains. The whites were 33,400. I saw him now for the first time. A turpentine enema had been given him the night before, but without result. A sixth of a grain of morphine had been given subcutaneously. There had been no loss of weight, and the patient had never had any pain before.

When I examined this patient the pulse was 105, the abdomen tense and markedly tympanitic. No tumor or other abnormality could be detected. The urine was then for the first time *found to contain blood.*

In this case thrombosis and embolism of the mesenteric vessels were considered, with pancreatitis, fat necrosis, gallstone obstruction and many other lesions; but not for a moment did we consider gastric ulcer or any of its complications. The diagnosis of renal colic, with abdominal spasm, was made.

This patient was seen later by an eminent medical consultant, who concurred in the diagnosis. The patient died at the end of a few days. The autopsy showed a perforation of the posterior wall of the stomach. The left kidney contained calculi.

The diagnosis in this case, it seems to me, could not have been made, unless it had been possible to put to the patient questions suggested by the autopsy. There was nothing in the history given Dr. Marion or myself which for a moment suggested a perforation of the stomach, much less a gastric ulcer. If the surgeon could only know beyond a doubt the real lesion, or if the evidence could strongly suggest the lesion, he could then select the course of treatment, whether operative or palliative, which would give his patient the better chance. The question of operation in this case depended absolutely upon the diagnosis, for there was a choice between medical and surgical treatment. In some abdominal lesions, such as internal strangulation, surgery, of course, affords the only hope and there is no choice.

If the surgeon could only be wise enough always to know when the patient's chance lies in operative treatment and when in non-operative treatment, his results would be much better than they are. He can never be wise enough, however, even if the diagnosis is clear, to decide in all cases intelligently and correctly. When the lesion is uncertain, he is indeed an experienced man who can decide even the question of exploration.

The common solution of such a difficulty — indeed, the only reasonable solution when the diagnosis, after as careful study as time permits, is still doubtful and when confidence in a non-operative diagnosis means, if the diagnosis is wrong, the death of the patient — is to descend to that plane of admitted ignorance in which the so-called " benefit of the doubt " demands operation.

However commendable it may be, in the practice of the experienced, to operate under certain circumstances of doubt, such a course must be followed with caution and reluctance, for if carried too far, it cannot but discourage accurate diagnosis, belittle sound judgment and substitute for careful, intelligent and conservative methods those of haste, carelessness and unjustifiable radicalism. To have recourse to the rule of universal exploration when in doubt is not objectionable; indeed, there is everything to commend such a resort, but only after every effort which time and experience justify has been made to solve the diagnosis, and when the diagnosis, if it excludes doubtfully a medical lesion, means, without operative relief, death.

It is just as surely a reproach to the art of surgery to lose a patient after an operation which is not essential to life, as it is a reproach to a physician to prevent an operation which is essential to life. A perforated gastric ulcer is not necessarily fatal; it is not nearly as likely to be fatal as an exploration which may, in a desperate case like the one just mentioned, turn the scale by even the slightest shock.

There are circumstances, I mean, under which no operation should be undertaken, for the patient's only hope lies in the *vis medicatrix naturæ.* It is for us to determine, in order that we may avoid those operations which serve simply to hasten death, under what circumstances the patient's only hope depends upon his being let alone. And, in order to determine this, we must cultivate diagnosis and especially prognosis. In this way alone can we avoid the surgical treatment which subsequent events prove to be meddlesome and the medical treatment which they prove to be useless. Considering, in the light of many years' experience, the prognosis in cases like the present one, I can recall, without consulting records, many instances of rigid and painless abdomen dependent upon such causes as direct blows, fractures of long bones, simple colics and other non-operative causes, symptoms which were promptly relieved by rest and catharsis. In many cases of renal stone, with pain and hematuria, these symptoms have been present. Moreover, experience has shown me at least that the absence of localized pain and tenderness in the beginning with later absence of general pain and tenderness make a combination of symptoms which must be observed with the utmost care, and, when the patient's general condition is desperate, treated with rare conservatism. In the study of similar cases as a whole, our endeavor should be toward correct, non-operative diagnosis, by which, for example, a perforated gastric ulcer may be recognized beyond a reasonable doubt. Not only should the surgeon strive to be able almost beyond question to recognize the most important lesion, a perforated gastric ulcer, but also, as in this case, the minor lesion, renal stone, which not only complicates the diagnosis but may completely obscure it.

In reviewing the history of this patient, it is clear that the weight of several symptoms was not accurately gauged. The pain as described by the physician and by the patient varied between " pains of a rather colicky character " and " awful pains." These are quite compatible with renal stone. The vomiting was not characteristic of gastric ulcer. The general absence of fever was strongly against a peritonitis of any kind, though there was at one time a temperature of 101°. The pulse was slow. Only one sign indicated infection, and the real significance of that is surely not fully understood, the very high white count. One would surely be at a loss to make a positive diagnosis, assuming that the facts had been correctly observed. But, discouraging as an experience like this may be, the very discouragement serves to stimulate to renewed effort. There must have been facts which would tend toward a correct diagnosis; and, had the patient lived, these facts would, in all probability, have been elicited. Such an experience cannot but stimulate one to more painstaking histories, to more effective observations, and therefore to more accurate deductions.

(To be continued.)

OBSERVATION HOSPITAL OR WARDS FOR EARLY CASES OF MENTAL DISTURBANCE.

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The long-continued and persistent efforts by a few individuals for observation wards or hospitals now seem to be about to bear fruit. This is certainly a satisfaction to those who have watched the conversion of the doubting minds, who have striven to pry these doubters out of the ruts they have been in so long and show them how to relieve many sick people who have been neglected and who have no voice nor recognized rights in their own treatment. A general active movement in this direction is now apparent in many of the large cities of this country. In and about Boston, committees have been formed in times past, recommendations made and many other fruitless efforts have been attempted to bring about that which a few well directed efforts give hope of accomplishing this winter. I have contributed several papers on this subject, and cannot add much to what I have already said, but I should like to bring before the profession further evidence in favor of this movement from other sources than those I have before mentioned, and some new evidence from the same sources. In view of the favorable attitude shown at the hearings this winter before the Massachusetts legislative committees on bills along this line, I feel that many physicians who heretofore have considered an observation hospital or ward a remote possibility of doubtful expediency, may now take time to read up and seriously consider this subject. At the above hearings no opposition appeared. Such unanimity would not have been possible a few years ago. I believe we are not going to stop at an observation hospital, but that within a very few years all of our largest general hospitals will realize the value to themselves of observation wards (under whatever name they choose to give them) as a part of their system for clinical instruction and the training of their nurses. The public are now becoming educated to this crying need as rapidly as the average practitioner, and they are demanding such wards. While I am writing this paper the information comes to me that an effort is being made to equip by private subscription a ward at the Massachusetts General Hospital for early cases of neurasthenia. This is a move in the right direction, and whether it be called by one name or another does not matter, so long as relief is afforded in these early cases. The first wards for this purpose were put in operation in Germany, and to Griesinger belongs the credit of the first plan for establishing these wards. Scholtz established observation wards in connection with the Bremen general hospitals in 1870, and about the same time Reijers organized similar wards in Würtzburg. The first clinic for these cases was opened by Furstner, at Heidelberg, in 1878, where later Kraepelin did such excellent work. A little later Fleichsig opened the second clinic at Leipsic. From time to time these clinics have increased until now in each of the twenty German Universities, or in general hospitals, or in buildings in their neighborhood, there are clinics and patients under observation. At Blockley Hospital, in Philadelphia, the Municipal Almshouse and the general and insane hospitals are grouped under one management and have four wards for the observation and detention of early cases. In Pittsburg the General Hospital of St. Francis has four well equipped wards which are under charge of Dr. Theodore Diller, where mental cases were first received fifteen years ago in a small wooden building serving as an annex to the hospital, and which was so successful that three years ago a brick pavilion was constructed containing one hundred beds. Bellevue Hospital in New York has a separate pavilion which is nominally a distributing station.

In an excellent paper on observation wards in general hospitals, Campbell Meyers, M.D., of Toronto, states that in all such hospitals the students are shown the actual changes which take place from the earliest symptoms of cerebrasthenia to the fully developed case of insanity, which can best be determined in these wards. He says:

" There can be no doubt that the clinical instruction in the pre-insane stage of these functional diseases of the brain will offer better results to the human race than that in any other department on internal medicine." " I am convinced from actual experience that early treatment has resulted in the restoration to health of a very large percentage of these cases and has prevented an attack of insanity."

In summarizing his paper he says:

" With one or more of such wards in operation, the first object aimed at, viz., the alleviation of suffering in the poor by proper hospital treatment for their disease, would be obtained. In addition to this there would result at least, the following:

" (1) Better facilities for clinical instruction to the medical student. Here the student could be shown these cases in his daily round of work and be able to study these diseases of the brain just as he studies in a neighboring ward diseases of the heart or lungs. He would learn to give the same attention to disease in this one organ as he now gives to diseases in all the other organs, and the importance of the study would be brought home to him in a way which is at present impossible. He would realize the importance of active treatment in these cases and his responsibility in allowing them to pass over the boundary line of insanity without adequate treatment. The study of these cases in their early stages would also enable him to recognize such conditions in private practice and to take such steps as may save a mind from destruction, a result more desirable even than saving the body.

" (2) A better knowledge of these diseases would result in the whole profession recognizing the necessity, for example, of hospitalization of asylums; and instead of the scanty number of specialists who are now endeavoring to bring about this good work, there would be a solid phalanx formed by the whole profession to the requests of which the Government would be obliged to accede without delay.

"(3) To the nursing staff of a general hospital such wards would be a boon, since, frequent as these cases are in private practice, but little opportunity to learn the art of nursing them is afforded in a general hospital.

"(4) By admitting such patients into the wards of a general hospital, an acute case of alleged insanity would at once be admitted without a certificate, on precisely the same conditions as though the patient were suffering from other disease than that of the brain and by this means the cruelty and injustice of taking these patients to a jail would be abolished. Under these conditions recourse to early treatment would be sought, since the prejudice against asylum treatment would be removed and much better results would necessarily follow. The stigma in the minds of the laity, of having been treated in an asylum, would also be obviated. Further, the treatment of these patients in a general hospital by the same methods as all other patients are treated (due allowance being made for the form of their disease) would gradually lead to a more rational view of insanity in the minds of the masses and thus gradually overcome the prejudice against asylums.

"(5) A large portion of suicides would be prevented since there is no doubt that many a sufferer from cerebrasthenia has ultimately given up in despair; and some additional grief, which, in health would have caused only temporary depression, has, under the circumstances, turned the scale, and another suicide is added to the long list of these disasters published daily in the newspapers.

"(6) And probably, most important of all, insanity would be prevented in a very large portion of cases."

From an economic point of view the prevention of insanity in the poor merits the careful attention of the state. If insanity were prevented in only 50% of the patients admitted into such wards as I have suggested, in a general hospital, who without this treatment would have become insane, what an excellent investment such wards would be to the government. The cost of maintenance for even a single insane patient to the government, extending as it sometimes does over fifty years, if added to the value of his service as a wage earner during this long period, would alone furnish sufficient money to build and properly equip a pavilion in connection with one general hospital.

Dr. Adolph Meyer, Director, Pathological Institute, Ward's Island, New York City, in an article in the *American Journal of Insanity*, October, 1907, says:

"The mainsprings of the movement for psychopathic hospitals were the feeling that the existing state hospitals did not fully answer the needs, owing to the distances and to the compulsory commitments; that the existing local measures mostly were insufficient; that medical schools should get better opportunities; that the medical profession outside of the state hospital system should get better chances to promote special psychotherapeutic work and to provide for patients for whom the asylum demanding legal commitment was not essential and therefore not desirable." "Municipal efforts of the past have suffered through the notion that the insane form a definite class of dependents, an idea fostered by the number of chronic insane and of cases with recurrences and the relative frequency of close association with the same exciting factors as also lead their victims to the local almshouses and penal institutions." "So far the state has not concerned itself with any cases which were not either adjudged insane and committed or provided with papers which merely required formal sanction and already contained all the material and evidence calling for commitment. All other cases are really not within the jurisdiction of the state and should be looked upon as a problem of the local community."*

"The arrangement of a medical service for mental difficulties and mental disorders makes undoubtedly considerable demand in excess of other hospital services. The propositions to be dealt with are, as a rule, more subtle and requiring more judgment and time so that they cannot very well be left to the common arrangement of a relatively untrained house-officer and a hurried visiting physician." "General hospitals will always have delirious cases, frequently disgracefully handled to-day because under the extreme paternalism nobody knows any better. On the other hand, cases with symptomatic deliria may need surgical or other attentions and it is very important that all the facilities be at hand.

"Where the number of psychopathic patients is sufficiently large, the difference of régime of the psychopathic division suggests the provision of an independent plant, but as far as possible connected with a general hospital or close to it." "A great advantage of many of the foreign university clinics and special hospitals lies in their admitting a fair number of simple nervous disorders. For a considerable number of cases annexes to convalescent homes in the country would be most serviceable. They would have to provide habit-training and occupation such as a hospital in the city can rarely furnish. Where a psychopathic hospital is directly associated with a larger hospital for the insane, it is very desirable that the cases should be kept from being assimilated in the institutionalized mass of chronic cases. We know, of course, that a line should not be drawn between the 'recoverable' and the 'chronic,' but that some line should be drawn between those for whom something can be done (even if it is not a recovery) and those who belong to the organized boarding-house. Twenty-five per cent of the recoveries occur among patients of over one year's residence at a hospital. But there is a wider range of classification possible, and as soon as it will be attained more patients will go out with a different account of the work of our hospitals and ready to come again and to advise others to trust the steadily improving provisions."

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* I do not agree that the state is too remote to take care of emergency cases and that the whole matter of prophylaxis ultimately depends on local initiative. It is the state government as a whole that can best afford and carry out efficient plans for the early treatment of the insane, and if left to local initiative, I am very much afraid that outside of the large centers, such as Boston and New York, the local initiative will be found very inactive and in many places dead.

Dr. George J. Preston, Secretary of the Maryland Lunacy Commission, recommends a psychiatric ward for temporarily insane patients in one of their city hospitals, to be added to and established as a *psychiatric hospital* as the need grows.

Dr. Ray Fergurson, in January, 1907, reports the Territorial Insane Asylum in Arizona, of which he is superintendent, greatly overcrowded, and asks that $15,000 to build a *hospital* in connection with the asylum be appropriated.

Resolutions were introduced last year into the Illinois House of Representatives condemning the psychiatric clinic in one of the state insane hospitals, the ground of objection being that it would be an ignominy and hardship to the unfortunates. This is the only case I have seen where there was objection to clinics of mental diseases in hospitals.

In November, 1906, I visited the Bellevue Hospital ward, which is really not a hospital of observation as much as it is a hospital of detention. I was shown about by Drs. Gregory and Waterman. Patients are here received from the street, private houses and institutions, and usually committed while here and sent to the insane hospitals. Restraint was used in excited cases, as a sheet being put over a patient and across the bed and wound around side bars of bed. Other sheets were wound around the feet and tied to the foot bar, or around the waist, and under the arm pits and fastened to the head bar if the patient was very excited. If the patient was restless and worked away from this restraint, as do many alcoholics, the regular straight jacket with possibly very slight modifications was used. They also gave the warm and cold pack — hyoscin, paraldehyde and sulfonal. I know that neither Drs. Gregory nor Waterman approved of restraint, but until the new reception hospital is ready restraint will probably be used.

In June, 1906, the Board of Estimate and aldermen of New York City authorized the purchase of property between 73d and 74th streets with a frontage of a block on Exterior Street overlooking the East River, as a site for a State Reception Hospital and Dispensary for the Insane. The land, 200 x 250 feet, was to cost $146,000, and the necessary buildings $300,000, the land being leased to the state, and the State Commission in Lunacy erecting the buildings.

During a recent visit to Zurich, Dr. Frank told me that in Zurich cases of delirium tremens are sent to the asylum and kept until the delirium is passed. They are then given the choice of going to a good hospital for the treatment of alcoholic cases, or of taking care of themselves, only voluntary patients being received at this hospital. Switzerland is very proud of her work, and many take advantage of the opportunity offered.

In March, 1907, the managers of the Western Infirmary at Glasgow, Scotland, decided to undertake the treatment of incipient mental diseases in the dispensary attached to the infirmary.

E. Goodall, in the *British Medical Journal* of Oct. 27, 1907, urges that as many recent and curable cases of insanity as possible be treated in mental wards attached to general hospitals, and that county asylums be employed as convalescent homes for such patients drafted from the hospitals. He also urges the prohibition of marriage to persons released from the asylums.

In October, 1906, Lord Rosebery opened at Bangour, in Linlithgowshire, an asylum which the lunacy board of Edinburgh has erected on the Villa or segregate system for the care of the city's insane poor. This is the first complete example in Great Britain of this form of asylum. Accommodations will be provided for 1,000 inmates.

Berlin, Germany, has an observation ward in the prison hospital.

St. Louis has a lunacy commission for examining and deciding the sanity of prisoners, or persons under suspicion.

Frank W. Robertson, in an article in October, 1903, in the *American Journal of Insanity*, entitled "The Insane in Penal Institutions," says: "The earlier recognition of the insane in penal institutions would prevent the turning out on the public of a class of degenerates that are a peril to society." He asks how the recognition of the insane in penitentiaries can be thus made a factor in the diminution of crime, and answers it: "(1) By the establishment in every state of separate institutions for the insane and defective who exhibit criminal tendencies, where they can be held in custody until a competent medical tribunal shall determine that they are fit to return to society. (2) By examination by competent alienists, prior to sentence by Court to assist in reaching a proper determination of the case. (3) The appointment on staffs of all penal institutions of competent alienists, whose duty it shall be to recognize and secure the transfer to hospitals of those so markedly defective as to require such treatment." If it is not practicable to appoint an alienist for each institution, he suggests "that one be appointed in each state whose duty it shall be to visit and inspect the inmates of the penal institutions."

An observation hospital established by Massachusetts can be used as a place of observation for arrested criminals before or during their trial, where, without notoriety, their mental condition may be determined by experts and also without long legal entanglements. This would be a great saving of expense both to the friends and relatives of the person under suspicion, as well as to the state or city. There would be many cases which would probably be found to be suffering from an auto-intoxication.

Dr. Brower, of Chicago, says: "There is much in the investigations that have been made into the pathology of adolescent insanity by Dunton, Labouchier, Bredier and others, to lead one to suppose that the disease is caused by an auto-intoxication, probably emanating from the sexual organs, and this makes manifest the necessity for elimination by bowels, skin and kidneys and for maintaining the highest possible standard of general nutrition by alteratives and tonics."

In the *Review of Neurology and Psychiatry*, April, 1907, there is reported a case of "Acute Hallucinatory Confusion and Hepatic Insufficiency," by G. Deny and M. Renaud, and according to the authors the following is the interpretation of the case: "The patient had a slight gastro-intestinal affection; the liver was unable to exercise its normal rôle, and the mental disorder followed upon this hepatic insufficiency. The renal insufficiency accentuated the auto-intoxication. Clinically, the mental disorder was almost the only expression of the hepatic insufficiency."

In a Congress of Alienists and Neurologists, held at Lille, in August, 1906, Dide states "that he has never found bile in melancholia as did Gilbert in the hospitals. In any case the toxicity is experimentally shown to depend on its rapidity of injection as well as on the relative weight of the subject. Its increased toxicity in epilepsy alleged by Carantzine is subject to this critique." Among the psychiatric conclusions which Dide draws are the following: "Firstly, that the *délire* of all the infections and acute intoxications is one and should for the future be described as one. It is the manifestation of a direct attack upon the thinking cells by toxins conveyed by the blood; and the nature of the reaction depends much more upon the nature of the cell than upon the variety of the toxin. The sub-acute toxic infectious psychoses are not due to direct attacks of toxins, but to their direct influence in diminishing the anti-toxic function of the host. They are not specific. Into the next group general paralysis would fall, if Ford Robertson can maintain his position. Its pathogeny is the same, plus the alteration of the supporting tissues. Here the nomenclature of Fournier, 'parotoxi-infectious,' and its connotation is accepted by Dide, who, however, modifies the doctrine in denying specificity to the processes, thus placing in the same group general paralysis and dementia precox."

Dr. A. T. Schofield, in the *British Medical Journal*, Sept. 28, 1907, urges the necessity of teaching psychology in the medical schools.

Dr. Perpere in the *Progrès Medical*, Feb. 16, 1907, states that hypochondria, hysteria, epilepsy, profound confusions, visual and auditory hallucinations may all be caused by auto-intoxication which, in its turn, is caused usually by constipation.

Dr. Shute, at the American Medical Psychological meeting, May 7, 1907, said that one of the greatest reforms in medicine was putting the study of the human mind upon a scientific basis, realizing that no demon possessed the insane, and that in treating the insane, we are simply dealing with a scientific problem, one part of the body — the human brain.

Heinrich Stern, M.D., of New York, in an article on "Auto-intoxication and Its Treatment," in the *Medical Standard*, March, 1904, says: "The auto-intoxication is said to be intestinal when its supposed causative factors have arisen within the digestive apparatus; it is catabolic when, apparently, it is intra- or inter-cellular in origin. We are justified in speaking of intestinal auto-toxicosis only in those instances in which the poisonous substances are of endogenous formation, that is, when they are truly intrabiontic. Preformed poisons, whether ingested as such or introduced into the organism by the medium of water or decayed food, as a matter of course can never occasion autochthonous intoxication. The pathogenic micro-organisms and their toxins, even if the latter have been produced within the intestinal tract, in the same sense are ectogenous in character."

E. E. Barlow, M.D., in a paper on auto-intoxication read before the Arkansas Medical Society, May, 1907, includes a great many diseases and says: "Auto-intoxication manifests itself in various ways; some patients refuse to eat; others will be restless and cannot sleep well; headache, backache, becoming tired after a little exertion; usually have a yellow skin and think themselves 'bilious.'" "I live right in the swamps at Dermott. In the last two years I have studied every case of fever microscopically. I want to say to you that I believe honestly that three fourths of the so-called malaria in the southern country is auto-intoxication."

James Wright Putnam, M.D., of Buffalo, N. Y., in the *Alienist and Neurologist*, November, 1904, says ("Toxines of Insanity"): "Auto-intoxication from a disordered alimentary canal which produces disturbances varying between headache and irritability and confusional insanity is familiar to all of us."

In a letter of Oct. 9 to the Boston Medical and Surgical Journal, Oct. 25, 1906, Dr. G. F. Butler, of Chicago, brings out many interesting points on the relation of auto-toxemia to neuroses.

In the *Journal of the American Medical Association*, of Feb. 20, 1904, is a paper by Samuel Bell, M.D., Detroit, Mich., on the "Relation of Toxemias to Nervous Diseases." He says: "There is to-day no specialty in the field of medicine which presents more difficulties and dissensions among alienists and other scientific investigators than the satisfactory diagnosis, comprehension and treatment of disorders relating to the nervous system. Although more than two centuries have elapsed since Hippocrates prepared a foundation for the science of psychiatry, a rational and universally accepted conception of diseases presenting symptoms referable to disorder in nerve structure or function has not been reached." He considers auto-intoxication an important factor in the causation of mental diseases, and says: "Inasmuch as the majority of nervous and mental disturbances due to auto-toxemias have been found to owe their origin primarily to the stomach, intestines, liver, kidneys and various glandular organs, only brief mention will be made of other sources of intoxication, as the lungs, skin and circulatory apparatus, the latter reacting more often to toxins originating in the former class. Auto-intoxication may also occur primarily from disturbed metabolism in the lungs and skin. We will not include the many disorders resulting when the lungs become primarily diseased in structure and function, through bacterial agencies, such as tuberculosis, etc., in which a distinct toxin is formed by a germ and exerts a deleterious influence on the nervous mechanism." "The effect of thyroid extract on metabolism has been conclusively established by Baumann, Horsley, Hutchinson and many others. Laboratory experiments have demonstrated that extirpation of the thyroids and parathyroids in animals results in characteristic nervous manifestations, convulsions, paralysis, cachexia, dyspnea and death." In his closing remarks he says: " It is the opinion of alienists in general that the proper and vigorous treatment of mental and nervous disorders in their incipiency would lessen to a great extent the number of admissions to our asylums. My experience in both asylum and private hospital work has confirmed my views that the rational treatment of many acute and subacute cases along the line of deduction set forth in the preceding discussion will result in unexpected benefit and often remarkable recoveries."

C. C. Goddard, M.D., Associate Professor of Mental Diseases in the University of Kansas, in a paper read before the Kansas Medical Society, Topeka, Kan., May, 1906, says, under " Toxic Psychoses," there are many cases resulting from the use of alcohol and drugs which he has cured by gradual withdrawal of them, substituting tonics, strychnia, etc. In some cases the patients were not aware that the drugs had been withdrawn.

We will leave the argument that many mental disturbances often classified as insanity may be physical diseases with *mental* symptoms, and again take up further testimony in favor of an observation hospital. Dr. Henry R. Stedman, in an excellent paper delivered before the American Neurological Association, June 4, 1907, brings out the necessity for the establishment of charitable sanitaria for the cure or relief of sufferers from nervous diseases, who are poor or of moderate means. He also brings out the importance of better opportunities for the clinical teaching of mental diseases, and agrees with the foremost thinkers of to-day that the only hope of checking the increase of insanity lies in its prophylactic treatment. He adds that the neurologist and family physician should have exceptional opportunities for the observation and study of it in its initial stage.

The *Medical News* states, in a recent issue, that at the suggestion of the New York City neurologists, Hon. Robert W. Hebbard, administrator of public charities, has established the first neurologic hospital in America. The details of hospital organization have just been completed and a medical board formed. The new hospital is to be known as the Hospital for Nervous Diseases of New York City. The present capacity of the hospital is 250 beds. Buildings for the accommodation of 100 patients more are in process of erection. The medical staff will be divided into ten services. The hospital is located on Blackwell's Island. The medical board is composed as follows: Drs. Francis A. Scratchley, Pearce Bailey, Smith E. Jelliffe, Joseph Fraenkel, William B. Pritchard, J. Ramsey Hunt, Graeme Hammond, William Leszynsky, L. Pierce Clark (president) and Edward L. Hunt (secretary). The consultants are: Dr. Charles L. Dana, Edward D. Fisher, George W. Jacoby, Bernard Sachs, Joseph Collins, Frederik Peterson and M. Allen Starr.

Coulton says, under the heading of " Wards in General Hospitals for the Treatment of Transient, Mild and Very Curable Mental Attacks ": " I am strongly of the opinion that there are certain forms of mental disease that could be suitably and efficiently treated in our great general hospitals in special wards for the purpose. Without these I think such hospitals do not do their full duty to the poor. Especially since the treatment of so many recent cases of insanity by rest in bed at first has been found to be so efficient, the provision of such wards in general hospitals is called for. As things go in the world, it is a hardship for a puerperal woman who recovers in a month to have what the public will insist on calling the ' stigma ' of a ' lunatic asylum ' put upon her if it could be avoided. My opinion of massage in mental diseases is that it suits very few cases indeed, and does positive harm to most melancholics, but there are marked exceptions to this."

He has used enormous quantities of quinine, but considers strychnine the best nerve stimulant.

J. Montgomery Mosher, in a recent letter to me, says: " For my own part I am inclined to believe that connection with a general hospital gives certain advantages and overcomes certain disadvantages which render this plan preferable to what is nowadays being called a ' psychopathic hospital.' In the end there is not apt to be much difference between the hospitals for mental diseases, whether run under a Greek name or a Latin one." In his address on June 18, 1907, at Minneapolis, Minn., he brought out the importance of the training of hospital nurses in the psychopathic ward, stating that in Pavilion F of the Albany Hospital at least ten weeks are required on day and night duty in the men's and women's wards. He also states that it should not be forgotten that insanity is a disease; that the determination by a court of the treatment of disease is illogical; that a few patients in incipient stages, less than 25%, and probably not more than 10%, fail to recognize the morbid origin of their abnormal thought and action, and decline the remedy. He also says that it is of first importance that the attitude of officers and nurses should be one of service upon the patient, and never one of dictation or assumption of superiority or command. In Pavilion F of the Albany Hospital, from Feb. 18, 1902, the day of the first admission, to Feb. 28, 1907, 1,031 patients have entered. Of these, 596 have returned to their homes recovered or improved, 316 have remained stationary, and 86 have died. Two hundred and forty-five have been transferred to institutions for the insane; of these, 126 were sent to Pavilion F for detention during the legal proceedings, and 118 were committed after a period of observation. It thus appears that 905 patients have been under treatment without legal process, 118 of whom it was necessary to commit later to institutions for the insane.

An editorial in the *Journal of the American Medical Association*, Sept. 17, 1904, states: "The largest single enterprise in which the individual states in our country engage is the care of the insane. The state of New York has an insane population of 23,000, cared for at an annual expense to the state of $5,000,000, and many states have a smaller number in proportion to their inhabitants; others have a still greater. California, for instance, has 6,000 insane, — a number larger in proportion to her population than any other state."

An editorial in the Boston Medical and Surgical Journal, Dec. 29, 1904, refers to Drs. L. Pierce Clark, of New York, and E. Stanley Abbott, of Boston, as agitators along this line, and says: "Physicians in whatsoever line of work engaged should give their attention to this problem, as they do to the problem of tuberculosis or to the many others which affect the municipality and not the individual alone. The recognition of the need on the part of a large proportion of the medical public would unquestionably lead to the initiative which is necessary for the accomplishment of a definite result."

During the Russian War Dr. Paul Jacoby urged on the Red Cross that certain barracks and tents should be set apart for mentally disturbed patients, to isolate them and render possible the restoration of their nervous balance. The conditions of warfare all predispose to psychoses, under the most favorable surroundings, and the new forms of death — forms to which the mind is not accustomed — and the psychologic conditions which they create, must certainly have an influence on the psycho-physical condition and on the pathogenesis of nervous morbidity among troops in active warfare. They may, perhaps, originate new morbid forms akin to the traumatic and hysterical neuroses of industrial origin. In the campaign of Manchuria all these causes were cooperating with an unprecedented intensity, and the physicians at the seat of war have been so preoccupied with their surgical duties that these victims of the war were neglected or sent home, thirty or forty days of railroad traveling being superadded to the other factors of their psychosis.

Dr. Theodore Diller, under date of Jan. 27, 1905, refers to the City Hospital of Nuremberg, where 31 of its 946 beds are allotted to insane patients, and says it is an effort to follow out in practice the theory that insanity is a manifestation of sickness. To treat insane in a general hospital is an object lesson to the profession and laity alike. He believes that in no other way is it so likely to be studied on a proper basis by physicians. In no other way can so much be done to do away with the old idea of the laity that insanity is either a curse or a disgrace, and show that it is a bodily disease in which the brain shares. By no other means are patients so apt to be brought early for treatment of insanity. He thinks the plan has more to recommend it than that of pure psychopathic hospitals unattached to general hospitals, which by laymen will doubtless be called "insane asylums," no matter how modern their methods. He says: "For ten years I have been one of the visiting physicians to the insane department of St. Francis' Hospital of this city and on the basis of this experience I ventured the foregoing observations. I do not know of another general hospital in this country like St. Francis' of Pittsburg, with an insane department as an intimate part of a general hospital. I am convinced that much good would result if one or more hospitals in each city of the country would provide wards (properly equipped, of course) for a few insane patients. Acute cases only should be taken."

Déjerine is so impressed with the value of isolation and psychotherapy in the treatment of hysteric and neurasthenic women that he has adopted these measures in his general hospital practice. He isolates the patient's bed in the ward by curtains around the bed, prohibiting all intercourse with the family, friends, or even the nurses. The visit of the physician in the morning and of the interne in the evening and the attendance of the nurses under the strict supervision of the head nurse, are the only means of communication between the patient and the world outside her curtains. Physical cases with mental symptoms would in many instances find their way to an observation hospital. In January, 1905, J. W. Wherry, M.D., of Clarinda, Ia., read a paper before the Pan-American Congress at Panama entitled, "Is Delusional Insanity Due to Disease of the Brain?" Many now feel that it is not, and it is indicative of the trend of the times that this medical opinion exists.

The London correspondent of the *Journal of the American Medical Association* writes under date of Feb. 22, 1908, thus: "Dr. Henry Maudsley has offered to the London County Council $150,000 toward a hospital for mental diseases. This noted alienist said that as a physician who has been engaged in the study and treatment of mental disorders for more than half a century, he has been deeply impressed with the necessity for a hospital, the main object of which would be: (1) The early treatment of patients with acute mental disorder, with a view, so far as possible, to prevent the necessity of sending them to the county asylums; (2) to promote exact scientific research into the causes and pathology of insanity, with the hope that much may yet be done for its prevention and successful treatment; and (3) to serve as an educational institution in which medical students might obtain good clinical instruction."

Burton Chance, M.D., writing for the *Outlook* of December, 1904, speaks of "Needed Reforms in the Care of the Insane " in some of our modern institutions. He says:

" Here, indeed, was a vast organization, but what of the unhappy beings for whom it existed? There were hundreds of them isolated from their friends and kindred, yet huddled together and treated as one — a being from whom all society shrank as from a pestilence. Their physical comfort was cared for to the last degree; no reasonable demand was denied. But nowhere was there the suggestion of treating the disease which brought them there. All other needs were supplied save that. It was a sight to make one's heart sink. One could not refrain from asking, ' What are you doing for the man's insanity? ' He is not a prisoner; he is a patient. You amply clothe his body and suitably feed him and comfortably protect him. What have you done for the treatment of his diseased brain? To this the chief physician and his two assistants — a man and a woman — think of only those three for that army of brain-sick beings! — could not reply. So long as the lunatics were made comfortable and treated kindly, well fed and afforded religious consolation, and amused to their heart's content, little more remained to be done. Medicine could offer no further advice, and consequently the services of one physician of experience were deemed sufficient to overlook the general health of the community. This vast establishment instead of developing into a great hospital for the cure of the disease, instead of affording a laboratory where scientific investigations might be made, had done little more than maintain a high character as a model lodging house for the insane.

" In the meantime, from the operation of peculiar circumstances, the diseased conditions of the brain which threaten or constitute insanity have practically been left almost uninfluenced by the advance of medical science. Speaking generally, this advance has been the work of hospitals, and the insane have been denied participation in its benefits because they have been relegated to asylums, the primary object of which is to dispose of the insane in such a manner that they may injure neither themselves nor others. They are permitted to recover, if they can.

" The value of a hospital report scientifically is questionable, but the meagerness of this one is to be deplored. From a resident population of 500 persons nothing is denoted by this report except the almost idle classification of the maladies of the afflicted ones into a dozen or so groups. The significance of this leads one to consider whether an insane person is assisted to get well by its being written down that his case should be included under such and such a classification, founded upon the character of his delusion or the peculiarity of his conduct; while the real basis of his physical disease on which his condition depends is very liable to be buried under a nomenclature which is apt to degenerate into jargon." " We seek almost in vain in our asylums for evidences of systematic inquiry into the study of diseased states of the brain, or of their treatment by which mental equilibrium may be restored. It is most rare to find a special pavilion for the observation and treatment of recent and acute cases." " The heavy burden of expense in every state, the duty of men to their afflicted brother, demand it. The necessity for some preventive measures is becoming apparent to all. Such preventive measures must be directed to the care of incipient and acute cases. For this we need numerous, well-equipped, psychopathic hospitals and numerous well-equipped alienists among our general practitioners. What every case of insanity demands, as the primary condition for recovery, is separate and individual treatment and consideration."

" The patients should be attended by carefully trained nurses. They should be submitted to the same system of examination as the patients in general hospitals. Every scientific appliance for the diagnosis and treatment of the disease should be called into requisiton, and every phenomenon should be carefully recorded. Each patient should be treated on the purest hospital principles for at least a year, unless recovery has been attained in a shorter period."

A CASE OF INFANTILE PYLORIC STENOSIS, WITH AUTOPSY SIX AND ONE-HALF MONTHS AFTER SUCCESSFUL GASTRO-ENTEROSTOMY.*

BY JOHN LOVETT MORSE, A.M., M.D.,
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AND

FRED T. MURPHY, M.D.,
Surgeon to Out-Patients at the Massachusetts General Hospital, and Assistant Surgeon at the Infants' Hospital, Boston.

PATHOLOGICAL REPORT.

BY S. B. WOLBACH, M.D.,
Instructor in Pathology, Harvard Medical School.

Charles D., born at full-term May 20, 1907, after a low forceps delivery, was the first child of healthy parents. He was normal at birth and weighed 6¾ lb. The breast milk appeared early and was abundant. It was examined on two occasions and found normal. He gained steadily and was perfectly well until he was two weeks old, when he weighed 7¾ lb. He then began to vomit and vomited continuously up to the time he was seen, July 6, 1907, when he was seven weeks old. At that time he was vomiting everything, sometimes immediately after nursing, at other times just before nursing. At other times he kept down several nursings and then vomited a very large amount at once. Giving the breast-milk in a bottle made no difference in the vomiting. Diluting it with lime water and water during the nursing had no effect. He never vomited bile. His bowels moved once or twice daily. The movements were small and consisted largely of mucus. They were not dark colored. He had lost weight steadily, then weighing only 6 lb. 10 oz.

Physical examination. — He was small and thin, but of fair color. The abdomen was sunken. He was fed and immediately vomited. The vomiting was not characteristically explosive. He was fed again and retained it. When the stomach was full there was marked visible peristalsis, the waves passing from left to right. The lower border of the stomach was about 1 cm. below the navel. In the right nipple line, just at the edge of the liver and deep down, a mass feel-

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* Read before the New England Pediatric Society, Feb. 15, 1908

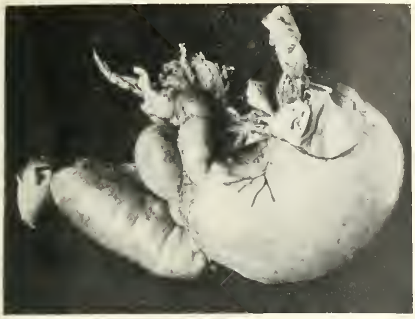


FIG. 1. Anterior surface of the stomach.

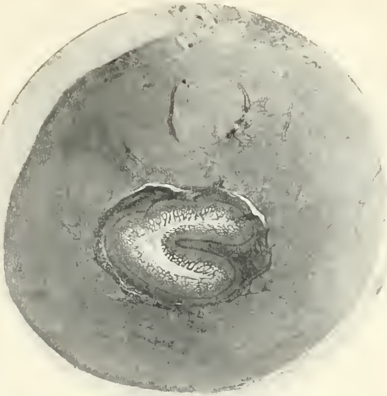


FIG. 4. Cross section of the pylorus through about the middle showing the folding of the mucosa and the great thickness of the muscularis.

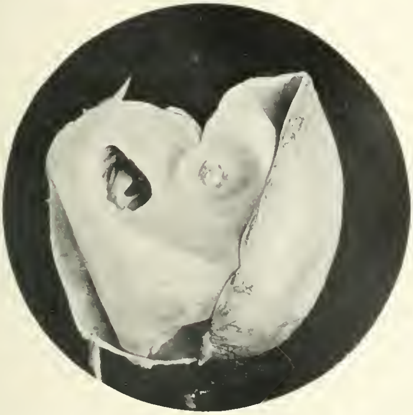


FIG. 2. Pylorus and gastro-enterostomy opening from the stomach side.

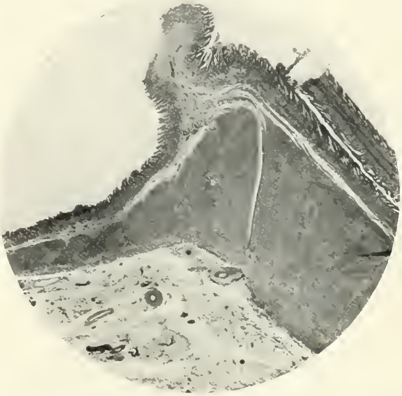


FIG. 5. Longitudinal section of the pylorus on stomach side showing the relative thickness of the pylorus and the stomach wall.

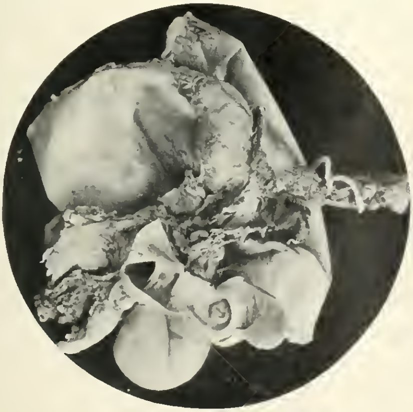


FIG. 3. Pylorus from the duodenum.

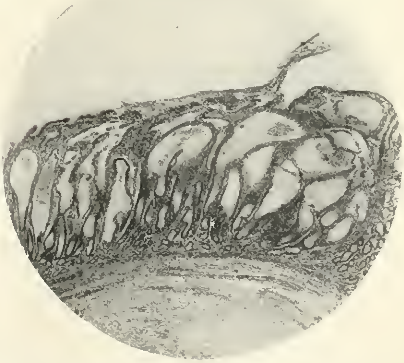


FIG. 6. Mucosa, showing the dilatation of the glands with mucus.

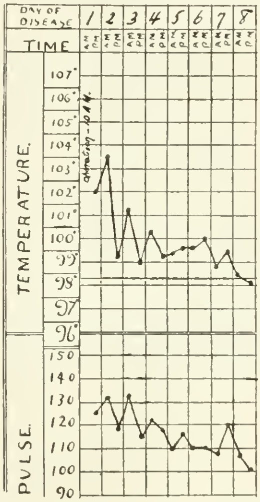
ing a good deal like 2 cm. of a lead pencil was indistinctly made out. The rest of the examination was entirely negative. Immediately after the examination he vomited a large amount explosively.

Operation by Dr. Murphy, July 8, at 10 A.M. He was given half an ounce of peptonized milk by enema every three hours during the previous night. His condition at the time of the operation was fair. The stomach was washed out and found empty. An incision was made, 2 in. long, just at the edge of the median line in the epigastrium. The stomach was found markedly dilated, the lower border extending below the umbilicus. The walls were thickened and edematous. The omentum contained no fat. At the pylorus was the typical tumor of congenital pyloric stenosis. This was about one inch long and as large round as the first finger of an adult. It was bluish in color, hard and elastic to the touch. There was a marked constriction ring on the gastric side. The small intestine was collapsed and abnormally small; the large intestine was not remarkable. A no-loop posterior gastro-enterostomy was done, clamps being used. Celloidin linen was used for all sutures. The jejunum was anastomosed to the stomach in the pyloric region running from right to left and downward to the greater curvature. The "in, out and over" stitch of Mayo's was used on the anterior suture. The jejunum was stitched to the stomach wall on either end beyond the line of suture. The stomach and intestine were kept warm with salt solution during the operation. The abdominal incision was closed with through-and-through sutures of silkworm gut with interrupted chromic gut sutures in the fascia. The condition at the end of the operation was good, as was the recovery from ether.

Convalescence. — The feeding in this case was of considerable interest. The operation was done at 10 A.M. Nothing was given until 6 P.M., when 2 drams of breast milk were begun and repeated every two hours. During the next twelve hours about a teaspoonful of brownish material was vomited after each feeding. Nutrient enemata, begun at the same time, were retained. The breast milk was then reduced to 1 teaspoonful every hour. This was vomited almost continuously, the vomitus being mixed with bile. Washing out the stomach brought away a good deal of bile and mucus. Enemata of 4 drams of peptonized milk every four hours were retained, as was salt solution in 4 oz. doses given subcutaneously. Vomiting due to peritonitis or mechanical obstruction was ruled out by the physical examination and general condition, and irritation of the stomach accepted as the explanation. The next day, that is, forty-eight hours after the operation, a mixture of breast milk $\frac{1}{4}$, lime water $\frac{1}{4}$ and water $\frac{1}{2}$ was given in $\frac{1}{2}$ dram doses, every hour. This was retained and quickly increased to a dram at a feeding. Both the strength of the mixture and the amount at a feeding were then rapidly increased, the changes being well borne. One-half ounce at a feeding was not reached, however, until the end of a week. He began to take the breast on the eleventh day. The enemata were kept up for four days and salt solution was given subcutaneously from time to time for eight days. Everybody concerned with the case felt that the salt solution subcutaneously, and to a less extent the rectal feedings, had a great deal to do with the successful result. This baby, at any rate, was unable to take even diluted breast milk in any considerable amounts in the beginning. The bowels began to move in thirty-six hours, the movements at first resembling meconium. They showed no traces of milk until the fifth day.

Further history. — The baby continued to do absolutely well, weighing 19 lb. when seven and one-half months old. During this time it had had only breast milk, had not vomited, had had perfectly normal movements and had developed in every way like a normal baby. It was taken ill Jan. 16, 1908, when eight months old, and died Jan. 25, after a rather indefinite illness, which proved by autopsy to be idiopathic peritonitis.

Autopsy by Dr. Wolbach twenty hours after death. The body was well developed and well nourished, 68 cm. long. The prepuce presented a clean, crusted line secured with catgut sutures, the result of a circumcision Jan. 16. Careful dissection, with special reference to an ascending infection, showed nothing abnormal. The thymus, pleural and pericardial cavities, heart, lungs, liver, spleen, pancreas, kidneys, adrenals and aorta showed nothing abnormal.



The omentum was adherent to the peritoneum at the site of the old operation wound over an area about 1 cm. in diameter. The peritoneal cavity contained a large quantity of rather thick, yellow, puriform material. The intestines were everywhere glued together by yellow fibrinous material. The surface of the liver, spleen and portions of the mesentery, which enclosed quantities of puriform liquid, were coated with a thick layer of elastic fibrinous material. The appendix was normal, 4 cm. in length, was directed upwards and backwards, had a mesentery and showed the fold of Treves. The peritoneal surfaces of the gastro-intestinal tract were pale, except those portions directly in contact with the exudate, which showed a moderate degree of injection. The lesser peritoneal cavity contained an exudate similar to that in the general cavity. The stomach and intestines were moderately distended with gas. The pylorus was tightly contracted and of a distinctly yellow color in contrast to the normal pinkish-gray of the stomach and duodenum. On palpation it presented as a firm resilient cylinder, 1.5 cm. long. There was a sharp line of junction between the slightly distended stomach and the contracted pylorus. The external diameter of the pylorus was 1.2 cm.; that of the duodenum, 2 cm. On the posterior wall of the stomach near the pyloric end was secured a loop of the jejunum. It was attached to the wall of the stomach in such a manner that the proximal end ran parallel to the first portion of the duodenum. The proximal arm was about 10 cm. in length. Both proximal and distal loops were moderately distended with liquid contents and gas. The line of junction to the stomach was marked by a compact band of tough fibrous tissue. The mesenteric lymph nodes were large, soft and pale; on section they were uniformly pale yellowish white, moist and soft.

Gastro-intestinal Tract. — The esophagus, stomach and first portion of the small intestine were injected with a 10% solution of formalin and preserved *in toto.* The small intestine contained a small quantity of thin, yellowish plastic material, with an offensive odor. The large intestine contained a thin, liquid, yellowish material of slightly offensive odor. In the ascending colon the solitary follicles were slightly enlarged, a few of which showed minute depressions surrounded by narrow injected zones; otherwise the intestinal mucosa was normal.

The stomach was injected with a 10% solution of formalin, through the esophagus, which was cut about 9 cm. from the stomach. No pressure was used in filling the stomach, other than that exerted by the column of liquid. During the process none of the liquid passed through the pylorus, as was shown by the fact that when the gastro-enterostomy opening was kept closed it was impossible to inject the duodenum and loop of jejunum. On releasing the gastro-enterostomy opening, the duodenum filled via the proximal loop.

In the hardened stomach the gastro-enterostomy opening measured 3 x 1.5 cm.; the long axis was parallel with that part of the greater curvature of the stomach which was opposite the opening. The upper border of the opening, measured along the posterior wall of the stomach, was 2.5 cm. from the pylorus. The right border was parallel to and 2 cm. from the greater curvature. Stretched along the edge of the right side of the opening were three black-silk sutures. The communication between the stomach and the distal loop of the jejunum was a free one, measuring about 1.5 x 1 cm. It was situated at the lower end of the gastro-enterostomy opening, the upper portion of which was opposite the inter-adherent walls of the flexed intestine. The pylorus was tightly closed and both ends presented puckered folds of the mucous membrane, which projected slightly into the stomach and duodenum.

Anatomical diagnoses:

Acute general fibrinous purulent peritonitis.
Old gastro-enterostomy (functional).
Circumcision (recent).
Colitis (slight).

Microscopic description. — The heart, lung, liver, pancreas and aorta showed nothing abnormal.

Spleen. — There was a marked congestion and many small hemorrhages into the pulp. The splenic corpuscles were small, circular in outline and contained very few active cells. The pulp contained a slight excess of polymorphonuclear leucocytes and many mitotic lymphocytes. There were numerous clumps of large cocci; some were lanceolate diplococci; others were in chains, and occasionally a clear space surrounded a single pair of the organisms.

Kidney. — There was marked granular degeneration of many convoluted tubules and there were many imperfectly developed glomeruli. Otherwise the kidney was negative.

Adrenal. — The medulla contained many hemorrhages; otherwise it was negative.

Mesenteric lymph node. — There were large necrotic areas containing large colonies of micrococci in pairs and chains. The follicles showed no evidence of activity. The sinuses were distended with cells, mostly large mononuclear cells with basophilic protoplasm. Many were undergoing mitosis. There were few polymorphonuclear leucocytes, but many of these contained numbers of cocci. Everywhere in the sinuses were enormous numbers of cocci.

A lymph node attached to the thoracic aorta contained cells and bacteria in the sinuses similar to those found in the mesenteric node.

Peritoneal exudate. — The exudate upon the surface of the spleen and intestine contained enormous numbers of large micrococci; a few occurred in pairs and were surrounded by clear spaces suggesting capsules; most, however, were in short chains. There were few cells and a small amount of fibrin. Most of the cells were degenerated large mononuclear cells, probably from the peritoneum, and polymorphonuclear leucocytes.

Pylorus. — A cross section taken through the middle of the pylorus showed a very thick wall of perfectly normal, smooth muscle. The increase in thickness was due chiefly to the increase in the inner layer of circular fibers. The submucosa was normal and was folded into the lumen. The glands of the mucosa were flattened and dilated with mucus, where the surfaces were in contact between the folds. The flattening and distortion of the glands was best seen in a longitudinal section made through the pylorus between the stomach and the space from where the circular piece was removed. This section showed the folded surfaces of the mucosa in contact. A similar section from the duodenal end showed normal smooth muscle in the thickened pyloric portion and normal submucosa. The mucosa showed very marked cystic dilatation of the glands, which were filled with granular coagulum. The duodenum was normal.

SUMMARY AND DISCUSSION OF AUTOPSY.

The cause of death was a general peritonitis without demonstrable anatomical cause. Special attention was given to the tissues about the gastro-enterostomy, both at the autopsy and afterwards in going over the hardened specimen. The condition of the gall bladder, appendix and gastrointestinal tract rules out infection from these sources. The negative findings in the dissection of the spermatic cords and seminal vesicles make an infection from the penis very improbable. Normal pleural and pericardial cavities exclude these as sources of infection. Finally, the absence of any older localized process and the diffuse, even distribution of the exudate forces us to the conclusion that the infection took place through a vascular route.

The infecting organism, judging from the morphology in sections, may be either the pneumococcus or the streptococcus, probably the former, for growth in chains is not unusual in cultures and in exudates, while lanceolated, encapsulated forms are rare with organisms which can positively be identified as the streptococcus.

The microscopical findings in the pylorus are surprising, because of absence of degenerative changes in the smooth muscle, either in the form of atrophy or in connective tissue overgrowth. The closed state of the pylorus was proved by the mechanical tests applied and by the rigidity and thickness of the walls, which are in striking contrast to the usual post-mortem condition of the pylorus in infants. The flattening of the mucosa can hardly be considered as an evidence of permanent closure. The cystic dilatations of the glands are probably mechanical in origin, though a few similar cysts have been seen in the mucosa of the normal pylorus of infants. In the case of an infant a few weeks old, operated upon for pyloric stenosis and which died a few days later, only slightly dilated pyloric glands were found. This fact supports the belief that in the case here reported, the long-continued closure of the pylorus was the cause of the glandular dilatation.

This is the first time, so far as we know, that any one has had the opportunity of studying the anatomical conditions in a case of infantile pyloric stenosis at so long a time as six and one-half months after a successful gastro-enterostomy. This case proves that in some instances, at least, the stenosis is not due to spasm, that medical treatment cannot be of any avail, and that the only hope for relief and life lies in surgical intervention. It also proves that an infant can live and thrive for many months, although all the food passes through the gastro-enterostomy opening and none through the pylorus. It suggests that the condition of organic infantile pyloric stenosis is a permanent one, that there is no tendency toward a restoration of normal conditions, and that there is little hope of the pylorus ever resuming its functions. It is not safe to draw conclusions from these suggestions, however, as it is possible that with the lapse of time and the growth of the parts, changes may occur which will result in the restoration of normal conditions and function. These points can only be decided by the actual observation of the anatomical conditions in cases dead at longer intervals after successful operations.

A CASE OF CONGENITAL STENOSIS OF THE PYLORUS.*

BY CHARLES W. TOWNSEND, M.D., BOSTON.

A MALE infant, sixteen days old, was admitted to the Boston Floating Hospital on Aug. 9, 1907, and was seen by me at the beginning of my service, four days later. The infant was born at full term on July 24, and had been breast fed until its admission to the hospital. Since then it had had its stomach washed, it had been fed on sugar water, whey and breast milk. Soon after birth regurgitation occurred, following each nursing. Later the vomiting became a marked symptom, generally after each feeding, and sometimes explosive or projectile in character. If the food were retained for one or two feedings, the total amount would afterwards be vomited. Almost continuous regurgitation of food was sometimes noticed, so that the napkin under the head was always wet.

The dejections were black and stringy, and their appearance, even on the twentieth day of the child's life, when I began my service, was that of meconium. Apparently no food found its way through the intestine, yet the infant appeared in fairly good condition, and showed but little loss of flesh or color.

The examination of the abdomen showed slightly greater prominence in the upper than in the lower portion, and an increase in the area of stomachic resonance. At no time could any mass be felt at the pylorus, and no peristaltic movements could be seen.

The apparently good condition of the infant made it seem probable that some food was digested, and passed through the intestinal canal, but careful observation showed that as much was vomited as was received, and at no time was there any evidence of food material in the stools.

The case was referred to Dr. James S. Stone, but as the infant gained an ounce, and as the results of examination of the abdomen were so negative it seemed advisable to postpone the operation until the 24th day of the infant's life on Aug. 17.

OPERATION BY DR. J. S. STONE.

Ether anesthesia. Through a perpendicular incision through the outer border of the left rectus the stomach was exposed and was found to be much dilated. The pylorus was felt to be firm and enlarged. The whole large and small intestine was found to be collapsed. The lower anterior part of the greater curvature of the stomach was seized with clamps and a loop of small intestine immediately below the duodenum withdrawn and seized with clamps. An anastomosis was then made with a double row of silk sutures. During the operation the child stopped breathing and artificial respiration had to be continued for several minutes. Aside from this the greatest difficulty was in determining which loop of the collapsed small intestine led up to the duodenum. It seemed wiser in view of the condition of the child to do an anterior rather than a posterior gastro-enterostomy because the latter operation would have added a little to the difficulties. The child stood the operation, which was prolonged by the delay mentioned, fairly well and rallied well afterward. The abdominal wound was closed without drainage.

The operation was well borne by the infant. On the second day diluted mother's milk was given, and about half was retained. The movements for the first time in the infant's life showed traces of food. Vomiting continued, however, from time to time, the infant grew weaker and on the third day after operation, the twenty-seventh day of its life, it died.

The interesting points in the case are the facts that so little weight was lost, and that the color and general condition of the infant remained so good, notwithstanding the occlusion of the pylorus. The birth weight is not known. The weight on the 17th day was 7 lb. 5½ oz.; on the 19th day, 7 lb. ½ oz.; on the 21st day, 6 lb. 11½ oz.; on the 22d day, 6 lb. 12½ oz.; on the 24th day, 6 lb. 11 oz.

AUTOPSY BY DR. S. B. WOLBACH, on Aug. 20, 1907:

Body of a well-formed, fairly well-nourished, white male infant. . . . On the anterior surface of the stomach, close to the greater curvature, and about 6 cm. from the pylorus, there is sutured a loop of the small intestine. . . . The union between small intestine and stomach is firm and dry. There are no adhesions to other structures. The pylorus is felt as a very dense cylindrical mass about 1 cm. long and ¾ cm. in diameter. . . . Pylorus is tightly contracted; with slight pressure a tapering probe dilates the opening to 2 cm. in circumference. On section there is an enormous thickening of the muscle layer, forming a well-defined band encircling the pylorus, 1 cm. in width and about 2 mm. in thickness. The mucous membrane enclosed by the pyloric ring lies in longitudinal folds. There is no evidence of scar tissue. The stomach contains a small quantity of clear liquid with white flocculi. The distended loop of the duodenum contains brownish, tenaceous material, which is inoffensive. The collapsed small intestine is absolutely empty, except for an occasional small mucous particle. The colon is normal. The lower portion contains a little thin, yellowish inoffensive material.

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* Read before the Boston Society for Medical Improvement, Jan. 27, 1908.

Anatomical diagnosis: Congenital hypertrophy of the pylorus. Gastro-enterostomy operation wound.

THE SCOPE OF THERAPEUTIC INOCULATION.*

BY G. P. SANBORN, M.D., BOSTON,

Formerly Assistant in Bacteriology, Harvard Medical School; formerly Assistant to Dr. John H. McCollom, South Department, Boston City Hospital; formerly Assistant in Prof. Sir Almroth E. Wright's Laboratory, St. Mary's Hospital, London.

The illuminating lecture that Prof. Sir Almroth E. Wright delivered in Boston, somewhat over a year ago, profoundly interested me. It seemed to offer us some hope of being enabled to treat successfully certain infections, over which we have hitherto been practically powerless. I had particularly in mind the septic complications of diphtheria and of the exanthemata, which are responsible for so great a proportion of the mortality in those particular diseases. The success of anti-toxin in diphtheria which I have seen during a two years' service at the South Department of this hospital served by its very contrast to emphasize the lack of specific treatment in other infections. It was my privilege last June to go to London for the purpose of study under Sir Almroth Wright. I entered his laboratory as a beginner, never having carried out, or seen carried out, either the opsonic laboratory technic or the methods of treatment, and I therefore can say that I was absolutely unprejudiced either for or against Wright's particular methods.

After less than three weeks spent in acquiring a rudimentary knowledge of the technic, I grasped an opportunity that offered to spend the month of July in the study of the general subject of immunity at the University of Cambridge under Prof. Sims Woodhead, Dr. Louis Cobbett and others. When I returned to Wright's laboratory Aug. 1, I felt myself much better equipped to take up the study of his methods and to judge for myself as to their usefulness, because not only had I reviewed the subject of immunity, but had acquired the view points of the very able men above mentioned, as applied to opsonic methods. Although Wright's work was discussed absolutely fairly, I could see that there was little enthusiasm at Cambridge over opsonic methods or the results of treatment by bacterial vaccine. This I found emanated from the fact that certain investigators there had completed a careful and exhaustive study into the accuracy of Wright's method. Their results showed that the possible error might be at any time from 25% to 100% or more, and they are quite in accord with the results of many other investigators based on a much less elaborate study. I was therefore in a more or less skeptical frame of mind when I returned to Wright's laboratory, but I still felt that there was to be balanced against their unfavorable evidence, the result of a few months' work, the careful painstaking investigations of Wright and Douglas and their co-workers, extending over several years, to say nothing of that of Bullock, the whole, the result of carefully directed effort along one special line.

It happened that, at the time of my return, Wright was in need of an assistant for routine work and was good enough to appoint me for this position which I held for five months. I was thus enabled by engaging in the daily routine to become familiar with opsonic technic and, by being present at the clinics, to carefully follow the cases in their treatment and progress. The result of my work there, which I consider first in importance, was that I was enabled to follow certain investigations that were being carried out regarding the reasons for inaccuracy in opsonic determination; that is, the sources of error in carrying out the technic. These researches have not yet been published, and I have yet to see evidence that they are recognized by any of the important critics of Wright and his methods. These researches will in due time be published from Wright's laboratory, and although I have a record of the experiments and results, it is, of course, not for me to give them in detail. I feel permitted, however, to say that one who is not cognizant of these sources of error cannot hope to obtain accurate opsonic indices unless he chances to be lucky. Given the most perfect technic that any one can develop after three months' constant practice, there still remain four or five at present unrecognized sources of error which, unless guarded against, may produce inaccuracies varying from 25% to 200% or 300%, and I have no doubt that some of them are responsible for the very bad results that have led many workers to give up opsonic determination. With a realization of these sources of error and of methods to guard against them, the limits of variation in the opsonic indices of normal people, according to a multitude of evidence that I have obtained from the records of Wright's laboratory, should be but 10% in three quarters of normal cases examined and not more than 20% in the remaining one quarter. There is, I submit, no reason to anticipate a greater range of variation due to errors of technic in the indices of patients than in those of normal people. I can say from experience, that a possible error of 10% or occasionally of 20% I know to be consistent with usefulness for the opsonic index.

During my first two months of service, I put the opsonic index to as many tests as possible and was soon able to convince myself that, as done in Wright's laboratory, it is sufficiently accurate to be useful. I was able to see it applied and to apply it successfully in the determination of the maximum dose of tuberculin at the earliest possible moment and of the proper interval between doses, in the decision of questions of differential diagnosis and of questions as to whether in a given case the disease process is quiescent. When one has finally arrived at a proper dosage of tuberculin, it is possible to get along with only an occasional index determination if the particular case is doing well. It not, the opsonic index will often tell us the reason. To obtain a large number of indices for a clinic, much laborious work is necessary and one is often compelled to use the opsonic index only when it may settle some definite question that the best clinical observation cannot settle. You can inoculate some cases of tuberculosis without the opsonic index fairly successfully; but I believe that by its judicious use we can feel that we are at least making an earnest endeavor to elevate immunization by bacterial vaccines out of the realm of empirical medicine.

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* Read at a clinical meeting at the Boston City Hospital, March 26, 1908.

I cannot speak too appreciatively of the opportunities extended to me by Professor Wright, by Captain Douglas and their associates at the St. Mary's Hospital, of their many kindnesses and of the advantages that I derived from these associations. The ideal of using one's best endeavors to the end of arriving at the truth by laboratory and clinical procedures and of applying it rationally in the interest of the individual patient, of searching for better reasons before instituting a therapeutic measure than clinical observation, can commonly furnish, as well as for more accurate methods for measuring the effect of such therapeutic measures, appeals to me as being a fundamental factor in the brilliant work of Professor Wright. This breaking away from empiricism is nowhere more strongly exemplified than in his teachings. From the profound knowledge of the subjects with which he deals, as displayed by him in his writings, we cannot conceive of his wasting his time with methods that he cannot use in the direction of medical improvement. In the matter of his attitude toward his present methods of determining the opsonic content of the blood, it is one of readiness to accept some better method if it is offered, but of unwillingness to give up present methods, though imperfect, with nothing better to take their place. One cannot but feel, after a service in his laboratory and clinic, that the endeavors of Professor Wright, of Captain Douglas and the able, enthusiastic group of men associated with them, will have an important place in the progress of scientific medicine.

The Department of Therapeutic Inoculation, of which Wright is the head, is a department of St. Mary's Hospital, an institution of three hundred and forty beds, an out-patient clinic of about twenty-five thousand, and about twenty-five thousand casualty cases each year. This department is equipped with three large laboratories; one for Wright and his personal assistants, a second for routine opsonic work for the clinic and a third for instructional purposes, to which men are coming from various parts of the world to learn the methods. The equipment is most excellent and every need of the worker is met without delay.

There are four assistants who, at a moderate stipend, are engaged in routine opsonic determination and in such other procedures as become necessary for the proper study of the cases. In the routine laboratory from twenty to fifty specimens of blood are examined each day for the opsonic content, and in the research lablaboratory quite as much routine work is done. Besides this, there are several men engaged in research work under Wright's direction. The house cases are in charge of his personal assistant, to whom they are referred for decision of questions of diagnosis and treatment by opsonic methods. The enthusiasm of the workers is such that they are by no means particular as to their hours of work, and rarely is the laboratory vacated until two or three in the morning.

The out-patient clinic, consisting largely of cases of localized tuberculosis, meets Tuesdays and Fridays and attracts from 40 to 60 cases each day. They are for the most part referred from the ordinary out-patient clinics and are sent back from time to time to the several clinics from which they came, as new conditions arise that may call for other methods of diagnosis and treatment and for notes as to their progress. The Inoculation Department is therefore kept in close touch with the other departments of the hospital. The new laboratories have been in use only since last June, when they were turned over to this new department in recognition of its success in treating a class of cases that had never been other than a burden to themselves and to the other out-patient departments. They are located in the new wing of the hospital, most of which, though completed for two years, has not been opened on account of the lack of necessary subscriptions. It is an unfortunate fact that, like most large London hospitals, St. Mary's is dependent on the voluntary subscriptions of public spirited citizens. The fact that funds were forthcoming for Wright's department in the new wing of the hospital, when funds were lacking for other purposes, may be taken as a personal tribute to Wright and to his work.

Inasmuch as improvement in the class of chronic cases treated is for the most part slow, quite in proportion to the chronicity of the diseases, observation as to results, even though they extend over a period of six months, cannot be called sufficient to enable one to arrive at definite conclusions regarding the efficacy of treatment in every group of cases. But such facts as I have and observations I have made are something as follows:

Lupus is one of the more or less intractable diseases in its response to any method of treatment. In some cases inoculation with tuberculin T. R. and B. E. is attended by striking results. The ulcerative type heals more readily than the dry type, apparently because local circulation is apt to be better. We may have to call in to assist us, x-ray, Finsen rays, cupping or poulticing, to the end of causing a determination of the blood, with its newly formed protective substances, into contact with the bacteria in the affected part. Among the thirty or so cases that I have seen, none showed extensions of the process after inoculation was under way; a few showed no improvement; the majority showed definite progress. Occasionally it is best to seek the aid of surgical methods. I have in mind a case of this type, a boy with a patch of dry lupus on his cheek, the size of a quarter, which did not improve after a year's inoculation and the patch was excised. Inasmuch as I never have seen so many cases of lupus treated by other methods, I am unable to make any comparison of relative efficacy of such methods and those of Wright. But as many of his cases have a very chronic history, have been treated for years, some of them with no improvement, only to show a steady gain after inoculation with tuberculin, I am led to believe that tuberculin may offer greater hope of success than other methods. The dry type of lupus is commonly complicated by a staphylococcic or streptococcic infection, which, in addition to tuberculin, has to be met by the use of an appropriate vaccine.

Ulcerated areas seem quite amenable to treatment and may respond in a few months. Improvement and cure have been obtained in lupus by the use of x-ray or Finsen ray, but relapses are very frequent. It has been found that if such cases are inoculated with tuberculin in addition, this tendency to relapse is never so prominent.

Tuberculous ulcerations of the skin and subcutaneous tissue, according to Wright, " offer the most unfallacious evidence of the advantages gained by the use of tuberculin." The work of Bullock and Western at the London Hospital corroborates this view. I have seen many cases presenting scars of healed ulcers and many others that appeared to be healing consistently. The type of successful case that I have in mind had an ulcer of the forearm of long duration, was inoculated for four months and healing resulted. A case may be refractory because of the location of the lesion, predisposing it to poor circulation. A type of such case had an ulcer of the leg, size of the palm, which required a year's treatment with tuberculin for it to heal to one half its original size.

Ulcers, and particularly *sinuses*, may require local treatment as well as inoculation to the end of increasing local circulation, bringing thereby to the part the anti-bacterial substances which our inoculations have produced. For this purpose poultices, Bier's bandage and cupping are used as indicated. In sinuses we have to consider the possible plugging of lymphatic channels by coagulated lymph, thus inhibiting free circulation. Syringing and dressing such a sinus with 1% sodium citrate in a 4% salt solution is Wright's method for preventing the coagulation of lymph and for drawing a flow of lymph into the sinus by osmosis. The effect of this treatment of choked sinuses is often remarkable.

Tuberculous bone disease in which surgical measures, often repeated, offer so little, is in very many cases amenable to systematic treatment with tuberculin. Western, of the London Hospital, reports 15 cases, 7 of which were cured, 5 showed improvement and 3 no improvement. The cases that I have seen in Wright's clinic have most of them shown a gradual gain. I have seen a number in which sinuses, previously leading to bone, had already healed. Donnelly, with a sinus leading to a tubercular sternum, showed complete healing in a year, with 12 inoculations. Prior, a boy of twelve, riddled with tuberculosis, with ulcers and sinuses in hands and feet, some leading to carious bone, had had forty-three scraping operations, with no improvement, during seven or eight years. After inoculation for two years, the sinuses had healed and he is practically cured.

Tuberculous adenitis in its early stages is amenable to tuberculin. In many cases, glands may disappear in from four to eighteen months. Some cases do not respond at all, and in such bovine tuberculin may be tried. Extirpation may be necessary if the glands are extensive or caseated, or unresponsive to tuberculin after it has been systematically tried. Among perhaps 20 cases that I have seen, but two did not show any improvement in six months, but these preferred to continue with tuberculin rather than be operated. Post-operative cases, with recurrence under the scar, may be saved a second operation in many cases by the proper use of tuberculin.

Joints and *tendon sheaths*. Western reports 11 cases of which 9 were cured or improved. My experience is that these cases are in general quite amenable to treatment. One case worth citing is a boy of six, who for two years had a tubercular knee. It was very painful and swollen and was accompanied by temperature and night sweats at times. After nine months' treatment he was able to walk without pain. Swelling had disappeared and general condition showed a decided gain.

A girl of fifteen with tubercular knee of ten years' duration, with the usual swelling and pain on motion, recovered after five months' inoculation.

Tuberculous cystitis is a difficult disease to treat. Very many cases show marked improvement. Micturition becomes less frequent and pain is lessened. A protracted course of tuberculin is usually needed. I have seen several unsuccessful cases after prolonged inoculation. Colon infection is not an uncommon complication and is met, of course, by an appropriate vaccine.

Pure colon infection of the bladder may yield rapidly so far as symptoms are concerned, but it is often difficult to entirely free the urine from bacteria.

Tuberculous peritonitis in its early stages may be treated successfully with tuberculin. If there is much fluid it should be removed by tapping. We must bear in mind, however, the spontaneous cures that used to result after laparotomies, in making claims. If we examine the records of these operative cases in the light of present knowledge, the explanation seems to be that the operation freed the abdomen of a fluid of proved low anti-bacterial power, which was replaced by fluid from the blood of anti-bacterial power equal to that of the blood. The treatment by tapping, plus inoculation to raise the anti-bacterial powers of the blood, serves to bring into contact with the organisms a fluid of high power, to take the place of one whose anti-bacterial substances have been depleted by contact with the diseased foci. Thus one is able by tapping to avoid operation and to make way for fresh in-flow of fluid from the blood, and by inoculation with tuberculin to increase the anti-bacterial power of this fluid.

In summing up the results of my observations in Wright's clinic in the treatment of local tuberculosis, I feel justified in expressing as my opinion that a large number of this type of case may be cured by systematic, careful inoculation with tuberculin, T. R. or B. E., in a longer or shorter time, depending on the age of the patient, the condition of hygiene that is possible, the previous chronicity and the location of the lesion; that most of those not cured can be relieved in varying degrees, of conditions that have resisted all other means of treatment and have often made their lives absolutely miserable.

The treatment of pulmonary tuberculosis interests me because I believe that in the light of present knowledge, the results obtained are not what they should be. Recent papers have indicated that tuberculin does good in many cases, but there are a large number that do not do well. Since the therapeutic measures are the same, the difference must obviously be within the patient. Not to go into too much detail, there are two factors that complicate the giving of tuberculin, and these are, first, spontaneous auto-inoculation, that is, a diffusion into the circulation of bacilli and bacillary products from the focus in the lung, which takes place in advanced cases with temperature, even as they lie quietly in bed; secondly, an exactly similar process in earlier cases, that may take place as a result of exercise. The effect of the auto-inoculations depends on the amount of toxin set free in the blood; it may be so great as to prostrate the patient, or so small as to produce nothing but favorable symptoms; and in the latter case, the only method of measuring it is by its effect upon the tuberculo-tropic power of the blood as registered by the opsonic index. It will be obvious to you that, if we do not know the degree of auto-inoculation that exercise produces in a given case, our patient may by his activity so vaccinate himself at about the time we give him the tuberculin inoculation, that the sum total of the vaccine thrown into his circulation automatically and that which we have administered, may prove an overwhelming dose and produce a serious setback. Such a condition may be registered by the opsonic index which will always be found to be low at first. Such a condition I have seen several times, and I do not believe that it is uncommon where tuberculin is used extensively. Moderate over-dosage produced in this way may not give rise to symptoms, but nevertheless interferes with the progress of the case. We can avoid this trouble by using the opsonic index to tell us if we are getting serious auto-inoculations. If we are, we should not use tuberculin unless we put the patient to bed. A method in such cases, if the temperature is normal, is to so *graduate* the exercise after a proper quiescent period, having absolute control of the patient's activities, that we shall obtain sufficient induced auto-inoculation to maintain the tuberculo-tropic substances on as high a plane as possible, as registered by the opsonic index.

For further discussion of the treatment of pulmonary tuberculosis, by graduated exercise and for proof that by it we cause the patient to vaccinate himself and raise the opsonic power of the blood, I refer you to the articles by Dr. Patterson, of the Brompton Hospital Sanatorium at Frimley, and by Dr. Inman, Pathologist to Brompton Hospital, in the *Lancet* of Jan. 25, 1908. These investigations are very important for two reasons: they are corroborative of the accuracy and usefulness of the opsonic index and they tend to show that fresh air, feeding and hygiene may not be the last word in the treatment of pulmonary tuberculosis.

Staphylococcia, carbuncle, furuncle and acne, are all but uniformly susceptible to treatment by appropriate vaccine. Relapses are apt to occur and it is often necessary to continue inoculations for some time. We do not obtain a lasting immunity. In carbuncle and furuncle incision is sometimes necessary. Poulticing and cupping have their place to hasten the cure by improvement in local circulation. In a porky phlegmon with its poor circulation and sloughing subcutaneous tissue, we can raise the anti-bacterial forces to the highest plane, but we often cannot cure the condition unless we use local measures. Oftentimes in these cases inoculation may be unnecessary, if we carry out appropriate local measures directed toward properly utilizing the anti-bacterial power the blood already has.

As to the septicemias, if we get them early before mechanical injury to the heart takes place, and get our organisms from the blood, we may have some hope of doing good. In streptococcus, while preparing an autogenous vaccine, we can use a stock multivalent vaccine.

Epidemic cerebrospinal meningitis, lobar pneumonia, typhoid fever, septic complications of diphtheria and of the exanthemata are all inviting fields for work. It is, however, well, in instituting inoculation treatment in a general hospital where assistance is necessarily limited at first, to confine oneself to the treatment of diseases in which experience has taught us we may expect the most in the way of results. These are the various localized infections which I have mentioned.

I realize that this sketch does not do full justice to the importance of the subjects with which it deals. To accomplish this, much more time would be necessary than I have had to-night. I desire, in closing, to particularly emphasize the necessity, in attempting the treatment of a number of cases in a general hospital by bacterial vaccines, of being familiar with and having the laboratory equipment needed, to make use of not only procedures for determining opsonic indices, but also the other methods which may be applicable in the study of questions that arise in the immunization of special cases; with methods of treatment which will act as adjuncts to the bacterial vaccine and with the indication for their use. The use of bacterial vaccines without access to the laboratory when certain information is needed is unsatisfactory and may be a source of damage to the patient, though many cases may be conducted with clinical symptoms alone as a guide; on the other hand, the extreme of using the opsonic index to guide, without reference to clinical symptoms, is equally unwise and unscientific. For the successful application of immunization methods one must not only be well grounded in the biology of the infecting agents, their methods of attack within the body, the machinery, so far as it is known, that the body sets in motion to destroy them and the procedures that have been proven effectual to assist the body in its struggle, but also should have the broadest clinical training, in order that the relations of the laboratory and clinic may be close, that the one may supplement the other, in the interest of the individual patient.

In proceeding to the application of new methods of treatment such as we are discussing, we must realize the importance of exercising the greatest care not to bring discredit on the work by making serious mistakes. As Prof. Theobald Smith says in his article in the *Journal of the American Medical Association* of March 21, "It is easier to arouse the nervousness of the public than to allay it. Whenever practice outruns the laboratory, and, more or less impatient, applies the latter's results to the prevention and cure of the disease, it frequently deals with half truths whose application may be harmful. It is this sense of being surrounded with half truths which should stimulate us all not to rest content with them, but to use our efforts unremittingly until they have been made whole."

Reports of Societies.

SURGICAL SECTION, SUFFOLK DISTRICT MEDICAL SOCIETY IN CONJUNCTION WITH THE BOSTON MEDICAL LIBRARY.

Meeting Held Jan. 2, 1907.

Dr. M. H. Richardson read a paper

ON THE SIGNIFICANCE OF CLINICAL HISTORIES BEFORE AND AFTER OPERATIVE DEMONSTRATION OF THE REAL LESION.

DISCUSSION.

Dr. R. H. Fitz remarked that the significance of clinical histories depends upon the qualifications of the historian and the understanding of the patient. Knowledge, skill and judgment are demanded of the former, while temperament and intelligence are desirable in the latter. Thoroughness of method is of the utmost importance, and in doubtful cases an investigation of all functions and an examination of all organs are demanded. Hasty diagnoses are a fruitful source of error to be avoided in the training and to be questioned in the trained. Time is an exceedingly valuable element in making clear a diagnosis. The limitation of certain lesions and the presence of compensatory change must make accurate diagnosis impossible until the clinical picture has been sufficiently elaborated. Finally, experiment and exploration furnish the principal tests by which the diagnosis is controlled. The serum test of typhoid, the culture test of diphtheria and the inoculation test of tuberculosis are examples of the former, although they represent amplifications of the method, rather an extension of means than a test of result.

Exploration is fundamental; it reveals the invisible, refines the touch and enables ultimate tests and control to be applied. Dr. Richardson has made sufficiently clear its value and has shown how slight its danger in comparison with the possible benefits. An exploratory operation, however, should be solely for therapeutic purposes, although it may prove of great value in developing the diagnostic skill of the operator. The crucial test of the thoroughness and accuracy of the diagnosis is offered only by the post-mortem examination. The operation, the biopsy, reveals mainly what is within reach, hence its field of usefulness has its limits and false conclusions may be reached. It has led to the conclusion that, as a rule, the perityphlitic abscess is extra-peritoneal. It has induced the operator to feel what he expected to find, but which the microscopist fails to disclose. There is no appeal from the control exercised by the post-mortem examination. It reveals unsuspected lesions and demonstrates the healing powers of the organism. The explorations of the surgeon have added much to our knowledge of stages in active morbid processes, but the pathological anatomist has shown repeatedly that a pathological process is not necessarily painful. That surgeon becomes the best diagnostician who controls his history by the operation and his operation by the post-mortem examination.

Dr. John B. Blake: I shall speak very briefly on this topic from the standpoint of its relation to the case method of teaching. You are doubtless familiar with this method and remember that it is the foundation stone of the instruction in the Harvard Law School, and that after enthusiastic advocacy by Dr. Cannon, it was introduced into the Medical School, first by Dr. Richard Cabot and then in the Departments of Neurology, Surgery, Orthopedics and Syphilis. It has been criticised freely by some, and this seems an opportune time to point out certain of its advantages.

One of its chief elements is the consideration of history and physical examination, apart from the patient, and by the application of logical reasoning, to deduce a diagnosis from these given premises. It is an exercise in the application of facts already learned to conditions which are unknown, and it concentrates study on the detail of the history as well as on the elaborate physical examination.

Dr. Richardson has emphasized the great importance of the history, placing it at times even above the physical examination. It is probably true that, taken as a whole, less attention has in the past been placed upon the history in surgical cases than in those which were purely medical. The reasons for this are not far to seek. The frequency of operation and the rapidity, therefore, with which the diagnosis is definitely established, too often differing from that expected, being perhaps the chief of these reasons.

One aim of the case method has been to avoid this: to compel a thorough examination, consideration and discussion of symptoms before attempting a diagnosis.

And in the particular case, as in the general instruction, it is to be remembered that the case method is not a *substitute* for anything else, but only a supplement and an additional method of attack. It is an exercise in reasoning, pure and simple. It emphasizes thoroughness, because in this somewhat mathematical consideration of a case, omissions or lack of detail in the history become very obvious. Not infrequently a single fact, temporarily overlooked, aids very materially in clearing up a very hazy situation. And in such an exercise held by a large section of the class, the suggestions of a number of students, concentrated upon a single object, are sure to cover and discover any forgotten points.

Given, therefore, drill in thoroughness in obtaining a history, criticism of incompleteness in it, the essentials of the physical examination, the case is presented to the student, as before stated, as an exercise in pure reasoning, in training the effort to make moderate logical deductions, a subject upon which President Eliot has spoken with all his familiar grasp and power. As he has pointed out, few of us possess minds which always move in a truly logical manner; too frequently our deductions from given premises are either erroneous or immoderate. To this point, as much as to any other single one, are due the frequent partial errors, and the occasional complete mistake in diagnosis of seemingly simple conditions. Not alone in the very difficult cases are mistakes common. Study of the case is the great essential to diminish these mistakes, but I am convinced that deductions from and interpretation of symptoms and history already correctly obtained, is one of the most important elements in this study. It is extremely easy to infer more than the symptoms really permit and the mistake is the easier, because in surgery the conclusion must often be reached rapidly, at once, and repeated examination and long study are not always possible.

Furthermore, in this logical process, the personality of the patient is eliminated as a disturbing factor. In arriving at a difficult diagnosis this may be of great importance. A familiar proof of the influence it may assert is found in the excellent practice of calling an outside physician to prescribe for a doctor's own family. I am convinced that in this consideration of the case, away from the bedside of the patient, and from a study of written notes, is a means of not infrequently avoiding errors otherwise more easily fallen into.

Pearce Gould states in his admirable hand-book on "Surgical Diagnosis," that more mistakes are made by not looking than by not knowing — deploring thereby incompleteness of examination; if he would add, "not reasoning" to "not looking," he might include the great majority of mistakes made at least by all conscientious men of average ability; the average working knowledge of symptomatology and the average ability to make a satisfactory physical examination are, I am sure, far higher than the average power of correct reasoning from data already obtained, and correct interpretation of symptoms.

Therefore, it should be the rule in all cases, and particularly in all difficult cases, to obtain complete physicals and histories, in writing, to study them and reduce the resulting diagnosis to writing and then to rigidly compare this result with the final outcome, which brings up the second part of the subject. This is, of course, epitomized in the familiar sentence, "We learn from our mistakes." It is probable that we do not, in reality, learn from our mistakes as often as we think we do, and still less do we learn as much and as accurately as we might from each mistake. If this is as I believe true, it is due simply to a lack of careful, accurate (impartial) comparison between our pre- and post-operative data; and also in a lack of consideration of the manner in which we translated symptoms of one condition as pathognomonic of a condition totally different. It is certain that if our mistakes were thus rigidly and unreservedly investigated, if we compelled ourselves to observe in detail the paths by which we misinterpreted symptoms or mistook the significance of definite signs, we would far more rapidly improve in the art of diagnosis. Simply to admit a mistake helps us but little in avoiding it upon a subsequent occasion, and study of methods which should be avoided is only less valuable than the study of those which should be followed and practiced until they become almost reflex.

This careful study of all available data before making a diagnosis, and the equally careful analysis of mistakes are, of course, only two of many elements which go to make the ideal diagnostician. They are, however, two of the most important, and also two which can most easily be utilized by the average practitioner by the expenditure of a little time and effort. In other countries, notably in Germany, the art of diagnosis is on a very high level; the various laboratory tests, which are still more frequently and widely used there than here, are less liable to misinterpretation, or to become the bases of inaccurate deductions. This is, of course, the greatest value of these scientific tests, in that they demonstrate one fact and one alone. They do not, however, and never can take the place of signs and symptoms which we learn directly from the patient by our special senses, and there is no reason why the American doctor should not become the equal of any in the world in the gentle art of diagnosis, if he is willing to use his brain diligently to that end.

Dr. E. P. Joslin: The introduction of such positive tests as the demonstration of tubercle bacilli and the Widal reaction has had the unfortunate tendency to lessen the importance given to clinical histories in medicine, just as the safety of an exploratory laparotomy has had a similar effect in surgery. But the fact remains that in the vast majority of instances the clinical history is the most valuable diagnostic aid in surgery. Laboratory methods, such as the blood count and analysis of gastric juice, have been unable to displace the history.

The clinical history is most valuable if it is a good history. A poor history is worse than none. It is important to bear this in mind, because busy practitioners frequently do not have time to take careful histories. They are obliged to consider the greatest good of the greatest number. Therefore, consider in each instance the care with which the record has been obtained and allow it only such weight as it deserves. A poor history recognized is not dangerous.

A clinical history is an account of the patient's condition from birth to the time in hand. Too often the history is taken at the onset of symptoms, then forgotten in the course of the disease, and only the recent evidence considered. Perspective is thereby lost at the very time it is of the greatest value. That man is sure to diagnosticate well who not only considers the present state of his patients, but its relation to the past.

Many different causes give rise to exactly the same symptoms, and this leads to errors in diagnosis. This is well illustrated in my own experience with gallstones. In four recent instances cholelithiasis has been accompanied by hyperacidity, and though this often is present in gastric ulcer, it did not lead to confusion. But as the first speaker of the evening, Dr. Richardson, has made it the fashion to confess one's mistakes, I feel it only proper to record two failures in diagnosis due to this point. Some years ago I treated a young woman for nervous hyperacidity of the stomach. No cure was effected until another consultant advised operation, when a gall bladder full of stones was revealed. In contrast to this I made recently a positive diagnosis of gallstones in a woman of sixty, who had had two attacks of colic in the right upper abdomen, and even demonstrated to the attending physician what appeared to me as a tender, palpable gall bladder. Two days later the patient died, and the autopsy disclosed a perforation of a duodenal ulcer.

Clinical histories lead to broad lines of diagnosis, which sometimes physical signs and laboratory tests make precise. They often do not justify a diagnosis, and to use histories for guess work is to foster distrust in their usefulness. The unwise and unwarrantable use of histories in diagnosis causes mistakes which lead many physicians to distrust their own abilities, a most undesirable condition, both for themselves and their patients.

Histories frequently tell *when*, but not *why* to operate.

Book Reviews.

Nephritis. By Seelye W. Little, M.D. New York: The Grafton Press. 1907.

An essay for the practitioner, this little book is intended to be read continuously. The theme running through it is the effect of man's modern environment on his kidneys. The author regards this as largely harmful. It is the artificial habits of man that cause much of the nephritis. That this is true is argued in part from the infrequency of nephritis in various animals, — mice, rats, birds, hogs, dogs, horses, etc. Overfeeding and improper feeding in man is a most important factor in producing renal damage. Pathology, symptomatology and treatment are discussed. In the latter a diet selected so as to reduce as much as possible the work done by the kidneys is the most essential factor. Dr. Little's book is interesting to read. Some of the author's arguments would seem unproven, but the reader of the book will be led to consider nephritis from a standpoint rather different from that given in most textbooks. A good feature of it is the insistence on considering each case individually and treating that particular individual, not some form of nephritis which he is supposed to have.

A Textbook of Pathology with an Introductory Section on Post-Mortem Examinations and the Methods of Preserving and Examining Diseased Tissues. By Francis Delafield, M.D., LL.D., and T. Mitchell Prudden, M.D., LL.D. Eighth edition. New York: William Wood & Co. 1907.

The short intervals between the appearance of successive editions of this standard work indicate the high favor in which it is held by teachers and students. It is one of the best textbooks on pathology in any language, and Dr. Prudden, aided by his associate in the department of pathology in Columbia University, has kept the work fully up to date. In the present edition the section devoted to general pathology has been amplified. Pathological physiology has received more attention in this than in former editions. Clearness and conciseness of statement is a notable feature of this work. The admirable bibliographical footnotes with their suggestions in regard to further reading make the book valuable as a work of reference and encourage the student to read the original monographs. Nearly all the important articles in the recent literature are mentioned.

Over one hundred and fifty new illustrations have been added. The publishers have done their work well. The book is printed on heavy opaque paper and the illustrations and press work deserve high praise.

The Common Bacterial Infections of the Digestive Tract and the Intoxications Arising from Them. By C. A. Herter, M.D., Professor of Pharmacology and Therapeutics in Columbia University. New York: The Macmillan Company. 1907.

This is an elaboration of the author's Harvey Lecture. It deals largely with one of the darkest chapters of pathological physiology, that of intestinal auto-intoxication. For more than ten years Herter has been investigating this obscure subject and he deserves credit for his perseverance in attacking a problem that has baffled so many. The book is of a highly speculative nature. To the investigator engaged in research along these lines it may prove suggestive. But the reader, unfamiliar with the work of A. Schmidt, Baumstark, Strauss and v. Tabora, will gain from this monograph ideas in regard to intestinal putrefaction and the clinical significance of indicanuria widely at variance from those held by most recent investigators. In justice to the author it should be stated that the book does not aim to give a systematic discussion of the subject nor to present fully the literature.

Pathology General and Special for Students of Medicine. By R. Tanner Hewlett, M.D., F.R.C.P., D.P.H., Professor of General Pathology and Bacteriology in King's College, London. Second edition. Philadelphia: P. Blakiston's Son & Co. 1907.

This is one of the smallest textbooks offered to the student of pathology. The attempt is made to cover not only the entire field of general and special pathology, but a number of subjects are included which lie on the borderland between general pathology and clinical medicine. The book has met with such a favorable reception in England that it was necessary to publish this second edition within a year of the issue of the first. The presentation of many subjects is so superficial and sketchy that it cannot satisfactorily serve as a textbook in the best American schools. The author states in his preface that he has aimed to present only such a knowledge of pathology as will aid medical students in the art of healing. Very little space is devoted to pathological histology. The book will be useful to practitioners who wish to gain some knowledge of modern teaching in pathology.

Practical Materia Medica for Nurses. With an Appendix Containing Poisons and Their Antidotes, with Posion-Emergencies; Mineral Waters; Weights and Measures; Dose-List; and a Glossary of the Terms Used in Materia Medica and Therapeutics. By Emily A. M. Stoney, Late Superintendent of Training School for Nurses, Carney Hospital, South Boston, Mass., etc. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company. 1907.

We have noticed with approval the previous editions of this work. This third edition has been revised and adapted to the Eighth Decennial Revision of the United States Pharmacopeia. We have no doubt it will continue to fill a place of usefulness in spite of the fact that we strongly question the desirability at this stage of therapeutics of describing drugs and preparations which are practically never used, and which, undoubtedly, will be less used in the future than they have been in the past. Certain drugs are naturally of the greatest possible importance to the nurse, as to the physician. These should be given a position of greater importance than the arrangement of the book indicates.

A Text-Book of Pharmacology and Some Allied Sciences (Therapeutics, Materia Medica, Pharmacy, Prescription-Writing, Toxicology, etc.), Together with Outlines for Laboratory Work; Solubility and Dose Tables, etc. By Torald Sollmann, M.D., Professor of Pharmacology and Materia Medica in the Medical Department of Western Reserve University, Cleveland, Ohio. Second edition, thoroughly revised and greatly enlarged. Illustrated. Philadelphia and London: W. B. Saunders Company. 1906.

In this second edition the author has seen fit practically to rewrite his book rather than merely to revise it. Certain changes have also been made in the way of condensing certain subjects and in expanding others, and certain new factors have been added to make it of greater use to the advanced student. In addition to the text, which has been arranged under convenient headings and with much care, a bibliography is added, which may be consulted with advantage by the more advanced student. Although it is manifestly impossible in a textbook of ordinary size to give anything like a complete list of references, we are strongly of the opinion that the value of a treatise on any medical subject is materially increased by references to the more important literature. This volume goes rather beyond a description of pharmacological descriptions and discusses at some length certain therapeutic measures, — pharmacy, materia medica, prescription-writing and toxicology. Here, again, we think the author is wise in showing the practical application of the laboratory side of his subject. The more closely clinical manifestations can be associated with the abstract sciences upon which their proper treatment is based, the more useful for the rank and file will such books become.

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MEDICAL ARCHEOLOGY.

Archeological investigations of any sort have a peculiar fascination to the ordinary mind. Quite apart, however, from a natural curiosity as to the methods of life and customs of ancient peoples, recent researches are coming to have a far-reaching scientific value, and medicine is apparently not to be excluded from the significant results.

In this connection we wish to draw attention to three exceedingly interesting articles published in the *British Medical Journal* for March 28 on certain discoveries with a distinct medical bearing recently made in Egypt by Dr. G. Elliot Smith and Mr. Frederick Wood Jones. Dr. Smith, who is at present professor of anatomy at the Egyptian Government School of Medicine in Cairo, describes the finding of bodies of the pre-Christian era in which he has been able to demonstrate the use of splints as a surgical procedure. The specimens which he describes were found by Dr. George A. Reisner, of the University of California, director of the Hearst Egyptian Expedition, in the course of excavations in tombs certainly not less than four thousand five hundred years old. Two sets of splints were found in the same cemetery, and are the only ones known to have been applied to living patients earlier than the Christian era. They have been in the Anatomical Museum of the Cairo School of Medicine for the five years since their discovery, but no adequate account of them has hitherto been published.

In one case the injury in a girl of about fourteen years was a compound fracture of the femur. This broken limb had been set with four splints, and, although they were apparently so applied as to be useless as a support to the broken bone, their purpose must have been to fix the knee joint and thereby give a measure of relief. Even a crude knowledge of the modern treatment of fractures is not shown by this specimen, and in general healed fractures taken from various tombs have usually shown shortening, displacement of fragments and excessive development of callus. The second case described by Dr. Smith was a compound fracture of the forearm as demonstrated by blood staining. In this case the splints were much more intelligently applied than in the fracture of the thigh to which we have just alluded. In general, it appears that fracture of the ulna was very common and that the results were, on the whole, good, probably because when the radius was undamaged it fulfilled in part the functions of a splint. The frequency of fracture of the ulna has been noticed in various remains studied, due no doubt to an injury inflicted by a crude sort of fencing which was practised both as an amusement and as a method of attack. Speaking of these splints Dr. Smith writes:

" There is one curious feature common to both sets of splints described in this communication, and that is, unlike the general usage of modern European surgeons, the old Egyptian employed more than two splints. In other words, he endeavored to form a protective casing around the damaged limb to guard it against injury from outside rather than to hold the fragments of bone rigidly in position, and so avoid the greater danger of damage from within. It is a striking testimony to the stability of this idea, as well as of the extreme conservatism of the Egyptian, that three thousand years later he was using exactly the same form of appliance. I have recently described sets of splints found around the broken forearms of a young Christian woman, who was buried on an island near Philae in the seventh century A.D. Five rough wooden splints were applied around one of these damaged limbs."

A further article by Mr. Jones on the postmortem staining of bone produced by the antemortem shedding of blood is likewise exceedingly interesting as proving almost beyond doubt that blood stains under certain conditions may persist for several thousand years, although the ordinary tests used for their detection become inefficient after about two hundred and fifty years. The possible historical significance of this discovery is apparent in the determination of the cause of death even at so remote a period. For example, in a Ptolemaic mummy with a crushed head, blood stains were found upon the front surfaces of the incisor teeth. It has been shown conclusively that some of these stains must be at least five thousand years old. Mr. Jones also contributes a paper on the examination of the bodies of one hundred men executed in Nubia in Roman times. It appears that most of these persons were executed by hanging, and much evidence is adduced to show that a peculiar opening of the sutures of the skull characterized this mode of death. The mechanism of the causation of this peculiar and hitherto unexplained lesion is discussed at some length. The paper in general offers a most entertaining and valuable discussion of the possibilities of archeological research when carried out by competent men with scientific training.

To those who have followed recent excavations in Egypt and in other parts of the world it is evident that a vast fund of information still lying buried is likely to be investigated in the near future to the distinct advantage of historical knowledge in general and no doubt, in some measure at least, to knowledge of the medical practices of ancient peoples which is at present extremely fragmentary.

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THE PREVALENCE OF POLIOMYELITIS.

The recent attention which has been given to the subject of infections of the nervous system, of which poliomyelitis is a striking example, and the increasing number of well recorded epidemics of the latter disease, have brought it very much to the forefront of medical attention. That it is a disease very seriously to be reckoned with is no longer to be questioned. Whether or not the actual number of cases is increasing through changing modes of life or other circumstances of which we have no knowledge is perhaps open to question; but there can be no doubt that its prevalence, both among children and adults, is now such that all possible efforts should be made to discover its cause and the conditions under which it occurs. It is also worthy of notice that many other as yet wholly obscure infections of the nervous system have of late been observed, which it is not improbable that future study will bring into some sort of relationship with the more familiar poliomyelitis. However this may be, the recent work of Harbitz and Scheel and other investigators establishes beyond question the fact that the affection of the gray substance of the cord is but one manifestation of a much more general infection, and makes probable the statement that as our knowledge still further grows it will be found that what we now call poliomyelitis is but one of a large group of infections, many of which are as yet little understood.

We are glad to call attention to a letter in this issue from our London correspondent, in which he speaks of an important meeting of the Medical Society of London, at which the subject of the prognosis and treatment of poliomyelitis was introduced by Dr. Risien Russell. Many points were brought out in the subsequent discussion which cannot be too strongly emphasized. One of these is the important matter, too little recognized, of relieving the strain upon paralyzed muscles in order to permit of their completest recovery. It is not to be questioned that a weakened muscle on the stretch shows far less tendency toward a restoration of function than one which is relaxed and removed from the strain of the pull of antagonists. The orthopedic surgeon should early come to the assistance of the physician in the treatment of these conditions, particularly in relation to the avoidance of deformities through the failure to protect paralyzed muscles. The whole surgical treatment of the deformities, often unavoidable, resulting from poliomyelitis, is a matter requiring the most detailed study, and one which on the whole has not received the attention it deserves. An interesting difference of opinion was expressed in this London discussion regarding the value of galvanism in the treatment. The adherents and opponents of therapeutic electricity seem in general to be somewhat evenly divided, but, although difference of opinion is no doubt justified, we are inclined to think that electricity intelligently applied has a definite if somewhat limited field in the treatment of conditions of muscular defect of which poliomyelitis is a good example. It should be said, however, that the use of electricity in small children, and particularly in those whose muscles are covered by a thick layer of fat, can seldom be employed in sufficient strength to accomplish results without undue discomfort if not actual pain to the patient.

Those who have followed the interesting development of the study of poliomyelitis and allied affections cannot doubt that a decided advance in our knowledge will take place within the next two or three decades. Whether a vaccine therapy will be discovered is open to doubt, particularly in view of the very rapid onset of the disease, but there can be small question that its etiology will be placed on a firmer basis, and possibly that its prophylaxis may be intelligently attempted. In any event the present interest in the disease cannot fail to bring certain results of importance.

MEDICAL NOTES.

Women Nurses for the United States Navy. — A bill has been favorably reported by the House Committee on Naval Affairs at Washington for the establishment and organization of a corps of trained women nurses for the United States Navy.

Pension for J. Hall-Edwards. — Mr. J. Hall-Edwards, a worker in the x-rays in London, who has already lost one arm as the result of x-ray irritation, has been granted officially a pension of $600 a year. In addition to this sum a further fund is being raised from outside sources.

Visit of Professor Koch. — The visit of Professor Koch to this country is likely to be a very short one. He is to be entertained in New York by the Society of German Physicians and then goes West, stopping at Buffalo and Chicago, and finally sailing from San Francisco for Japan. It is announced that Boston will be included in his itinerary.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 8, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 57, scarlatina 60, typhoid fever 177, measles 206, tuberculosis 50, smallpox 0.

The death-rate of the reported deaths for the week ending April 8, 1908, was 21.56.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, April 4, 1908, was 250, against 248 the corresponding week of last year, showing an increase of 2 deaths and making the death-rate for the week 21.39. Of this number 133 were males and 117 were females; 238 were white and 12 colored; 172 were born in the United States, 67 in foreign countries and 11 unknown; 43 were of American parentage, 171 of foreign parentage and 36 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 52 cases and 4 deaths; scarlatina, 60 cases and 2 deaths; typhoid fever, 14 cases and 0 deaths; measles, 181 cases and 3 deaths; tuberculosis, 79 cases and 33 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 34, whooping cough 2, heart disease 32, bronchitis 5, and marasmus 8. There were 15 deaths from violent causes. The number of children who died under one year was 47; the number under five years 72. The number of persons who died over sixty years of age was 65. The deaths in public institutions were 78.

There were 2 cases reported from cerebrospinal meningitis during the week. No deaths.

Registration in Medicine. — Thirty-seven physicians have passed the examination of the Massachusetts Board of Registration in Medicine held in March. Five of this number are women.

Registration of Nurses. — The Committee on Public Health of the Massachusetts Legislature has reported favorably a bill to establish a system of registration of nurses. Registration is to be under the general jurisdiction of the Board of Registration in Medicine, hence no new board will be created.

Measles in Cambridge, Mass. — Many cases of measles have appeared during the past month in Cambridge, Mass. It is reported that over three hundred cases occurred between March 1 and April 1. Other children's diseases show no increase over the normal situation.

Bequests. — By the will of O. T. Noble, of Malden, Mass., the Deaconess Hospital of Boston receives a modest bequest. The Holy Ghost Hospital of Cambridge is a beneficiary under the will of Ellen Kelleher.

Registration of Dentists. — The Massachusetts State Board of Registration in Dentistry has recently announced the successful candidates of the last examination held. Of seventy applicants but seventeen succeeded in passing. A number of those who took the examination have before been unsuccessful applicants.

Difficulty at the Fall River, Mass., Hospital. — It is reported that a strike of the Fall River City Hospital Staff has been started because of the retention of two practitioners who refused to join the majority in protesting against the contract system of treating members of fraternities. Inasmuch as the physicians who objected to the general protest have declined to resign, the difficulty has been temporarily met by the appointment of the City Physician to take charge of the hospital.

Typhoid Fever from Worcester County Milk. — Cases of typhoid fever, numbering upwards of a hundred and sixty, most of which are in Jamaica Plain, Boston, have recently appeared as the result of infected milk coming from farmers and contractors in Worcester County, Mass. The Boston Board of Health has taken active measures and has cut off the supply of milk from two dealers who are known to have sold it in quantities. One of these dealers is ill with the disease, which he apparently contracted from the infected milk.

Exhibition at the Harvard Medical School. — An exhibition of prints and engravings of distinguished physicians and surgeons has recently been opened at the Warren Museum of the Harvard Medical School and will remain open to the public for five weeks. Three collections are on exhibition. Dr. Walter G. Chase shows various mezzotints and several Hogarths, together with an interesting autograph letter accompanying a sketch by Dr. Hunter. The collection of Dr. Ernest B. Young includes many American as well as foreign medical men. The third collection comprises several hundred prints presented to Harvard University by the Royal College of Surgeons of England as the result of a visit by Dr. Chase in 1906.

NEW YORK.

Jewish Maternity Hospital. — A Jewish maternity hospital and nursery has been organized on the lower east side, and two adjoining dwellings on East Broadway are now in process of alteration to meet the needs of the institution. For this purpose $30,000 is required, and about $10,000 of this was recently raised by an entertainment given at the Grand Central Palace.

Purchase of Mount Marcy. — It is gratifying to learn that the State Forest Preserve Board has succeeded in purchasing Mount Marcy, in the Adirondacks, the highest mountain in New York, whose forests have for some time been threatened with destruction by the operations of a lumber company. The mountain is part of a tract which the board has just acquired which includes Mounts Skylight and Redfield, nearly 5,000 feet in height, and Mount Allen, considerably over 4,000 feet high. Eventually, the board hopes to secure possession of the wooded slopes of the entire range to which these peaks belong.

Prevention of Premature Embalming. — Mayor McClellan has signed the bill recently passed by the legislature the object of which is to prevent the embalming, without the permission of a coroner, the body of any person dying under suspicious circumstances. The penalty for violation of the provisions of the bill, which becomes a law immediately upon receiving the Governor's signature, is imprisonment for a term not exceeding one year or a fine not exceeding $500, or both fine and imprisonment. In New Jersey there would appear to be already such a law, as the coroner's jury in the case of Walter F. Baker, of Boston, who died suddenly at Bogota, N. J., in its recent verdict, which was to the effect that death was due to arsenical poisoning, expressed its "disapproval of the action of the undertaker in violating the law of embalming the body before it had been viewed and action taken by the coroner."

Eastern Custodial Asylum.—The New York State Medical Society and New York Neurological and Psychiatrical societies, having declared that the need of an Eastern Custodial Asylum was urgent, Governor Hughes some time ago appointed a commission to consider and report upon the matter. This commission has now reported in favor of such an institution, and recommends that it be located at Haverstraw, on the Hudson, where a site suitable for the purpose can now be purchased at a reasonable rate. One advantage of the place selected is that it can be reached by the poor relatives and friends of patients from New York City at a cost not prohibitive to them and to the charitable societies concerned. It is estimated that more than 20,000 epileptics and feeble-minded persons reside in the state, of whom 3,250 overcrowd the institutions for such subjects at Rome, Syracuse, Newark and Sonyea. In addition, 2,800 are in urgent and immediate need of the state's custodial care, while thousands of others, now living in private homes, would be much better off, both as regards themselves and their families, if provided with such care.

Legislation Regarding Osteopathy.— In consequence of the legislation enacted at Albany last year many osteopaths have been claiming the right to register as physicians, but the Health Department has maintained the position that osteopaths were not recognized by the state as medical practitioners and has refused to accept certificates of death signed by them. As this position was disputed, the osteopaths contending that the new medical law recognized their school and prescribed a state examination for its adherents as a preliminary to the issuing of licenses to them, President Darlington, in order to have the question settled, requested a decision from the office of the Corporation Counsel. Acting Corporation Counsel George L. Sterling has now delivered an opinion recommending that the matter be passed upon by the courts, and holding that in the meanwhile osteopaths should not be considered as physicians within the meaning of the law. He states that the practice of osteopathy is mentioned as distinct from the practice of medicine. The result is that the holder of a license to practice osteopathy is not allowed to practice medicine except so far as osteopathy enters into the field of medicine. The holders of such licenses derive from the act no new right except the privilege of practicing osteopathy, provided neither drugs nor surgical instruments are used. Consternation was thrown into the camp of the osteopaths by this opinion, which places them in the category with Christian Scientists and others who claim the right to heal but have no authority from the state.

Mrs. Humphry Ward.—An ovation was given to Mrs. Humphry Ward at the Waldorf-Astoria on March 31, when a dinner, at which five hundred were present, was tendered in her honor by the Playground Association of America, in recognition of her services in behalf of the children of the poor in England. Dr. Luther H. Gulick, director of physical education in the public schools of New York, who is president of the association, presided, and Richard Watson Gilder was toastmaster. Others at the principal table were Drs. Henry S. Curtis and Seth Thayer Stewart, Jacob Riis, and Robert W. De Forest, president of the Charity Organization Society. In the course of her address Mrs. Ward said: "It seems to me that in your evening use of your grade schools for growing lads and girls you have solved the problem at which we in England are still tamely fumbling; and in the Playground Association and your Athletic League, in your vacation schools and recreation piers, and the like, you are going a long way to meet the need of physical exercise and out-of-door games. The organization and equipment which the city authorities provide in your parks and playgrounds are beyond anything that we have at present in England. In London we have far better playgrounds than you, but they are far less useful to us. We have not yet learned how to organize and direct them. There is no living voice there in the play hours to help or control or suggest." In closing she expressed the hope that the series of lectures she intends giving in this country might prove sufficiently remunerative to enable her to establish another recreation center in London on her return. (The first of these lectures was given on April 3, and was very largely attended.) Among the other speakers was the young Duchess of Marlborough, who read a thoughtful and interesting address, principally devoted to the responsibilities of women. In the course of it she made the suggestion that owners of land in the vicinity of village schoolhouses should give or lend one or more acres, where the children should have individual plots and be taught gardening under school supervision. She said that she had seen this plan adopted, and could personally testify to its success in the way of benefit to the children.

Bequest to New York Association for Improving the Condition of the Poor. — It is announced that John D. Rockefeller has contributed to the New York Association for Improving the Condition of the Poor $125,000 towards the erection of a large seaside hospital for the treatment of nonpulmonary tuberculosis. Some time ago, Mr. Rockefeller offered to make such a gift on condition that a like sum for the purpose should be raised by the association, and this has now been done. Plans for a hospital to accommodate 200 patients have been prepared by McKim, Mead & White, but, unfortunately, building operations cannot be begun just yet, as the city has not yet secured the title to the land promised for the site. It is now two years since the Legislature empowered the city to acquire land on the seashore "for the establishment of a seaside park for public health and recreation"; and one year ago the municipal authorities, in consequence of the representations of the Association for Improving the Condition of the Poor as to the good results in tuberculosis of the bones, joints and glands which had been obtained at its Sea Breeze Hospital, at Coney Island, accepted the offer of the association to build a larger hospital upon a site to be provided by the city. For this purpose one thousand feet of land were designated within the proposed Seaside Park, which it had been decided to locate at Rockaway Beach. This park, about twelve miles distant from the City Hall, is to embrace a tongue of land commencing at Belle Harbor, three miles long and containing five hundred acres. It is practically of the same size as Prospect Park, Brooklyn, and faces the Atlantic Ocean, while it has Jamaica Bay on its north shore.

Increase of Fees. — In consequence of the present high cost of living, the physicians of Warwick, Orange County, N. Y., who are members of the County Medical Association, have agreed upon an advanced schedule of fees. The increase determined upon amounts to 50%; 75 cents, instead of 50 cents, being charged for an office consultation and $1.50 instead of $1.00 for a visit within one mile of office, with double these rates for night work.

Current Literature.

New York Medical Journal.

March 14, 1908.

1. *Tuttle, J. P. *Acute Flexures or Angulations of the Sigmoid and Colon.*
2. Porter, W. H. *The Diagnosis of Diseases of the Heart.*
3. MacKee, G. M. *Indicanuria: Etiology, Diagnosis, Pathogeny and Treatment.*
4. Chance, B. *A Case of Accessory Sinus Disease with the Symptoms of an Osseous Tumor of the Orbit.*
5. Shelmerdine, E. K. *Winter Diarrhœa in Infant Feeding.*
6. Hausell, H. F. *A Case of Acute Double Miliary Tuberculosis of the Conjunctiva.*
7. Murray, D. H. *Cautery Clamp for Hemorrhoids.*
8. Robbinovitz, S. *Cause of Premature Separation of the Placenta.*
9. Herzig, A. J. *Acute Purulent Otitis Media in Infants and Young Children.*

1. Tuttle emphasizes the influence of acute flexures or angulations of the colon and sigmoid in the causation of constipation and fecal retention. These flexures may be congenital, due to abnormalities of the colon or its mesentery. If acquired, they are usually due to some inflammatory process causing adhesions. There is often associated a chronic appendix or salpingitis which may be the cause of the trouble. He reports some eleven cases in which this condition was found at operation, and the subsequent history proved that all the cases were relieved by straightening out the angulation. Usually it is only necessary to separate adhesions; occasionally fixation of the bowel is required. [R. I. L.]

March 21, 1908.

1. Boldt, H. J. *Progress in Gynecology from a Clinical Standpoint.*
2. Keating, E. *Points in the Early Diagnosis of Pulmonary Tuberculosis.*
3. Winfield, J. M. *The Treatment of Eczema in Infants and Young Children.*
4. *Burvill-Holmes, E. *The Value of Stained Smears in the Diagnosis of Diphtheria.*
5. VanderHoof, D. *Symptomatology and Diagnosis of Nephritis.*
6. Haim, L. *The Question of Sour Milk.*
7. Egbert, J. H. *Trachoma — Clinical Aspects and Successful Treatment.*
8. Franze, P. C. *How to Estimate the Functional Power of the Heart.*

4. In 529 smears from the nose and throat, Burvill-Holmes found that in only 31 did the smears fail to correspond with the cultures. The discrepancy seemed to show that the smears were rather more reliable than the cultures, as in some cases the subsequent cultures agreed with the smears. He believes, however, that while smears are of great value in experienced hands, control cultures ought always to be made. The chief value, of course, is when an immediate diagnosis is required. [This is at variance with the generally accepted view held as to the value of smears.] [R. I. L.]

The Lancet.

Feb. 29, 1908.

1. Dudgeon, L. S. *The Erasmus Wilson Lecture on Acute and Chronic Infections of the Urinary Tract due to the Bacillus Coli.*
2. Shaw, T. C. *The Radical Cure: Certification of Inebriates.*
3. Thorp, H. *A Case of Acid Intoxication following the Administration of Chloroform.*
4. Telford, E. D. *Three Cases of Delayed Chloroform Poisoning.*
5. Bride, T. M. *A Report on Two Cases of Delayed Chloroform Toxemia.*

6. Wilson, H. C. *A Fatal Case of Delayed Chloroform Poisoning.*
7. Wallis, F. C. *Three Cases of Fracture of the Lower End of the Humerus.*
8. Fitzwilliams, D. C. L. *The Pathology and Etiology of Intussusception from the Study of 1,000 Cases.* (Continued article.)
9. Clarke, J. S. *Two Cases of Anthrax.*
10. Purpura, F. *Tansini Method for the Cure of Cancer of the Breast.*

March 7, 1908.

1. *Armour, D. J. *Hunterian Lectures on the Surgery of the Spinal Cord and its Membranes.*
2. Duckworth, D. *Address on the Diatheses; the Personal Factor in Disease.*
3. Taylor, S. *Clinical Lecture on a Case of Aortic Aneurysm with Extensive Arterial Disease.*
4. Lewers, A. H. N. *Case of Wertheim's Hysterectomy for Advanced Carcinoma of the Cervix.*
5. Stoney, R. A. *Hernia of the Iliac Colon.*
6. *Fitzwilliams, D. C. L. *Pathology and Etiology of Intussusception from the Study of 1,000 Cases.* (Concluded.)
7. *Sequeira, J. H. *Seven Years' Experience of the Finsen Treatment.*
8. Schofield, A. T. *Case of Egg Poisoning.*
9. Hirsch, C. T. W. *Motoring Notes.*

1. Armour gives the first of the Hunterian lectures on the surgery of the spinal cord and its membranes. He presents the classification of "spina bifida," and describes its association with other congenital defects. It is said to occur once in every 1,000 births. Next to club-foot it is the most frequent of congenital malformations. It seems that it is rather more frequent in females than in males. In about 77% of all cases the defect is in either the lumbar or sacral regions, or in both. Diagnosis as to exactly which variety of spina bifida is present is difficult or impossible, except on operation, although there are with each variety certain associated conditions which he describes. The treatment of rhachischisis, or complete lack of union, is hopeless. Spontaneous cures do take place occasionally, 13 cases having been reported. Aspiration is of value as a palliative measure only when the tumor is tense and ulcerated; it usually soon results in death. The only forms of treatment to be recommended in spina bifida are palliation or excision. Palliation consists in some form of protection of the tumor from external violence. Treatment by injection into the sac of an iodoglycerin solution, usually known as Morton's fluid, has shown, according to Morton, 80% of cures in a certain class of cases. The writer gives numerous details as regards the methods of operative procedure in the different varieties of this condition. Operation if to be done at all should be done as early as possible. The chief contraindications to operation are marasmus and hydrocephalus. The excision of spina bifida will not cure the associated hydrocephalus. Prognosis without operation is absolutely bad. In those operated on in the first few months of life the mortality is over 35%, while in those operated upon when five or more years old the mortality is only 4.7%. This difference can be largely accounted for by the fact that the patients living five years or more are not bad cases, and are presumably good subjects for operation. There is an extensive bibliography accompanying the article.

6. Fitzwilliams presents some considerations on the pathology and etiology of intussusception, from the study of 1,000 cases taken from the records of the Hospital for Sick Children, the West London Hospital and others. He believes that for the onward progression of the intussusception the longitudinal fibers of the sheath are the all important factor, the circular fibers merely contributing a fixed point on which they may act. Up to this time ileocolic intussusception has been placed in a class by itself. He can see no reason for this, and believes that it should not be described as a separate variety, but should be grouped with the other enteric cases. He presents photographs and diagrams showing the rôle played by the mesentery in this condition. He speaks at length on the subject of the classification and the varieties of intussusception. In his series 67% of cases under twelve years were of the ileo-cecal variety, and 21% of the so-called enteric variety. He presents diagrams and brief descriptions of double, triple and multiple intussusceptions. In the light of our present knowledge of the physiological action of the intestine, he believes that the dietetic factor in the causation of this condition is far more important than is generally admitted. Curiously enough, in his series of 1,000 cases, by far the greater number occurred during the month of March, with a steady rise from the beginning of the year to this month, and a gradual decline to the end of the year. In 648 cases under the age of twelve years, 71% occurred in children who were not more than twelve months old. Sixty-eight per cent were males; 32% females. He believes that the want of co-ordination of the intestinal movements in infancy is an important factor in the production of an intussusception, not, however, the sole cause. As regards the exciting cause he believes that some error in diet can generally be found on careful investigation. The segmentation of the intestinal contents in animals fed on large quantities of bismuth, as shown by Cannon and others, he believes has an important bearing on the formation of intussusception. This article in two numbers of the *Lancet*, is provided with numerous diagrams, tables, charts and illustrations, with an excellent bibliography, and seems to bring the subject fairly well up to date.

7. Sequeira gives some remarks on seven years' experience with the Finsen treatment, particularly as regards its effects on lupus. Out of 599 cases he has had 71.6% of cures and 17.8% of improved cases. In lupus erythematosus the Finsen treatment has been beneficial in 38% of cases. He has given up this treatment in rodent ulcer, as he believes the x-ray is more efficient, nor does he advise it in cutaneous nevi, moles, leucodermia or alopecia. Keloid is better treated by the x-ray.

[J. B. H.]

March 14, 1908.

1. *Armour, D. J. *Hunterian Lectures on the Surgery of the Spinal Cord and its Membranes.*
2. Dow, W. *Clinical Symptoms of the Cases of Epidemic Cerebrospinal Meningitis admitted into Belvidere Fever Hospital, Glasgow, during the Recent Epidemic, together with a Short History of the Disease in Scotland.*
3. Nicoll, A. *Remarkable Case of Persistent Ingestion of Needles and their Removal from Different Parts of the Body, especially from the Organs of the Abdominal Cavity, by Laparotomy Several Times Repeated.*
4. Stretton, J. L. *Study of Five Cases of Appendicostomy.*
5. *Carpenter, G. *Congenital Hypertrophic Stenosis of the Pylorus and its Medical Treatment.*
6. Beddard, A. P. *Suggestion for Treatment in Delayed Chloroform Poisoning.*
7. Lake, R. *Case of Cystic Disease of the Maxillary Antrum.*
8. Handley, W. S. *Lymphangioplasty; a New Method for the Relief of the Brawny Arm of Breast-Cancer and for Similar Conditions of Lymphatic Œdema.*
9. Lunsden, G. H. C. *Portal Obstruction without External Evidences of Portal Caval Anastomosis; its Prognostic Significance.*
10. Beale, H. E. *Note on a Case of Compound Depressed Fracture of the Vault of the Skull; Operation and Recovery.*

1. Armour, in the second of the Hunterian lectures, speaks on fracture dislocation of the spine, presenting a classification of injuries to the vertebral column, clinical types, diagnosis between partial and total transverse lesions, and the question of regeneration. As regards operating in these cases, he believes that it is essential, in order that the operation should be successful, first to remove enough laminæ to be absolutely sure that there is no remaining pressure on the cord; second, to remove any projecting pieces of bone; third, to remove all blood clots; fourth, to open the dura mater to ascertain definitely the position of the cord; fifth, to see that the cord dilates to its full extent again and that pulsation returns. Operation is indicated (1) to relieve pressure from depressed or displaced fragments of bone; (2) to relieve pressure from blood clot or extensive hemorrhage, either extra- or intradural; (3) to relieve pressure and prevent further de-

struction from edema by enlarging the constricted bony canal; (4) to remove the future danger of pressure from exudate and inflammatory thickening. He believes in operating on these cases.

5. Carpenter believes in the theory that hypertrophic stenosis of the pylorus is congenital, because the condition has been found in the fetus; because symptoms frequently arise immediately after birth, and the associated muscle hypertrophy of the stomach is not a general hypertrophy of the organ, but is confined to the pyloric end. He believes that if this stenosis were an acquired condition due to work thrown upon the stomach, the hypertrophy would be general and not localized. He discusses this question at length. Surgery as a mode of treatment for pyloric spasm is neither necessary nor advisable. He thinks that to operate on such a case would be on a par with performing tracheotomy for the cure of laryngismus stridulus. He attaches great importance to the discovery of a pyloric tumor in diagnosis. In regard to treatment, this he believes must be conducted on broad, general principles that experience has taught us to be of value in the uncomplicated complaint. The secret of success lies not so much in the drug treatment as in the discovery of the milk best suited to the child. Regular meals are no less important than restricted ones, but all meals must be given slowly. Abdominal massage in the direction of the pyloric outlet is occasionally efficacious. Thorough stomach washing with warm, normal saline solution should be used twice a day until the complaint shows decided signs of improvement, when it may be used once a day. The infant's stomach must be kept warm, and its digestion must not be upset by starchy food. He believes that the physician will best serve his patient by not being in too great a hurry to shift his responsibility on to his surgical colleague. [J. B. H.]

Deutsche Medizinische Wochenscrift. No. 6.
Feb. 6, 1908.

1. Ahlfeld, F. *Treatment of the Umbilical Cord.*
2. Stadelmann, E. *Cutaneous and Conjunctival Administration of Tuberculin.* (Continued article.)
3. Mühsam, R. *Pyocyanase in the Treatment of Diphtheria.*
4. Spiethoff, B. *Atoxyl in Syphilis.*
5. *Schlesinger, E. *Injection Therapy in Neuralgias.*
6. Schönwerth, A. *Diverticuli of the Ureter and Hydronephrosis.*
7. *Zangemeister. *Treatment of Puerperal Mastitis by Suction.*
8. *Ritter. *The Use of Hyperemia in the Treatment of Burns.*

5. Schlesinger has treated 42 cases of sciatica with a normal salt solution chilled to the freezing point. He injects from 2 to 10 ccm. of this solution at the point of the greatest pain. The effect of the injection is probably mechanical, being due to the lifting and loosening of the tissues. The pain vanishes almost instantly, and the cure is generally permanent, although in rare instances a second or third injection is necessary. The author describes several acute cases in which the pain was relieved after the infection of 10 ccm. of the chilled mixture. Among the chronic cases were neuralgias attendant on diabetes and gout. These are the cases requiring two or three injections, but the pain has not returned during the several months following the treatment. He also used this treatment in some cases of gastric crises with some success.

7. Zangemeister, after an experience with 50 patients with puerperal mastitis, concludes that suction treatment does harm in the first stages of mastitis. On the other hand its effects were good in those cases which had progressed to the stage of abscess formation, for here with the suction very small incisions sufficed to complete the cure.

8. Ritter confirms the statements of other writers that prompt relief follows the application of hyperemia treatment to burns, but emphasizes the fact that such constriction must be brief. For general burns the problem is different and further investigation is necessary. In some cases the scars seem to be intensified, probably because the tissues are filled with blood to an excessive extent. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 6.
Feb. 11, 1908.

1. *Czerny. *Treatment of Cancer with High Frequency Currents.*
2. Wolf, K. *Immunisation by Mouth.*
3. Lommel, F. *Observations on Polycythemia (Erythremia).*
4. v. Graff, E. *Experimental Explanation of the Action of Bier's Hyperemia.* (Preliminary report.)
5. Hoffmann, R. *The Properties of the Serum in Diseases of the Thyroid.* (Preliminary report.)
6. Schottelius, M. *Lysol and Cresol Soap.*
7. Fornet, W., and Schereschewsky, J. *Does a Specific Precipitin Reaction in Lues Exist?*
8. Bacmeister. *The Precipitation of Cholesterin in the Bile and its Importance in the Pathogenesis of Gallstones.* (Continued article.)
9. Harnack, E. *Further Studies on Skin Electricity and Skin Magnetism of Man.* (Concluded.)
10. Frank, E. *Reminiscences of Albert v. Tobold.*

1. Czerny, following Keating Hart's work, has treated cancer with the high frequency current directly applied to the growth. The action of electricity so applied seems to be at first a destruction of the cells of the neoplasm, often followed, however, by an increased rapidity and malignancy in the remaining portions of the growth. In all superficial carcinomata, as much growth as possible should be removed surgically, either by knife or curette. Czerny has treated 35 cases by this method (" fulguration "). In 3 cases of small superficial carcinomata of the face and mouth, the healing was immediate and lasting. All the other cases were far advanced, or recurrences from previous operations (breast, jaw, uterus and rectum). In these cases many were for the time being benefited, but no real arrest of the process nor permanent cure was observed. He concludes that in superficial carcinomata of skin or mucous membrane, especially when ulceration is present, fulguration will be of lasting benefit. Otherwise, the method is rather hopeless. [R. D.]

Berliner Klinische Wochenschrift. No. 6.
Feb. 10, 1908.

1. Lesser, E. *A Case of Late Post-Conceptional Infection of the Fetus with Syphilis.*
2. Wolff, M. *Cutaneous, Conjunctival and Subcutaneous Tuberculin Injections.*
3. *Oberwarth, E., and Rabinowitsch, L. *Infection with Tubercle Bacilli from the Gastro-Intestinal Tract.*
4. *Michaelis, L., and Lesser, F. *Experience with the Serum Diagnosis in Syphilis.*
5. Casper, L. *Recurrent Papillomata of the Urinary Bladder.*
6. v. Bardeleben, H. *Ligature of the Veins the Best Method of Treating Puerperal Thrombo-phlebitic Pyemia.*

3. The authors experimented on young pigs, in which the esophagus had been divided and a gastric fistula had been made; in this manner the respiratory and gastro-intestinal tracts could be kept absolutely separate. The pigs were fed through the fistula with emulsions of tubercle bacilli. After twenty-two hours, tubercle bacilli were recovered from the blood and lungs of one animal. Another animal which was killed three weeks after the introduction, showed neither microscopic nor macroscopic evidences of tuberculosis, but from his glands (mesenteric), lungs and liver, tubercle bacilli were recovered after injection of emulsions of these organs into guinea pigs. The authors remark that this seems to show, not only that tubercle bacilli can be carried directly from the stomach and intestines to the lungs, but also that the tubercle bacillus may remain latent in different organs for a longer or shorter period.

4. Michaelis and Lesser report their results with the serum diagnosis in syphilis. In 63 cases of lues the reaction was positive in 74.6%. In 14 cases of general paralysis 85% were positive. The authors believe that the reaction is of great value in the diagnosis of early and late syphilis, and also that the reaction is an absolutely specific one. [R. D.]

Zeitschrift für Klinische Medizin. Bd. 64, Heft 5 and 6.

1. *Dietschy, R. *A Peculiar General Disease with Particular Involvement of the Musculature and Integument.*
2. Neufeld, L. *Laryngeal Changes in Acromegaly.*
3. *Benedict, H. *Peri-arteritis Nodosa.*
4. *Choroschilow, W. A. *Pathogenesis of Paroxysmal Hemoglobinuria.*
5. Grüner, O. *A Contribution to the Physiology of Chloride Metabolism and its Relation to Water Excretion and to Body Weight.*
6. *Schrank, F. *Experimental Contributions to the Effect of Iodine Preparations upon Adrenalin Arterio-Necrosis.*
7. Schrank, F. *The Effect of Spermin in Adrenalin Arterio-Necrosis.*
8. Mayer, E. *Studies on the Agglutinotion of Bacterium Coli.*
9. v. Moraczewski, W. *A Contribution to the Knowledge of Levulosuria.*
10. Schültze, A., and Braun, K. *Experimental Antidiastase Formation.*
11. Pappenheim, A. *Historical Remarks on the Benzaldehyde Color Reaction in Urine.*
12. Zangemeister, W. *The Influence of Molecular Concentration of Fluids upon Their Absorption.*

1. This is the report of a case of interstitial polymyositis with calcareous changes in the tendons, and scleroderma. A thirteen-year-old girl developed, during the course of a year, a general atrophy of the entire skeletal musculature, combined with painless sclerodermatic changes in the hands and face. During the course of the disease ulcers and fistulæ formed, from which at times calcium carbonate was discharged. This latter seemed to come from the insertions of tendons or adjacent structures. In the later stages of the disease contractures developed, particularly in the knees and elbows. The skin showed marked atrophy and round cell infiltration around some vessels. In the striated muscle there were numerous foci of cell infiltration and considerable increase of the interstitial tissue with atrophy of the muscle fibers. There were a few foci of infiltration in the heart, bladder and uterus, while the other organs were normal. The disease is considered to be related to the chronic rheumatic affections.

3. In 1866 Kussmaul and Maier described the disease peri-arteritis nodosa. Since then 19 cases have been reported. Benedict adds a case, a woman of forty-four, who showed marked arteriosclerosis with relatively high blood pressure, hypertrophy of the left side of the heart and relative insufficiency of the aortic valve. As an evidence of the severe vascular changes, she developed a hematoma in the abdominal wall and several nodules the size of hazel nuts, one of which was in the subcutaneous tissue of the breast. Histological examination of this showed it to be a dissecting aneurism. Another nodule from the tibia showed on histological examination the structure of an aneurism, and an adjacent small blood vessel showed marked peri-arterial proliferation such as has been described as characteristic of this condition. The disease began with the symptoms of rheumatism affecting many joints. There were moderate anemia, slight leucocytosis, moderate fever, marked pain in the epigastrium and in the region of the liver and slight jaundice. Such symptoms have been rather characteristic of other cases which have been reported. The disease generally occurs in young individuals. The reported cases range from babies to middle age. Fifteen of 21 cases were males. Nearly all showed a febrile onset. A few of the cases showed icterus, usually not at the beginning. Five of the reported cases showed subcutaneous nodules from the size of a pea to a hazel nut. General arteriosclerosis is marked in only a few of the cases. A very frequent symptom is colic-like pain in the stomach, increased by pressure and by eating. This pain is usually paroxysmal, lasting varying times from an hour to a half day, sometimes accompanied by vomiting. Diarrhea is frequent. In some cases following the vascular changes there has been necrosis of the mucous membrane of the intestine with perforation and diffuse peritonitis. The urine almost always shows albumin and frequently blood and casts. Moderate leucocytosis is almost constant. Symptoms of peripheral neuritis in moderate degree are very frequent, and there may be dizziness, vomiting, coma or paralysis resulting from involvement of the cerebral vessels. The usual duration is three to four months, but the author's case was under observation for three years. Most of the cases are fatal. Diagnosis is difficult unless an affected blood vessel is excised for diagnosis.

4. Choroschilow reports here a study of two cases of paroxysmal hemoglobinuria in which he followed clinically attacks of hemoglobinuria which were induced by exposing the hands or feet to the action of cold water. As a result of these experiments he believes that the red blood corpuscles undergo certain pathological changes when they are exposed to the action of a reduced temperature while circulating in the peripheral blood vessels. That such an effect is produced by the cold is shown by the fact that after exposure to cold the blood corpuscles *in vitro* after coagulation of the blood give up their hemoglobin more readily than under normal conditions. Circulating in the body in the blood plasma they do not, as formerly assumed, give up their hemoglobin to any great extent, since no hemoglobinemia is present, but within the kidney they do give up their hemoglobin, which is excreted in the urine. Such hemoglobinuria in man differs from the hemoglobinuria produced in animals by the injection of dissolved hemoglobin, or the injection of substances which *in vivo* dissolve the red blood corpuscles. In the experimental hemoglobinuria the hemoglobin does not appear in the urine until a considerable quantity of hemoglobin is present in the blood plasma, whereas in man the blood plasma shows no hemoglobin. It might be assumed in the latter case that the kidneys play a particular part in splitting off the hemoglobin from the red blood corpuscles, and this action on the part of the kidney has been emphasized by previous observers. However, experimental observations have shown that different substances are eliminated from the circulating blood at different rates of speed. If hemoglobin, produced by solution of red blood corpuscles in distilled water, is injected into animals, hemoglobinemia results and when that reaches a certain grade hemoglobinuria ensues. However, if hemoglobin, obtained from muscles, is injected, hemoglobinuria appears when there is scarcely a trace of hemoglobin in the plasma. Consequently, the ready excretion of hemoglobin in these cases of paroxysmal hemoglobinuria may in part be the result of some peculiarity of the hemoglobin which causes it to be excreted more readily than the hemoglobin of the normal corpuscles. Notwithstanding the fact that the attacks of hemoglobinuria are accompanied by pain, disagreeable subjective symptoms, headache and temperature, this author does not regard the hemoglobinuria as an auto-intoxication, or a disease of metabolism or an affection of the nervous system, but primarily as a disease of the red blood corpuscles, possibly the result of some abnormality in the blood-forming organs. Owing to this defect in the red blood corpuscles they are abnormally susceptible to the action of cold, give up their hemoglobin chiefly in the vessels of the kidney, and this hemoglobin is excreted abnormally easily.

6 and 7. Schrank has studied the effect of iodine prepaations and spermin on arterio-necrosis produced in rabbits by the injection of adrenalin. He found that injections of iodipin decreased the effect of the adrenalin, while injections of potassium iodide rather increased the effect. Iodipin is a combination of iodine with sesame oil. This discrepancy in result was shown to be due to the fact that not the iodine, but the oil part of the compound had the inhibitory action, and sesame oil used in combination with adrenalin acted in an inhibitory way on the adrenalin. Olive oil similarly had a certain inhibitory action. Spermin was found similarly to exert an antagonistic action on the adrenalin. [H. A. C.]

Bd. 65. Heft 1 and 2.

1. *Aronsohn, Ed., and Blumenthal, F. *The Relation of Ferments to Fever.*
2. *Oberndörffer, E. *Metabolism in Acromegaly.*
3. *Kitamura, S. *Arteriosclerosis of the Pulmonary Artery from Beer-Drinking.*
4. Von Herwerden, M. *Metabolism of the Purin Bodies.*

5. *Witte, J. *The Value of Salomon's Method for the Diagnosis of Cancer of the Stomach.*
6. *Wiens. *The Bacteriology of the Blood in Croupous Pneumonia.*
7. Janowski, W. *Coefficient of the Quickness of the Pulse (Pulszcleritat) in Normal and Pathological States.*
8. Kentzler, J., and Királyfi, G. *The Value of Deviation of the Complement in the Diagnosis of Typhoid Fever.*
9. Rautenberg, E. *Remarks on the Physiology of the Contraction of the Heart.*
10. *Wagner, A. *On Ochronosis.*
11. Kohler, R. *The Quantitative Estimation of Albumin by Means of Measuring the Electrical Conductivity.*
12. *Mendl, J. *Metabolism in Tetanus.*

1. This article is an experimental investigation into the mode of production of fever after fever puncture in animals. The authors compared the autolysis taking place in given amounts of muscle and liver in fever animals with that in normal animals and those in a state of hunger. They found in animals subjected to fever puncture a great increase of autolysis in the muscle, while the autolysis in the liver was somewhat decreased. This points to an increased action of the proteolytic ferment in the muscle, as the mode of production of the fever after fever puncture, and excludes the liver as taking part in the phenomenon.

2. Oberndörffer's investigation of the metabolism of a patient with acromegaly over a period of ten days showed practically normal conditions. He refers the abnormalities found by other investigators to differences in the diet, to over and under nutrition.

3. Kitamura reports a very remarkable case of arteriosclerosis of the pulmonary artery in a man who drank beer to great excess (thirty glasses daily). The smaller as well as the greater branches of the vessel were thickly studded with sclerotic plaques, due entirely to proliferation and subsequent degeneration of the intima. All the blood vessels and the cavities of the heart were richly filled with dark fluid blood, from which the author concludes that a true plethora was present. To this plethora, which apparently caused an increased blood pressure, especially in the pulmonary circulation, he ascribes the arteriosclerosis. The toxic effects of the alcohol consumed could be neglected, because the other arteries of the body were free from sclerosis.

5. Salomon's method for the differential diagnosis of cancer of the stomach is as follows: The patient is put, on the preceding day, on fluid diet, free from albumin, and receives no food after the evening meal. On the following morning, the stomach is washed out with 400 ccm. of normal salt solution. The wash water is tested with Esbach's reagent and the nitrogen in 100 ccm. of the wash water is estimated according to Kjeldahl. If cancer is present, there is a marked precipitate with Esbach's reagent, and the nitrogen content per 100 ccm. is relatively high. Witte, from Ewald's clinic, reports the results of the use of this method in a large number of cases of various diseases of the stomach. He concludes, from his own work and a careful review of the literature, that this method is a valuable one in the diagnosis of cancer of the stomach, and that values for nitrogen above 25 mgm. in 100 ccm. of wash water are almost conclusive evidence of cancer. The only other disease of the stomach which may lead to confusion is gastrosuccorrhea, and this disease can always be readily distinguished from cancer by other features. Ulcer of the stomach gives in all cases a much lower figure. The amount of precipitation with Esbach's reagent is of less value. It goes without saying that the test is of no value where blood is present in the wash water. This method promises to be of some value in a few doubtful cases, but, on account of the time and laboratory facilities required, can never be of wide application.

6. Wiens reports from Strümpell's clinic the results of blood cultures made by him in croupous pneumonia. Thirty-three cases in all were investigated by various methods, and 26 were positive. With blood agar plates, however, only 42% of positive results were obtained, and with Conradi's bile method, only 1 out of 8. The use of peptone in various modifications gave exceedingly good results, a growth being obtained in 13 out of 15 cases. He recommends the following as the best method for cultivating pneumococci from the blood. A liquid medium containing 1% of dextrose and 10% of peptone is used. One cubic centimeter of blood is mixed with 10 ccm. of this medium and incubated for twenty-four hours, after which transplants are made from the sediment to agar slants. In case the result is negative, a second transplantation is made after an incubation of forty-eight hours. With this method Wiens obtained positive cultures in all of 6 cases examined. He comes to the following conclusions with regard to the presence of bacteria in the blood in croupous pneumonia: (1) Bacteriemia can always be shown in croupous pneumonia if suitable methods are employed, and (2) has of itself no prognostic value; in general, however, the presence of large numbers of bacteria renders the prognosis worse, but if only a few can be shown, the case may still end fatally. (3) The pneumococci do not disappear from the blood at the crisis, but may be shown as much as twenty-four hours afterwards. The writer also devoted some attention to the character of the knee jerks in pneumonia and found them absent in two cases out of twenty; these were both very severe cases with marked toxemia. These cases, however, were all adults and he appears not to be familiar with the work of Pfaundler, who found the knee jerks absent at some time in a great majority of cases of pneumonia in children, and attached considerable diagnostic importance to this fact.

10. Wagner reports *in extenso* a case of ochronosis with alkaptonuria. He found the reducing qualities of the urine to be due to the presence of homogentisinic acid. Investigation of the pigment deposited in the tissues showed that it was free from iron and belonged to the melanins, but it was not possible to obtain it in a pure state. Ochronosis is often, but not always, combined with alkaptonuria and both anomalies may be due to the same disturbance of metabolism.

12. Mendl reports an exhaustive investigation of the metabolism in a case of tetanus which recovered. He found a marked increase of the excretion of nitrogen, which involved all the various forms in nearly equal proportions. This increase cannot be ascribed to fever, which was absent in this case, but was probably due to the breaking down of cell proteids in the body. [W. T.]

Miscellany.

PARASITOLOGY.

A SUPPLEMENT TO THE JOURNAL OF HYGIENE.

The editors of the *Journal of Hygiene*, Messrs. G. H. F. Nuttall and A. E. Shipley, propose to issue shortly a supplement to that *Journal*, entitled "Parasitology." It will be issued at intervals determined by the material received by the editors, but is expected to make an annual volume of 400 to 500 pages, with plates and figures. The editors believe that the remarkable development of parasitology in recent years, and the increase in our knowledge of the part played by parasites in human and animal diseases, demand a means of publication, in the English language, of original papers dealing with the subject in its widest sense, and that the fundamental discoveries upon the modes of infection in plague, malaria, sleeping sickness, yellow fever, ankylostomiasis, elephantiasis, and other important diseases, affecting man and animals, render it evident that the co-operation of specialists in different fields is required for the proper elucidation of the complex problems which surround the causation of these diseases. It is hoped that this publication will appeal not only to medical men, but to veterinarians, zoölogists and agriculturalists. Papers may be sent to the editors, 3 Cranmer Road, Cambridge, England.

Correspondence.

LETTER FROM LONDON.

[From our Special Correspondent.]

Anterior Poliomyelitis. Calmette's Reaction. Opsonic Index. Leprosy.

London, March 24, 1908

Mr. Editor: A discussion has recently been held by the Medical Society of London on the prognosis and treatment of poliomyelitis. It was introduced by Dr. Risien Russell who said his pleasure in so doing was enhanced by the legitimate inference that in the opinion of that ancient society the disease still lay within the domain of the physician, and would not be yielded to the encroaching surgeon. For purposes of prognosis, two allied conditions must be definitely excluded: Landry's palsy, which is a fatal disease, whereas, poliomyelitis is rarely so, and toxic polyneuritis which is susceptible of recovery to a degree equally rare in poliomyelitis.

No prognosis as to life can be given until paralysis is arrested, since the respiratory musculature may be involved late; with regard to the paralysis, early and rapid return of power is of good augury for complete recovery in a particular group of muscles; the electrical reactions are of some assistance, but are not infallible, and not till twelve months be past should all hope be renounced. He referred to the cases of good recovery in which, nevertheless, a generally diminutive limb resulted, and mentioned the occurrence of progressive muscular atrophy later in the history of such cases. In his experience adults present more severe forms of paralysis and show a poor degree of recovery. The statement of some authorities that cases with marked febrile reaction at onset permit a better prognosis, he could not verify from experience.

As to treatment, he advocated no active measures during the acute stage: merely rest, a diaphoretic and purgative and local applications, such as warmth or leeches (or failing these, morphia where the respiratory muscles are not involved) for pain. Counterirritants and the prone position are undesirable since they conduce to restlessness. He asked for an expression of opinion as to the date for active treatment by massage and movements and as to the proper time for surgical intervention. He urged that the physician should prevent deformities, and not call in the surgeon only when they were already developed. It is desirable to ascertain the relative value of, and proper periods for, tendon transplantation, arthrodesis, and nerve implantation.

Dr. Beevor agreed that adults generally present the severe type of the disease.

Mr. Tubby thought the main function of the physician treating poliomyelitis was the intelligent anticipation of deformities, and the simplest means thereto, the malleable iron splint. In general the prognosis may be said to be better than one would expect. The proper time for the surgeon to be called in is when medical methods fail, and the surgeon should keep in view and distinguish two factors: one, the actual paralysis, and the other, the effects of gravity and malposition. The latter must be treated first since the continual stretching to which weakened muscles were thus exposed constituted an almost insuperable barrier to recovery. Tenotomy, though often unavoidable, is scientifically indefensible since it subtracts power from good, but does not enhance the value of bad muscles. In choosing a method the surgeon must bear in mind the main function of the limb he is to treat; thus in the leg, where it is support and not fine movements that is wanted, arthrodesis finds a wider field than in the arm where tendon transplantation is more often required. He thought there was a great field before nerve implantation, that it should be done early, and that there was need for research as to the position of fibers destined to particular muscles or muscle-groups in the great nerve trunks.

Dr. Guthrie spoke of rational treatment with vaccines, but admitted that the mischief was done before they could be employed. He believed in the systematic re-education of muscles, and thought much of the success said to be due to surgery was in reality the outcome of more careful after-treatment.

Dr. Batten objected to the galvanism advocated by Dr. Russell, as a painful and difficult process, the benefit of which was not worth the disturbance caused. He had seen one case of complete recovery.

Mr. Robert Jones desired to emphasize the importance of relieving the strain put upon palsied muscles by their opponents or by gravity, in order to permit the practical complement, in those muscles, of the degree of recovery attained by the nerve cells directly concerned.

Dr. Buzzard compared poliomyelitis to smallpox as a scourge in the community, believing that the former is much more common than is usually believed, and that the inevitable deformities of the one are even less tolerable than the disfigurement of the other. He hoped for the time when it would be possible to employ preventive vaccination in the one case as successfully as in the other. He advocated notification. Dr. Kingston Fowler admitted that all so far said as to treatment applied to the effects of, but not to, the disease itself. As to the ultimate recovery of muscles he had seen instances of return of power after very long intervals. He would like to know whether for life-assurance purposes, an old poliomyelitis patient could be considered "average." On this last point, Dr. Russell replied that he believed it could unless the chest muscles were involved. Referring to Dr. Batten's remarks, he said he personally had never seen a case of complete recovery; he did not agree that galvanism was impracticable, and had in fact found it of great service.

The general experience of Calmette's ophthalmic reaction, introduced with great enthusiasm in London by Sydney Stephenson, has been so far unfavorable that many ophthalmologists are condemning it in almost unmeasured terms; apart from the fact that the indications, both positive and negative, are fallible, there have been ugly cases of corneal ulcers and resulting opacities in eyes previously normal. Even with a 0.5% solution persistent conjunctivitis has been seen.

Serious attacks, too, have been made upon the validity of the opsonic index; Shattock and Dudgeon, working with melanin granules from the eye of the ox, have come to the conclusion, chiefly as a result of saturation experiments, that the chief increase of opsonin is not specific, that opsonin is not formed *in vitro*, and that "calculation of the opsonic value of a patient's serum alone does not give a complete estimate of the patient's hemophagocytic resistance." Wright, who was present when this paper was read, whilst dissenting from deductions, has not yet had opportunity to offer evidence for a destructive criticism.

On the other hand, Dr. Latham, working at the question of the administration of tuberculin and other vaccines by the mouth, in conjunction with normal saline, or fresh horse serum, has had occasion to study a very large number of opsonic indices in close relation with simultaneous observations of the temperature and clinical signs. The observations were carried out by individuals deliberately kept in ignorance of more than one of the data it was desired to correlate, and yet the results were so uniform as to afford, when charted, good ocular demonstration, and as to enable Dr. Latham now to dispense with index observations and to administer his doses upon the clinical evidence alone. This does not look as if, even though the index be an incomplete guide, it is an inaccurate one.

Speaking of horse serum, I may mention that it is very much the fashion, and is recommended with equal faith — belief in that which you know not to be true — for pernicious anemia and for varicose ulceration.

Professor Deycke, of Hamburg, has communicated to the London School of Tropical Medicine a new method of treating leprosy; in the tissue subjacent to a leproma, he finds, after three weeks' incubation in saline, a streptothrix, which may or may not be the cultural form of the lepra bacillus, but which at any rate furnishes substances, apparently of a fatty nature, which upon injection, exert a beneficial influence upon the progress of the disease. I understand that the communication was received with cordiality, but with marked reserve.

C.

RECORD OF MORTALITY

For the Week ending Saturday, March 28, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	—	—
Chicago	660	200	Waltham	7	1
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	7	2
Baltimore	198	51	Brookline	2	—
Cleveland	—	—	North Adams	7	1
Buffalo	—	—	Chicopee	7	3
Pittsburg	—	—	Northampton	7	4
Cincinnati	—	—	Medford	2	—
Milwaukee	—	—	Beverly	4	3
Washington	—	—	Leominster	2	—
Providence	77	24	Hyde Park	5	2
Boston	281	84	Melrose	5	1
Worcester	52	14	Newburyport	—	—
Fall River	43	26	Woburn	5	1
Cambridge	34	8	Westfield	—	—
Lowell	36	9	Marlboro	2	1
Lynn	16	4	Revere	3	—
New Bedford	52	18	Attleboro	1	0
Springfield	21	5	Peabody	—	—
Lawrence	31	13	Adams	1	1
Somerville	26	8	Clinton	4	0
Brockton	9	5	Gardner	4	3
Holyoke	15	8	Milford	—	—
Malden	12	4	Watertown	1	0
Chelsea	13	4	Plymouth	—	—
Newton	7	1	Weymouth	3	0
Salem	19	8	Framingham	3	—
Haverhill	9	3	Southbridge	7	2
Fitchburg	8	2	Wakefield	—	—
Everett	4	0	Webster	—	—
Taunton	10	2	Arlington	2	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED APRIL 1, 1908.

Carmichael, D. A., surgeon. Granted leave of absence for ten days from March 25, 1908, on account of sickness. March 28, 1908.

Kalloch, P. C., surgeon. Directed to proceed to Bradford, Me., for special temporary duty, upon completion of which to rejoin his station at Portland. March 27, 1908.

Anderson, J. F., passed assistant surgeon. Directed to proceed to Asheville, N. C., for special temporary duty, upon completion of which to rejoin his station in the Hygienic Laboratory. March 25, 1908.

Amesse, J. W., passed assistant surgeon. Relieved from temporary duty in the Hygienic Laboratory and directed to rejoin his station at Havana, Cuba. March 30, 1908.

Warren, B. S., passed assistant surgeon. Detailed to represent the Service at the annual meeting of the Oklahoma State Medical Association at Sulphur, Okla., May 14–16, 1908. March 27, 1908.

Wightman, W. M., assistant surgeon. Granted leave of absence for seven days from March 1, 1908. March 31, 1908.

de Valin, Hugh, assistant surgeon. Relieved from duty at New Orleans Quarantine Station and directed to proceed to Savannah Quarantine Station and assume command of the Service at that port. March 24, 1908.

Bryan, W. M., assistant surgeon. Temporarily relieved from duty at New Orleans and directed to proceed to New Orleans Quarantine Station, reporting to the medical officer in command for duty. March 25, 1908.

Tarbell, B. C., acting assistant surgeon. Granted leave of absence for thirty days from April 1, 1908, and excused without pay for a further period of two weeks from expiration of said leave. March 19, 1908.

Foster, S. B., acting assistant surgeon. Granted leave of absence for fifteen days from April 6, 1908. March 30, 1908.

Gustetter, A. L., acting assistant surgeon. Granted leave of absence for four days from March 3, 1908, on account of sickness. March 19, 1908.

Jackson, J. M., Jr., acting assistant surgeon. Granted leave of absence for seven days from April 14, 1908. March 28, 1908.

Keatley, H. W., acting assistant surgeon. Granted leave of absence for one day, March 19, 1908, under paragraph 210, Service Regulations.

Simonson, G. T., acting assistant surgeon. Granted leave of absence for two days from March 31, 1908. March 27, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at Boston, Mass., April 9, 1908, for the purpose of making physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Surgeon R. M. Woodward, chairman; Assistant Surgeon T. W. Salmon, recorder. April 1, 1908.

RESIGNATION.

Resignation of Assistant Surgeon R. B. Scofield accepted, by direction of the President, to take effect April 17, 1908. March 19, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 4, 1908.

F. X. Koltes, assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to the Navy Yard, Mare Island, Cal.

R. F. S. Buck, pharmacist. Ordered to the Naval Training Station, San Francisco, Cal.

P. Leach, surgeon. Ordered home to wait orders, when discharged from treatment at the Army and Navy General Hospital, Hot Springs, Ark.

M. C. Baker, assistant surgeon. Detached from duty on the Midway Islands and ordered to the Navy Yard, Mare Island, Cal.

SOCIETY NOTICES.

American Therapeutic Society. — The Ninth Annual Meeting of the American Therapeutic Society to be held at the Bellevue-Stratford Hotel, Philadelphia, Pa., May 7, 8, and 9, 1908.

Noble P. Barnes, M.D., *Secretary*,
Washington, D. C.

The New England Hospital Medical Society. — This Society will hold its regular meeting Thursday, April 16, 1908, 7.30 p.m., at Hotel Nottingham. 1. Report of Case of Optic Atrophy and Tumor of the Brain following Premature Menopause. Dr. Ella R. Wylie, Boston. 2. Report of Case of Severe Hysteria. Dr. Anna W. Croacher, New Bedford, Mass. 3. Reports of Cases of Dysmenorrhœa with Treatment. Dr. Emma Y. Slaughter, Somerville, Mass. 4. Report of Cyst of Post Nasal Space. Dr. Evelyn Y. Nagle, Boston. 5. Report of Cases of Arthritis with Treatment. Dr. Evangeline W. Young, Boston.

Blanche A. Denig, M.D., *Secretary*.

BOOKS AND PAMPHLETS RECEIVED.

The Pupil of the Eye in Health and Disease. By G. Griffin Lewis, M.D. Reprint.

Obstetrics and Gynecology. By E. S. M'Kee, M.D. Reprint.

Cathartics Hypodermically. By E. S. M'Kee, M.D. Reprint.

Medico-Legal. By E. S. M'Kee, M.D. Reprint.

Physicians and Publicity: A Study. By E. S. M'Kee, M.D. Reprint.

The Hymen: Anatomically, Medico-Legally and Historically Considered. By E. S. M'Kee, M.D. Reprint.

Les Pseudo-Bacilles Acido-Résistants. Critique des Méthodes de Coloration du Bacille Tuberculeux. Revision du Groupe des Bacilles dits Acido-Résistants. Par Le Dr. André Philibert. Paris: G. Steinheil. 1908.

A Plea for Humane Treatment of Advanced Cases of Tuberculosis. By Frank C. Wilson, M.D. Reprint.

A Manual of Normal Histology and Organography. By Charles Hill, Ph.D., M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

The Immediate Care of the Injured. By Albert S. Morrow, A.B., M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

A Text-Book of Pharmacology. By Torald Sollmann, M.D. Second edition; thoroughly revised and greatly enlarged. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., M.A., F.R.S. (Edin.) Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

Practical Materia Medica for Nurses. By Emily A. M. Stoney. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders Co. 1907.

Original Articles.

CHRONIC OBSTRUCTION OF THE DUODENUM BY THE ROOT OF THE MESENTERY.*

BY E. A. CODMAN, M.D.,
Assistant Visiting Surgeon, Massachusetts General Hospital, Boston.

At the last Clinical Meeting, in a short communication on "Perforating Duodenal Ulcer," I ventured to suggest that possibly a chronic condition like acute gastro-mesenteric ileus might have some causative relation to duodenal ulcer and the so-called "hunger pain," supposed to be due to hyperchlorhydria. I further ventured to prophesy that in the next few years we should hear more about duodenal stasis. Curiously enough, recent issues of the *Journal of Medical Research*, the *Annals of Surgery* and the Boston Medical and Surgical Journal show that attention is now tending toward this problem. The authors who have written these articles seem to have allowed the acute condition of complete obstruction to occupy their whole attention and have not yet concerned themselves with the incomplete or chronic form. This is but natural, and is parallel with the history of the surgical investigation of other organs. Appendicitis, gall-stone disease, etc., have gone through the same story. Obstruction of the duodenum by the root of the mesentery has forced itself on our attention by the alarming acute condition; now let us turn to investigating its milder and more subtle ways of producing trouble. There must be a wide range between complete obstruction and physiological obstruction.

I also raised the question whether we were right in attributing "hunger pain" in every case to acidity. May the alkaline disturbances of the duodenum not give disagreeable sensations? I know that I have myself been annoyed by quite severe epigastric pain and yet felt that my stomach was quite comfortable and my food being well digested. The duodenum is a more complicated organ than the stomach and therefore more likely to get out of order.

My contentions are these:

1. That in the human being the transverse portion of the duodenum is more or less compressed by the root of the mesentery.
2. That slight anatomical deviations from the normal or certain pathological conditions may increase this pressure to a varying extent up to the point of complete occlusion of the gut.
3. That when this pressure reaches a degree great enough to give more resistance to the muscular efforts of the duodenum than the closed pylorus, the condition becomes of pathological significance.
4. That thus anatomically the duodenal secretions are brought in contact with mucous membranes unfitted physiologically to withstand their corrosive action.
5. That the obstruction favors stasis in the duodenum and thus bacterial invasion of the tissues.
6. That if the above propositions can be proved they will materially alter the present conceptions of the etiology and treatment of a variety of pathological conditions, e. g., hyperchlorhydria, nervous dyspepsia, duodenal and gastric ulcer, pancreatitis, cholelithiasis, persistent vomiting after laparotomy and in pregnancy, and excessive fluid drainage from wounds in the common duct and duodenum.

I believe that it can be shown that certain facts collected about the duodenum by Dwight in Anatomy, Cannon in Physiology, Türck in Experimental Bacteriology, and Ochsner and others in Operative Surgery tend to substantiate my contentions. I will take these six propositions up in order.

1 and 2. The superior mesenteric artery supplies nearly the whole intestine and, together with the portal system, lymphatics, fat, connective tissue, sympathetic plexus, etc., forms the mesentery. The root of the mesentery is formed practically by the trunk of the superior mesenteric artery where it emerges from the aorta between the transverse or third part of the duodenum and the pancreas. The main trunk of the portal vein is also in the root at this point and passes over the transverse part of the duodenum and under the pancreas and under the first part of the duodenum. A considerable variation is found in the way the folds of mesentery carrying these two vessels cross the transverse duodenum; but whenever the latter extends to the aorta or to the left beyond it, the superior mesenteric artery will inevitably press it against the aorta and vertebral column. Just how often this occurs is a matter for a large series of statistics, but a fair idea can probably be obtained from what Dwight says: "In the 54 cases already mentioned, the duodenum was on the right of the aorta till just before the terminal flexure 26 times. *It was wholly on the right 6 times.* The fourth part lay in front of the aorta 11 times and the third part actually crossed the aorta 11 times."

Thus in every individual the transverse portion of the duodenum is crossed by the root of the mesentery, and the contents of the gut must pass underneath a bridge between the vertebral column and the superior mesenteric artery. In the erect position the lumen of the gut must be a vertical slit compressed in proportion to the weight of more or less of the intestine. This compression occurs in all adult human beings, but will be greatest in those in whom the transverse portion of the duodenum crosses the aorta or possibly in those in whom the other extreme exists.

In thinking over some method of demonstrating that in certain cases such an obstruction to the duodenum did exist, I recollected that in his anatomical lectures Professor Dwight used to show us certain wax casts of the duodenum. On inquiring, I found that some years ago he had made a large number of these casts and had written a paper on the normal anatomy of this organ. This paper, from which the above quotation is made, appeared in the *Journal of Anatomy and Physiology*, vol. xxxi.

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* Prepared for the Clinical Meeting of the Medical Board of the Massachusets General Hospital, March 13, 1908.

About forty of the casts are still preserved at the Harvard Medical School and proved most interesting to me. Within certain limits they vary surprisingly in shape, size and general appearance. I must refer you to Dr. Dwight's paper for the scientific report of them, but the point that interested me was this: that while the majority of them showed little indication of it, certain ones showed a very decided constriction where the root of the mesentery overlay the vertebral column. Dr. Dwight has kindly allowed me to bring three to show you. The first shows no constriction; the second, a well marked one with slight dilatation of the proximal half; the third shows that the wax mass was compressed to a thin sheet at this point, so that the whole mass is practically a greatly dilated proximal portion composed of the first, second and a portion of the third parts.

The only criticism of the value of this evidence that I can see is that these casts were made on specimens in which the usual arterial injections with colored starch had been made. It is possible, even probable, that the one that shows no groove is one in which no previous arterial injection had been made. The other forty casts, however, show all gradations between these specimens, the first and third being the extremes. The circumference of the third is 19 cm., the largest in Dr. Dwight's series. Even if we admit the variation to be due to the arterial distention, do we not have this condition to consider in life, for the blood pressure makes the arteries nearly as stiff as the injection? The following quotation is interesting, for I believe it refers to this specimen (page 519): "Size. This varies much. In all casts the first part is strikingly different from the others, being rather egg-shaped and smooth, presenting neither the valves which appear in the second, nor the numerous small irregular folds which are often seen, particularly on the posterior aspect of a good cast, in the second and third parts. *The largest circumference is usually at the second or third part. The two largest, 18 and 19 cm., are at the second. In at least one case of an immense second part, it was evident from the condition before the injection that the size in no way depended on overdistention.*" The last clause is significant and yet he does not mention the root of the mesentery as a cause!

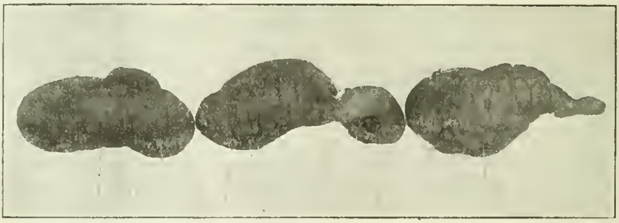


FIG. 1. Three of Professor Dwight's wax casts of duodenum seen from below. They are set up on pins to be photographed. The parts that present conspicuously are the transverse portions. All three show to a certain extent a concave outline beneath representing the vertical column. In the second and third a groove due to the aorta is also seen. On the superior surface of the second is a groove representing the superior mesenteric artery. On the third the approximation of the groove for the superior mesenteric and that of the aorta and vertebral column is so close that the wax forms a narrow ribbon. Note the relative diameters of the proximal portion in all cases.

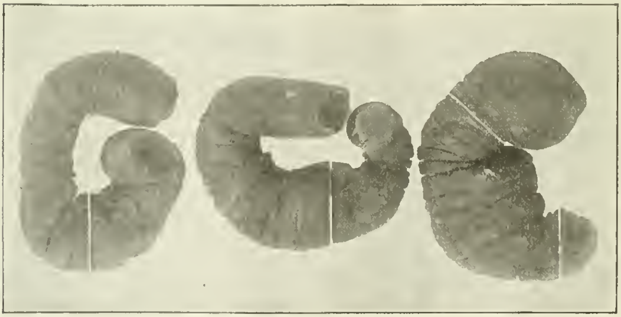
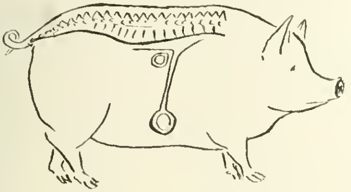


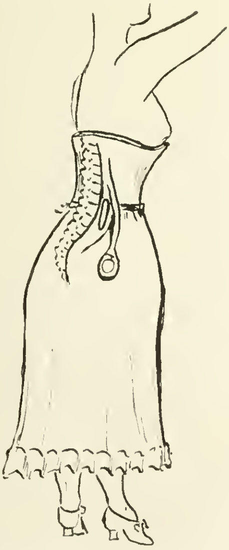
FIG. 2. Anterior view of the same casts. Note the absence of the superior mesenteric groove in the first and its presence in the second and third. Note the relative smoothness of the mucous membrane in the first part of all three. Note the relative sizes of the portions proximal and distal to the root of the mesentery, which crosses at the points represented by the vertical lines.

You may object to this theory on the ground that nature would not have put the duodenum in such a preposterous position, between the mesenteric artery and the spine, without providing some way of avoiding pressure. My answer is that this arrangement was originally designed for a horizontal animal and is out of place in a vertical animal who rests in the dorsal position, especially when he is extremely weak and sick. The activity of the prehistoric and historic races probably allowed them to get along fairly well until they began to wear belts and corsets and to behave with conventional dignity to appear civilized.

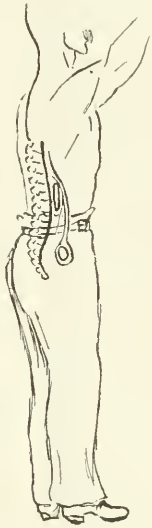


The horizontal animal with the ideal digestion. The root of the mesentery does not compress the duodenum.

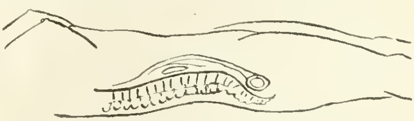
Dwight's paper shows that we are not all victims to the same degree of this change from the horizontal to the vertical, for in six cases he found the duodenum was wholly on the right of the aorta. And besides this, it is probable that in some cases the looseness of the peritoneal folds enables the distended duodenum to dodge the pressure. Although I feel by no means certain that the pressure will be greater if the transverse portion extends far to the left, it is likely that either this variation or the other extreme will be the poorer arrangement. The point is that since variation exists, one form is more likely to lead to partial obstruction than the other. Dwight, after saying that the duodenum is capable of some downward displacement, says: (page 520): "In many of the cases in which the gut lay on the front of the aorta as it ascended, or just before the final flexure, and in some of those in which the third part crossed the aorta, a fold of peritoneum lay between the two. It is impossible to give definite statistics on this point, for the attachment of the peritoneum is so lax that it is very easily displaced. I have on several occasions seen a duodenum empty, or moderately inflated, lying on the right of the aorta and partly overlapping it with a fold of peritoneum between, which was completely displaced to the left when the gut was strongly distended. In other words, the left fold of the mesentery seemed to arise from the right of the aorta in the normal condition



In vertical woman the duodenum is compressed by gravity, by the tension of the abdominal muscles and somewhat by the corset.



In vertical man the duodenum is compressed by gravity, the belt and the tension of the abdominal muscles.



In the horizontal, dorsally recumbent position in the human being the compression by gravity is partly relieved and the tension of abdominal muscles wholly relieved.

In this position at autopsy and at operation the drag of the mesentery is not noticed. At autopsy it is especially deceptive since the normal arterial blood pressure is not present, and the weight of the guts is supported by the posterior abdominal wall.

but to be pushed to the left of it with distention of the duodenum."

One can see that this same mechanism might enable the gut to avoid the root of the mesentery as it distends. This may give a suggestion for treatment.

Besides these deviations from normal anatomical conditions it needs no evidence to say that such pathological conditions as pelvic adhesions, incarcerated hernia, tumors of the intestine and mesentery, constipation, portal congestion, etc., might increase this drag of the mesentery and thus the pressure on the duodenum. Belts and corsets must also increase it.

In addition to this evidence I may say that I have observed this anatomical condition clinically on the operating table as well as on the fresh cadaver several times. That in extreme cases this pressure may cause complete obstruction is also shown by the reported cases of acute gastromesenteric ileus, the literature of which Laffer, of Cleveland, has recently reviewed so well There must be a wide field for chronic obstruction between such acute cases and the normal.

3. Owing to our having been in the habit of finding the pylorus patent when we see it relaxed at autopsy or etherized on the operating table, we have thought of it as an open door. Cannon's work shows that it is closed during digestive activity at least. The strength of this muscular closure is considerable, for it turns back the food forced toward it by the powerful grinding contractions of the antrum. When it opens it does not remain open but immediately closes again. Thus we should look on it not as a flimsy structure allowing the intestinal juices to regurgitate freely back and forth into the stomach, but as a strong circular muscle like the sphincter of the bladder, intended to act as a barrier to regurgitation and to retain the food in the stomach until it is ready to leave it.

In horizontal animals no barrier is offered to the passage of food or secretions out of the duodenum, and the fact that in man the first portion of the duodenum is lined with mucous membrane, more like that of the stomach than of the intestine, suggests that this portion was not devised to carry on intestinal digestion or be bathed in duodenal secretions. The facts that similar ulcers occur in the stomach and first portion of the duodenum and but seldom below suggest that the mucous membrane above and below the second part of the duodenum where the biliary and pancreatic ducts enter have different powers of resistance to malign influences. This argument has been used to show that the acid of the stomach was the malign influence; but is it not more reasonable to suppose that the reverse is the case, for these membranes must have been arranged to resist their normal contents better than abnormal contents which are their chemical antitheses. Possibly the first part of the duodenum is normally filled with gas.

If it could be shown that an obstruction forced back the duodenal secretions, which we know to be extremely irritating to the skin, into the upper duodenal mucous membrane and even through the pylorus, is it not reasonable that they should there exert a more irritating influence than a slight increase in the amount of the normally existing acid?

That such an obstruction exists in some cases must be a fact, for we know that the extreme cases of pressure by the root of the mesentery cause occlusion, and the existence of extreme cases means the existence of intermediary cases.

Suppose the mesentery exerts but a mild pressure; muscular contraction of the duodenum will drive its contents immediately past the obstruction. Suppose a slightly greater pressure; part of the contents will be forced back against the pylorus and come in contact with the first part of the duodenum. Suppose a still greater pressure; a certain amount will be forced through the pylorus itself. We may learn this from the analogy of the yielding of the sphincter of the bladder to the intra-urethral pressure of injections. Suppose a greater pressure still; regurgitant peristalsis will be awakened and vomiting will take place.

On the other hand, suppose the pylorus refuses to yield to the demands of the duodenum and fluid continues to pour into the latter from the gall bladder, etc.; a point will at length be reached when the back pressure will tend to ascend the common duct just as dilatation of the urinary bladder eventually involves the ureters.

One asks, Why, then, do we not find many cases of hypertrophy and dilatation of the duodenum? The answer is simply this: That the pylorus, following the law of sphincter muscles, always yields before a very great pressure is reached. That occasionally dilatation is seen is shown by such specimens as Fig. 3 and by such clinical observations as those of Ochsner's in his writings on a sphincter of the duodenum. It is not unlikely that his " sphincter " represented an hypertrophy of the musculature due to the unusual efforts of the duodenum to pass a mesenteric obstruction. Ochsner's idea of the consequences is much the same as mine.

Probably the usual condition is slight dilatation as compared to the normal duodenum and representing the inverse power of the pylorus. At autopsy in very severe cases we should find the duodenum and stomach dilated together as shown in the illustrations of acute cases in the articles by Bloodgood and Ordway; but in mild cases we might find the circular muscles of the duodenum contracted and be deceived as to its size.

4. What reason is there to suppose that the mucous membrane above the entrance of the biliary and pancreatic ducts is unfitted to withstand the contact of the duodenal secretions?

A priori from what we know of the general adaptations of the other mucous membranes, we may expect each membrane to tolerate its own secretions and, *vice versa*, to be more or less irritated by the secretions of other organs. In ureteral transplantations the urine at first irritates the rectum. Rectal leakage irritates the nates, and if a recto-vesical fistula exists causes ystitis. The discharge from the small intestine rritates the skin. Acid eructations from the stomach irritate the esophagus, etc. In the vomiting of seasickness is it not a general experience that the first deluge is less painful than those that follow and consist largely of duodenal secretions?

Clinically we know that of all irritating fluids, that of the pancreas is most caustic. Its digestive action on the skin is a bugbear to all operators on the common duct or upper intestine. In cases of pancreatic obstruction it simply devours the pancreas itself. Is it not reasonable to suppose that it may be more irritating in backing up where it does not belong than the stomach juices which are merely passing their normal route?

As mentioned under the last heading, the anatomical structure of the mucous membrane and the very existence of the pylorus are other additional arguments. The casts shown in the photographs illustrate this admirably.

The fact that ulcers of the intestine are rare distal to the ducts where these alkaline juices are normally present and practically always occur proximal to the ducts where the alkaline secretions have no legitimate business, is a strong argument that these mucous membranes are not fitted to withstand these secretions. This argument is strengthened by the numerical distribution of the ulcers which are commonest in the regions most subject to the action of regurgitated duodenal secretions. That duodenal ulcers are slightly less common than pyloric may be explained by a transition condition of the mucous membrane of the first part of the duodenum.

That suitable protective substances normally exist in the mucous membrane of the duodenum and stomach is shown to be probable by the work of Wienland, who proved that the bodies of parasitic intestinal worms contained one or more " anti-ferments " which were capable of restraining the action of pepsin and trypsin *in vitro*. He also found that anti-ferments existed in the mucous membrane of the stomach, for the extract of this membrane when added to the combination of fibrin and pepsin or trypsin delayed the digestion of the fibrin. Trypsin will work in an acid medium but pepsin will not work in an alkaline. Unfortunately, he does not seem to have tested the relative relations of the powers of the mucous membranes of the stomach and duodenum against their opposite ferments. He found, however, that increased alkalinity did not affect the power of the anti-ferment for trypsin although an increased acidity did detract from the resistance of tissues to pepsin. He therefore concludes that ulcers would be more apt to be produced by hyperacidity in spite of the fact that he admits that the corrosive action of trypsin is the greater. His experiments should be of great value if conducted with the express purpose of comparing the resistance of the stomach mucous membrane to trypsin and the lower duodenal mucous membrane to pepsin. As they stand I should interpret them as favoring my theory. His argument is spoiled by supposing a lack of alkalinity in the blood circulating in the mucous membrane in cases of ulcer. He evidently tried to arrange his facts to suit the accepted acid theory.

5. What reason is there to suppose that even if a partial obstruction were offered by the root of the mesentery that stasis would occur and bacterial invasion be favored?

Remembering that the pylorus is closed, from a simple mechanical point of view, we may say that if considerable obstruction at the root of the mesentery existed, complete evacuation of the contents would not take place because in the course of the muscular contraction a point would at length be reached when the amount of contents would not offer a large enough resistance to the muscular walls to enable them to exert their full power to lift the weight of the mesentery. The greater the amount of the obstruction the sooner this point would be reached and the greater would be the residual contents. The mechanism would be the same as in stricture of the urethra.

When a residual is once established, be it ever so small, bacterial invasion is favored for a stock culture is maintained. Thus during muscular contraction of the organ in propelling the contents past the obstruction, a back pressure of infected fluid is always ready to take advantage of a relaxation of the sphincter of the duodenal papilla. Infections may be introduced into the gall bladder in this way.

In speaking of the cause of ulcers in the duodenum there evidently must be two prime factors: a factor to produce a loss of substance and a factor to prevent healing. The old theory of Virchow that ulcers are practically *infarcts* does not seem satisfactory. Modern pathology looks for a primary superficial bacterial invasion of the mucous membrane which, when it has reached the muscular coat, becomes a true ulcer. It is then that the digestive action by dissolving the fibrin that is thrown out in the healing process tends to make the ulcer chronic. The classical " terraced " appearance is then simply the evidence of anatomy not of etiology. Chemical trauma would undoubtedly favor the action of the bacteria, but probably the two are far stronger than either alone. We may compare the action to that of a burn which when it is strictly aseptic, heals without reaction, but when septic produces an intractable ulcer.

Türck has performed some very conclusive experiments on twelve dogs by feeding them for months on food saturated with cultures of colon bacilli. In this way the stomach and duodenum were constantly exposed to the presence of bacteria, and in every case ulcers of the stomach or duodenum developed although such ulcers are extremely rare in dogs.

Why may not chronic obstruction of the duodenum with associated stasis of a bacterial residual produce a similar result?

6. My sixth proposition is that an acceptance of the theory of partial obstruction by the root of the mesentery will explain certain clinical conditions better than existing hypotheses. The following suggestions are offered for your criticism:

People vary greatly in their discomfort in ordinary digestion even though digestion is perfectly completed. The extreme cases without physical signs are called nervous dyspepsia and hyperchlorhydria. Perhaps such cases may suffer from duodenal distention, and their duodenal peristalsis may be constantly overtaxed because they happen to have more pressure at the root of the mesentery than other people. In such cases the distention is mainly with gas which occasionally leaks through the pylorus into the stomach and causes eructations. In other cases, however, the fluid contents may flood the first part of the duodenum and cause more or less acute distress. It is in cases of this type that lack of exercise and out-of-door life plays an important part. In other words, a more unrestricted life allows the mesentery to move about and relax its pressure more.

Why should these cases, both of hyperchlorhydria and ulcer, be more common in young adults? Because the congenital fault first asserts itself when the unrestricted life of the boy and girl ceases and conventional dignity makes vertical animals of us all. This is also the reason why cholecystitis and cholelithiasis are never found in youth and infancy.

Both in these mild cases and in those which are complicated by ulcer, the pain occurs when the process of digestion is nearly completed and the stomach contents are becoming acidified. According to Cannon it is at this time that the acid causes the pylorus to open at intervals and allow small volumes of fluid to pass into the duodenum. But it is also at this time that the biliary and pancreatic secretions are most active, owing to the acid reflex in the duodenum stimulating the gall bladder. Therefore, this is just the time when distention of the duodenum would be greatest and the duodenal peristalsis the most persistent in forcing the contents past the obstruction. This brings it about that intraduodenal tension is highest when the pylorus tends most to relax. Hence occasionally regurgitation may take place. When the mucous membrane is normal this peristalsis is barely recognized, but when the interior of the duodenum is inflamed, either locally by ulcer or by diffuse catarrhal inflammation, pain is experienced. The diffuse catarrhal condition gives distress of an aggravated character rather than pain. When the battle between the pylorus and the duodenum is fierce we have pyloric spasm. " Bilious attacks " may be due to such catarrhal conditions and it is likely that jaundice is due to the same — perhaps complicated by infection from some organism. Definite infection must occur when pancreatitis, cholecystitis and ulcer are present.

One of the strongest arguments for attributing epigastric pain to hyperchlorhydria is that sodium bicarbonate relieves it. This drug neutralizes the acid, but this may not be the reason it relieves the pain for it also closes the pylorus by the very fact that it neutralizes the acid (Cannon). It also generates gas which increases the tension inside the stomach, making it harder for duodenal secretions to regurgitate. Food also relieves the pain in the same manner by temporarily closing the pylorus. We know clinically that the relief by these means is but temporary. This is because the acid soon gets the upper hand again and relaxes the pylorus once more. The food already digested insists on moving on and the new food is held in the cardiac end for further digestion (Cannon). Real relief is not obtained, and more than that the stomach is not properly rested between meals and constantly contains partially digested food. Real appetite is lost and the patient is constantly taking food to close his pylorus which must certainly soon open to allow the acidified portion of the last meal to pass on.

The symptoms of these cases are made worse by constipation. This is because the colon becomes overloaded and adds its weight to the mesenteric drag beside that of the overloaded stomach.

The acidity theory also falls short on the analysis of stomach contents because many cases do not show excessive acidity. I do not know whether they show traces of trypsin or bile, but it would be interesting to see. To cause distress but little pancreatic fluid might be needed the alkalinity of which would be immediately neutralized.

Fat people probably have less pressure on the duodenum than thin people, for fat in the mesentery distributes the pressure, and in thin people the main trunk of the superior mesenteric presses the duodenum directly against the bodies of the vertebræ. Many of the acute cases have been in emaciated people.

Clinically, it is striking that both duodenal and gastric ulcers improve with rest. Fatigue in standing and sitting increases the mesenteric drag. Rest relieves it. The postures which ulcer patients assume show some indication that they gain relief by freeing the mesentery. Some hang over the back of a chair to try to press the gas and fluid out of the duodenum? Some get down on their hands and knees like a horizontal animal. Many prefer to lie on their belly or side. Even lying on the back gives great rest, for it relaxes the abdominal muscles which in the erect position greatly increase the intra-abdominal pressure.

I have already spoken of the application of this theory to the existence of duodenal and gastric ulcers in using the facts known about ulcer as evidence for a pathological action of duodenal secretion on stomach mucous membrane. That duodenal distention exists in cases of perforated ulcer in the first portion I can bear evidence from clinical observation. I have seen it positively spurt from the perforation and repeatedly fill the field of operation with bile-stained fluid. In eight cases on which I have operated, two of which had not perforated, I am inclined to think that the duodenum was larger than normal, but as I have only recently realized the significance of the root of the mesentery, I can only give the clinical report of one common duct case in which I actually demonstrated partial obstruction. I believe this illustrates a group of common duct cases which usually die from duodenal leakage through a patent dilated papilla.

Mrs. A. E. T. Age thirty-eight. Married. Referred to Massachusetts General Hospital by Dr. McHardy, of Somerville. Admitted to the Accident Ward on Dec. 13, 1907.

Ten years ago patient had had an attack of "indigestion," lasting about a week and confining her to bed. Pain and vomiting were the chief symptoms. Since that time she has had frequent similar attacks of epigastric pain and vomiting but these attacks have been of shorter duration. She has not been jaundiced until the present attack. No typhoid or other significant previous illness.

Five weeks ago she was taken with very severe epigastric pain, vomiting and prostration. She became jaundiced and the stools became clay colored. These symptoms have persisted in varying degrees since and have recently been much worse. There have also been febrile symptoms.

Examination. — Deeply jaundiced, sick-looking woman with anxious facies. Abdomen somewhat rigid, especially in right upper quadrant, not distended. Liver extends three fingers' breadth below costal margin and is not nodulated. Gall bladder not made out on account of tenderness and rigidity. Vaginal examination negative. T. 101.6. Leucocytes 21,000.

My diagnosis was perforation of the gall bladder with localized abscess and I operated at once.

Operation. — Adhesions between liver, gall bladder, duodenum and colon separated with great difficulty. The gall bladder was exceedingly small and connected by a fistulous opening with the duodenum. This tract was divided and the opening into the duodenum closed and inverted. In freeing the gall bladder, an abscess cavity containing about an ounce of pus was found. In the base of this abscess cavity was a pouting opening about the diameter of a pencil from which oozed when pressure was made on the liver a mixed stream of thick pus and clear, normal-looking bile. Further exploration showed that this opening was a perforation in the dilated common duct. Distal to this opening a large soft stone was impacted. This stone was removed, piecemeal, and a uterine probe passed into the duodenum to make sure that the rest of the duct was patent. The gall bladder was not removed and the wound was closed with drainage to the point of perforation which had been dilated to extract the stone.

For several days convalescence was normal, but after the fourth day she began to vomit occasionally without apparent cause. On the sixth day it was evident that she was fast losing strength, although the temperature was normal, the abdomen soft and not distended and the wound looking well. Vomiting at intervals, however, continued, and the dressings were constantly stained with an abnormal amount of bile-stained fluid with a peculiar sour smell. The stools had again become clay colored. This condition continued until the eleventh day when it was evident that she was practically moribund. She was constantly vomiting, the extremities cold, the face anxious, the pulse 140 and very weak. In spite of this the abdomen was soft, retracted and showed no especial tenderness. The wound of the previous operation had practically healed except for a sinus which was discharging large quantities of thin bile.

A consultation was held with my senior, Dr. Harrington, who had been watching the case with me. We had previously lost two common duct cases who presented almost the same clinical picture, i. e., rapid progressive loss of strength, clay-colored stools and loss of a large amount of bile-stained fluid from the wound. These cases had also occasional vomiting which had become more frequent toward the end. The autopsies of these cases had shown no obstruction in the duct or other satisfactory cause of death.

In this case Dr. Harrington was inclined to think that the condition was one of acute gastro-mesenteric ileus, while to my mind the progressive loss of strength was due to the excessive loss of body fluids escaping from the duodenum through the fistula. The outcome has convinced me that we were both right. We decided that the hopelessness of the condition justified exploration with the object of gastro-enterostomy if Dr. Harrington was right and closure of the opening in the duct if I were right.

Second operation. — Her vitality was so low that the patient required but a few whiffs of ether. The abdominal wounds did not bleed. An incision was made in the median line. The abdomen was normal in appearance throughout except for adhesions holding the pyloric region to the old wound and definite fistulous tract to the opening in the duct. Stomach and intestines were alike empty, the coils of small intestines appearing as fine ribbons, many being in the pelvis. Neither the stomach nor the duodenum was distended and apparently contained but little fluid or gas, — more, however, than the small intestines. Leakage and vomiting had kept them empty. The root of the mesentery where it crossed the duodenum was examined with the greatest care to see whether it was causing obstruction. It evidently did constrict the duodenum but the proximal part was not distended. I was astounded to find how heavy the mesentery and the empty coils were when I attempted to pull them out of the pelvis. The weight which the muscular power of the duodenum had to overcome must have been great. Feeling that gastro-enterostomy would be useless, I turned to the other alternative, and rapidly divided the rectus across into the old wound, broke down the adhesions and fistulous tract and exposed the opening in the common duct. It was quickly closed with three silk sutures. The abdominal wounds were hastily closed, and the patient sent to the ward.

To my extreme surprise the patient lived through the day, the vomiting ceased, strength returned, the stools became of normal color and she left the hospital well on Jan. 22, with only one small, granulating, superficial area.

I ask your pardon for reporting this case in such detail, but my excuse is that it seems to me to illustrate a principle which may be applied to a large class of cases. There are other cases of the common duct operation which die of the same cause from which this woman was suffering.

The operation, whether by lifting the mesentery (which at once fell back again) or by closing the fistula or by separating the adhesions was a most brilliant success. My own impression is that patency of the common duct due to dilatation allowed duodenal fluid to leak from the fistula, and at the same time the mesenteric obstruction created an intraduodenal back pressure which was not overcome until the duct was sutured. At any rate, the tide was turned and the patient recovered. The right thing must have been done, because she was so sick that nothing but doing the right thing could have saved her.

I fully realize that this paper is iconoclastic, but I feel that the evidence which I have given is already strong from facts already collected. The directions from which further evidence will come are also plain. From the trend of the writings of those authors whom I have quoted and of others from whom I have not quoted it is shown that medical thought is focusing towards this idea and that the evidence merely needs to be correlated and then substantiated by crucial experiments.

Dwight demonstrated but did not observe this condition because he did not think of the changefrom the horizontal to the vertical animal. His admirable work was pure, descriptive anatomy.

Cannon has done much to show us the physiology of the duodenum, but has worked with the horizontal animal and therefore not appreciated the clinical importance of the root of the mesentery in man.

Weinland gave us evidence of the anti-ferments, but was so imbued with the traditional dread of acid that he failed to perform the crucial test of cross experiments.

Türck, in order to keep the stomach and duodenum exposed to bacteria, took the trouble to feed dogs constantly for months with cultures of bacteria. Perhaps he might have produced an artificial stenosis of the duodenum by sewing down the mesentery and have kept his stock culture in the duodenum itself.

Ochsner observed cases of dilatation of the duodenum on the operating table and vaguely appreciated their clinical importance, but erroneously supposed the condition to be due to an imaginary sphincter.

Laffer, Finney, Ordway and the numerous writers and experimenters on acute gastromesenteric ileus have been so engaged with the acute condition that they have not realized the importance of the chronic but more common condition produced by the same cause. Bloodgood is the only one whom I have read who has even devoted one sentence to the chronic condition. Doubtless others whom I have not read have spoken of it.

Those interested in this subject will find the literature of the acute condition admirably reviewed by Laffer in the *Annals of Surgery*, for February and April of this year. Laffer's paper is a landmark in the study of this subject.

Kaiser Wilhelm Professor at Columbia University. — At a meeting of the trustees of Columbia University, held on April 6, Dr. Max Verworn, director of the Physiological Institute of the University of Göttingen, who had been nominated for the position by the Prussian Ministry of Education, was appointed Kaiser Wilhelm Professor for the season of 1908-9. His lectures will be given both in the medical department of Columbia and in that of pure science.

ACUTE YELLOW ATROPHY OF THE LIVER. A REPORT OF TWO CASES, ONE WITH ASCITES.*

BY WILDER TILESTON, M.D., BOSTON.

In spite of the large number of cases of acute yellow atrophy of the liver already published, the subject remains a dark one and there are still many points to be explained. The following two cases present certain features which are rather unusual and have therefore seemed worthy of being placed on record.

Case I. *Woman, twenty-nine years old. Vague gastro-intestinal symptoms of some months' duration. Jaundice soon after an attack of "grippe." On the eighteenth day of jaundice persistent vomiting, followed by severe abdominal pain, distention and ascites. Delirium and stupor on twenty-fifth day of jaundice; on the following day laparotomy and death. At autopsy, typical acute yellow atrophy.*

H. McC., twenty-nine years old, single, a domestic servant. The past and family history could not be obtained. Her last employer states that the patient came to work with her in August, 1907. She did not seem well, was inclined to be drowsy, and easily tired. Her complexion was sallow, and at times "decidedly jaundiced." Her appetite was capricious, and though she felt very hungry before meals, a few mouthfuls would satisfy her. About Christmas, 1907, she had the "grippe"; the symptoms were severe cough with fever, accompanied by inflammation of the middle ear without suppuration. She recovered in two weeks, except that she did not wholly regain her strength. On Feb. 1, 1908, she called in Dr. G. W. Nickerson, of Stoneham, complaining of jaundice of two weeks' duration. She showed then an intense icterus, which was thought to be catarrhal. Two days later, she had a chill, and began to vomit. The next morning she had another chill. When seen again by Dr. Nickerson, on Feb. 5, she complained of frequent vomiting and thirst. There was no pain, the temperature was normal and the pulse 74 to 80. He found the abdomen free from distention, and thought that he could feel the gall bladder. Three days later severe abdominal pain set in, and Dr. Nickerson found the abdomen distended. On Feb. 11, 1908, she was admitted to the Massachusetts General Hospital (Record No. 156,996) to the service of Dr. J. G. Mumford, to whom I owe thanks for placing the case at my disposal. She was too confused to give a good history; she complained of abdominal pain, vomiting and constipation.

Physical examination. — A well developed and fairly nourished woman of medium stature. Marked jaundice. There is an odor of acetone on the breath. The chest negative. The abdomen distended, the muscles held rigidly. On percussion there is dullness in both flanks, shifting with change of position; in the center the note is tympanitic. The liver dullness extends from the fifth space to two fingers above the costal margin. Marked tenderness about the navel, and towards the right iliac fossa; none over the gall bladder. The patient is evidently suffering severe pain, and keeps her hand applied to the tender area. The urine, withdrawn by catheter, contains bile and acetone, but no sugar. Two small evacuations of the bowels were obtained after enemata; the feces were clay-colored. Temperature 98.6°, pulse 110.

Subsequent course. — The patient became delirious on the night of admission, and the next day (Feb. 12) was in a state of stupor. She reacted somewhat to stimuli, but would not reply to questions. The leucocyte count was 34,000. Differential count, 400 leucocytes: polynuclear neutrophiles 82.5%; small lymphocytes 15.5%; large lymphocytes .75%; mononuclear and transitional, 1%; eosinophiles. 0%; mast cells .25%. Iodophilia present. Red cells normal. She was seen by several consultants, but no definite diagnosis was made. As her chances without operation were evidently of the worst, it was decided to open the abdomen. Dr. Greenough kindly asked me to see her just before the operation: examination showed the abdomen much distended, with a high degree of ascites; the upper limit of the liver dullness at the fifth rib, the lower border somewhat above the costal margin; the epigastrium tympanitic. The spleen was not palpable, and the splenic dullness was obliterated. The possibility of acute yellow atrophy was considered, but the marked tympanites was considered sufficient cause for the decrease of the hepatic dullness below, and for the absence of splenic dullness.

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* Read at a meeting of the Medical Board, Massachusetts General Hospital, March 13, 1908.

Operation, Dr. R. B. Greenough, 1 P.M., Feb. 12. On opening the peritoneum a large amount of clear dark-colored fluid escaped. The small intestine was a good deal distended, especially the duodenum. The stomach was likewise larger than normal. The gall bladder was somewhat distended, its walls normal, however, and no stone could be felt. The liver was palpated, and did not seem abnormal. Exploration revealing nothing which could be helped by surgical measures, the wound was closed. The patient's condition rapidly became worse, her temperature fell to 97.2°, and she died in coma at 8 P.M. the same day.

Autopsy No. 2,084, Feb. 13, 1908. — Dr. Oscar Richardson. (The following is an abstract of the autopsy protocol, unessential details being omitted.)

A woman, 167 cm. long, well developed and nourished. No subcutaneous edema. Head not examined. The *skin* and conjunctiva yellow, with a few minute brownish-red macules. The *peritoneal cavity* contains a moderate amount of reddish fluid. (Most of the ascitic fluid had been evacuated during the operation.) The *peritoneum* in many places shows smaller and larger irregular red spots. Similar hemorrhagic areas are found in the pleuræ, the mucosa of the intestine, the lungs and in some of the muscles. The anterior margin of the right lobe of the liver is four fingers' breadths above the costal border in the mammillary line. Diaphragm on the right at the third rib, on the left at the third interspace. The *pleural cavities* contain a slight amount of reddish fluid. The *lungs* show no consolidation; in one bronchial gland a small fibro-calcareous nodule (obsolete tuberculosis). The *heart* weighs 238 gm.; myocardium firm, brownish red, rather pale. Valves and cavities not remarkable. The *gall bladder* contains a small amount of dark, thick bile, but no stones. *Bile ducts* free. The *pancreas* not remarkable; the duct of Wirsung is free. The *spleen* weighs 130 gm.: on section slightly soft, with visible follicles and trabeculæ. *Kidneys:* combined weight, 260 gm.; the color pale brownish-yellow, otherwise not remarkable. The *adrenals, bladder, uterus, tubes* and *ovaries* are normal. The *stomach* not abnormally large, the mucous membrane normal; the *duodenum* also not distended. The *intestines* normal except for the small hemorrhagic areas in the mucous membrane, already mentioned: the contents not hemorrhagic. The *retroperitoneal glands* near the head of the pancreas moderately enlarged, but without signs of tuberculosis.

Liver. — Weight, 645 gms. It is greatly reduced in size. From side to side it measures 18 cm., from top to bottom 13 cm.; the right lobe measures from side to side 13 cm., and the left 5 cm. The right lobe measures about 5 cm. at its thickest portion. The organ is symmetrical and its contours are fairly well preserved. It is extremely flaccid, so that when supported on the tips of the fingers it falls over them like a cap. The surface generally is fairly smooth, and of a pale brownish-yellow color, tinged with red in places. Along the upper border of the right lobe are a number of yellowish nodules projecting above the surface, and about the size of a split pea. On section the tissue is somewhat leathery and flabby. The section surfaces generally show a pale, brownish-yellow homogeneous tissue mottled with small reddish areas, giving somewhat of a nutmeg appearance. In places there are pale brownish-yellow areas, in which there are minute yellowish spots. There are also areas which are pale red and homogeneous. The hepatic bile ducts not remarkable. The portal vein is free and its walls are normal. The perivascular tissue along the portal spaces is well marked.

Bacteriological report. — Cultures on blood serum from the heart's blood and spleen show a scum of growth of colon-like bacilli, with streptococci in the water of condensation.

Microscopical examination. Liver. — The original parenchyma has been very extensively destroyed. The greatest part of all sections is made up of connective tissue. Scattered through the section are rather numerous areas rich in blood, which under the high power are seen to consist of capillaries close together, separated by a thin reticulum of connective tissue. In some of them there are red cells apparently free in the tissue. These areas are the red spots seen in the gross specimen. Here and there are groups of liver cells with atypical arrangement, often in parallel columns. The cells are of varying size, some larger, some smaller than normal. The nuclei are well stained, the protoplasm contains a moderate amount of fat. These groups are considered areas of regeneration, probably from pre-existing liver cells. In places there are small patches of liver cells separated the one from the other by detritus, without definite arrangement; these cells are of various shapes, rounded, elongated, or polygonal; they take a deeper stain with eosin than those in the regenerating areas. Some are quite small, and loaded with brown pigment (bile pigment). The bile ducts in the connective tissue portions are much more numerous than normal. There is a marked infiltration with lymphoid cells in some of the portal spaces, with a few plasma cells. Sections stained with Mallory's connective tissue stain do not show any considerable new formation of connective tissue; the apparent increase of the latter seems to be due mostly to collapse of the liver tissue, consequent on the destruction and removal of the parenchyma. About some of the larger bile ducts, however, there is a distinct increase of connective tissue. Sections hardened in Flemming's solution and stained with saffranin show a moderate number of fat droplets in the liver cells, and much bile pigment, partly within the cells, partly in small masses apparently within bile ducts. *There is no evidence of an antecedent cirrhosis.*

Kidneys. — The glomeruli and interstitial tissue normal. Sections stained with osmic acid show extensive fatty degeneration situated chiefly in the convoluted tubules.

Spleen. — The spleen shows nothing of importance histologically.

The above description was kindly verified for me by Drs. J. H. Wright and Oscar Richardson.

Examination of the urine. — A specimen of urine was obtained just before the operation, with the intention of looking for leucin and tyrosin, but owing to circumstances I could not examine it until after the autopsy. Bile, acetone and a trace of albumin were present. The sediment showed a few typical leucin crystals, but no tyrosin. Leucin and tyrosin were further searched for by Frerichs' method. The syrup thus obtained showed numerous characteristic crystals of leucin, and many large needles thought to be tyrosin, but not aggregated in rosettes. The syrup gave all the tests for tyrosin which were tried, viz., Millon's, Pyria's, Denigé's and Scherer's. The small amount of material at hand made it impossible to separate the two substances, and the tests for leucin, which require the presence of that body in a pure state, were therefore unsatisfactory.

Toxicological examination, by Dr. W. F. Boos. Aqueous extracts from the liver, kidneys and blood, freed from albumin, were concentrated at a temperature of 70° C., and samples of each were given to rabbits intravenously, and to frogs, but produced no effect. Dr. Boos had previously found that similar extracts from the organs of eclamptic patients exhibited a marked toxic action. This is interesting in connection with the relation which has been assumed by some to exist between eclampsia and acute yellow atrophy.

This case presents in most respects the usual picture of acute atrophy of the liver. The ascites, however, is quite exceptional and requires a separate discussion. A fairly thorough search of the literature has brought to light only seven cases with ascites, in which the diagnosis of a primary acute atrophy of the liver seems certain. Those instances of atrophy secondary to cirrhosis are naturally to be excluded.

The study of these cases shows that they have several features in common. A comparatively long course (usually about two months) is almost invariable, and in the only exception (MacCallum's case), the acute changes in the liver could be dated back with probability to an attack of dysentery six months previous. The ascites is usually of unknown duration, but may appear early, as much as two months before death. The spleen was enlarged at autopsy in all but the present case, and usually much enlarged (up to 1,200 gm.). Cerebral symptoms are generally absent till near the close of life, in spite of the fact that the acute process in the liver has evidently taken place a considerable time before.

A very remarkable feature in this group of cases is the regeneration of the liver, which in several instances (Marchand, MacCallum, Schöppler) took on the form of a nodular hyperplasia very suggestive of adenoma.

As a rule no explanation of the ascites has been sought for; Schöppler attributed it to a coincident nephritis and Marchand to portal obstruction due to the extensive destruction of liver tissue. A careful perusal of the microscopical descriptions leads me to the belief that the ascites has been due in all these cases to changes in the circulation within the liver. In those cases where the new formation of connective tissue has been great, the ascites was probably due to the same causes that produce ascites in ordinary cirrhosis of the liver. In my case the connective tissue increase was but slight, and it seems more reasonable to attribute the ascites to the profound circulatory disturbance which must necessarily accompany the destruction and removal of such large areas of liver substance. F. C. Herrick has recently shown that, for some cases at least, there is no portal obstruction in the ordinary cirrhosis of the liver, but an abnormally free communication between the radicals of the portal vein and those of the hepatic artery, with consequent increase of the portal pressure. A similar abnormality in the circulation might well arise in the type of acute yellow atrophy under consideration, and would account in a satisfactory way for the ascites.

A second point of considerable interest in the present case is the dilatation of the duodenum which was found at the operation, and which considerably exceeded the distention present in other parts of the intestine. This feature, with the accompanying dilatation of the stomach, suggested the possibility of a so-called gastro-mesenteric ileus. This condition, to which a good deal of attention has been paid lately, may, according to some authors, be chronic in certain cases. Such a chronic dilatation of the stomach and intestine would favor catarrhal inflammation of the duodenum, and might in this way have acted as a predisposing factor in the production of icterus and the acute atrophy of the liver which followed. Dilatation of the duodenum has not been noted in other cases of acute yellow atrophy, but the stomach has often been described as "large" at the autopsy, and dilatation of the duodenum might have been present in life, and, as in the present case, not have been demonstrable at the autopsy. It is possible, of course, that the dilatation may have developed as the consequence of a terminal gastro-mesenteric ileus, the result of the persistent vomiting, or that it may have been due to atony. The above suggestion, for which Dr. E. A. Codman is responsible, is therefore offered purely as an hypothesis.

Case II. *Boy, nine years old. Sympathetic ophthalmia following injury to the eye. Inunctions of mercury for fifty-three days, then nausea and vomiting, tenderness at navel. Six days later jaundice; delirium beginning on eleventh day of jaundice; enlargement of spleen. Liver dullness normal in size; rapid decrease only on day preceding death. Death in coma on seventeenth day of jaundice. No autopsy.*

T. B., a boy, nine years of age, on Feb. 18, 1907, received an injury to the left eye from a knife. Early in April the sight in the other eye began to fail, and on the 12th he was admitted to the Massachusetts Charitable Eye and Ear Infirmary, to the service of Dr. E. E. Jack, to whom I owe thanks for placing the hospital records at my disposal. The family and previous history were negative. Examinations of the eyes showed panophthalmitis on both sides, with small irregular pupils, irresponsive to light. Daily inunctions of mercury (Ung. hydragyri, half strength) were prescribed, for antiphlogistic purposes. There was no history of syphilis. The mercurial treatment was continued for nearly two months without intermission. During this time the temperature was normal, there was no pain, and the child seemed healthy except for the eye condition. Mercurial stomatitis was not observed. On May 4 and 6 tuberculin was administered for diagnostic purposes, in doses of 1-10 and 5 mgm. respectively. There was no reaction. On June 4 there was nausea and vomiting, with tenderness just above the navel, and the inunctions were omitted. These symptoms persisted, and six days later jaundice appeared, and rapidly became intense. I was called to see the patient in consultation on June 20. Examination showed a well developed and nourished boy with marked icterus. Temperature normal, pulse 90. Chest negative; the liver palpable at the costal margin, the spleen not enlarged. Psyche normal. A diagnosis of catarrhal jaundice was made. At my next visit on June 25, the liver flatness began at the sixth rib and reached to the costal margin; the spleen was now enlarged to percussion, though not palpable, the splenic dullness extending above to the seventh space, and forwards nearly to the mammillary line. The patient had been delirious at night for four days, and markedly so for the last two nights. He talked to himself, got out of bed at night, and tried to lie on the table, pounded a hole in the wall, etc. In the daytime he was depressed, and had a delusion that his mother was dead. There had been daily vomiting, usually at 5 A.M. The vomitus consisted of food. The stools were not observed. The jaundice was so intense that the water of his bath was stained yellow (excretion of bile by the sweat). There was retention of urine, rendering catheterization necessary. The temperature was never over 99°, and reached 97° twice. The pulse was extremely labile, rising to 135 at times, though usually between 80 and 90. The urine was dark, bile-stained; specific gravity 1,020; it contained a trace of albumin but no sugar. The sediment showed a fair number of hyaline and fine granular casts, with a few small round cells adherent; numerous small granules of bilirubin. I was unable to find crystals of leucin or tyrosin, but did not employ chemical methods for the detection of these substances.

The patient was transferred the same day (June 25) to the Children's Hospital, where he was under the care of Dr. H. I. Bowditch, to whom I am indebted for further notes. He became unconscious that afternoon. The white count was 23,000; lumbar puncture was performed, and 60 ccm. of a clear fluid under low pressure escaped; smears of the sediment showed no cells or organisms. The next day there was frequent vomiting of a coffee-grounds material; the feces (obtained after enemata,) were clay-colored. *The liver flatness was now decreased,* extending from the seventh space to just above the costal margin. The urine showed no leucin or tyrosin in the sediment. The temperature rose to 103.5° in the last hours of life. Death took place on the 27th, at 4 A.M. Autopsy was refused.

The foregoing case is so typical of acute yellow atrophy that the diagnosis may be considered certain, even in the absence of autopsy. None of the usual features was absent, except the demonstration of leucin and tyrosin in the urine. But these bodies may be absent in acute yellow atrophy, and they may have been present in the case in question, for chemical methods of examination may reveal them where they are not present in a crystalline form in the sediment. Phosphorus poisoning may be excluded by the course of the disease, and Weil's disease by the lack of fever and of enlargement of the liver.

The chief importance of this case lies in its bearing on the etiology of acute yellow atrophy. So far as I can ascertain, it is the first in which mercurial poisoning could be thought of as the sole predisposing cause. In all the other cases where the administration of mercury has preceded acute yellow atrophy, the drug has been given in the treatment of secondary syphilis. Because of the fact that acute yellow atrophy has occurred in some cases where no mercury had been given, the writers on the subject have denied that mercurial poisoning had any part in the process. In the present case, however, there can be no question of syphilis. Kobert [1] states that mercury may cause fatty degeneration of the liver and sometimes jaundice. And C. W. Miller and Edsall [2] have shown that mercury increases autolysis, a factor to which much importance is now ascribed in acute yellow atrophy. Bandler has collected a number of cases of acute yellow atrophy following chloroform narcosis, and has shown experimentally that chloroform may cause marked lesions of the liver. If, however, a single chloroform narcosis may cause acute yellow atrophy, it is by no means impossible that the prolonged use of mercury might have a similar effect. The fact that ptyalism was not noted in the present case is of no great importance, for it was not especially looked for, and it may be absent in cases of chronic mercurial poisoning.

For the above reasons I believe that the prolonged use of mercury *may* have acted as a predisposing factor in the production of acute yellow atrophy in the case in question, and that it may have been of some etiological importance, in conjunction with syphilitic toxins, in many of the reported cases of acute yellow atrophy associated with syphilis.

In conclusion, the high leucocyte count in these two cases is worthy of remark. In the first, the hyperleucocytosis was shown to be due to an increase in the polynuclear neutrophiles. The few previous reports of the blood findings in this disease usually show a leucocytosis, the character of which is seldom mentioned. Leucocytosis, relative or absolute, could probably be found nearly always after the advent of cerebral symptoms, if looked for.

REFERENCES TO CASES OF ACUTE YELLOW ATROPHY OF THE LIVER WITH ASCITES.

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ON THE SIGNIFICANCE OF CLINICAL HISTORIES BEFORE AND AFTER OPERATIVE DEMONSTRATION OF THE REAL LESION.

BY MAURICE H. RICHARDSON, M.D.,
Moseley Professor of Surgery, Harvard University.

(Concluded from No. 15, p. 473.)

At the Quincy Hospital on Thursday, Dec. 8, 1906, I saw a man of fifty who was suffering from an attack of epigastric pain, tenderness, rigidity and distention. He had had a similar attack on Nov. 2, beginning in the night and accompanied by vomiting and severe abdominal pain. Distention followed, with a bad condition of the heart. A year before this he had had an attack associated with a very irregular heart. The patient was admitted to the Quincy Hospital on Nov. 3. The temperature was 100.6°; the pulse uncountable. The bowels were distended and constipated, and there was intense muscular spasm all over the abdomen. The pulse dropped to 80 on the 4th, and the symptoms rapidly subsided. The bowels began to move on the 5th. The vomiting ceased and there was no pain or tenderness. The patient was discharged from the hospital at the end of a week. During this attack the patient was seen by Dr. Lund, who wisely considered that his condition did not justify operation.

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[1] Kobert, R.: Lehrbuch der Intoxicationen, 1902, Bd. ii, pp. 329, 331.

[2] D. L. Edsall: in Osler's "Modern Medicine," vol. i, p. 126.

The next attack — the attack during which I saw the patient — began on Tuesday, Dec. 6, at eight o'clock in the morning, with severe abdominal pain and vomiting. One sixtieth of a grain of strychnia, with morphine and atropine, was given him. The pulse at that time was 56, and not strong. He had two enemata, without result. The pain was located to the right, about the navel. The abdomen was board-like in hardness, and to Dr. Welch it seemed to be a characteristic intense muscular spasm. It was impossible to make any impression upon the abdomen, although it was not at that time especially distended. Morphia relieved the patient until 10.30 A.M. There was some muscular rigidity. The pulse was 72. That afternoon the patient had intense abdominal pain and distress. His general appearance was very bad: he looked as if he were going to die. His face was dusky. The pulse was 90. The morphia and strychnia were repeated. He was then brought to the hospital, where he passed a little gas and had a small movement.

I could get no history of jaundice. There was nothing significant in the family history. The patient had a temperature of 99.5°; a pulse of 100, of small volume. The abdomen was distended, especially in the epigastrium, where there was great rigidity. The lower abdomen was not distended.

The man's condition was such that no operation was seriously considered; yet in my notes I say: "I feel very doubtful in this case as to the wisdom of delay. The epigastrium is very prominent. It is a question of perforation of the stomach. It makes me think of the preceding case. (See page 472, No. 15.) On the following day, Friday, the 9th, the pulse and temperature were normal, and the vomiting had ceased. The patient was in good condition.

On Dec. 24 this patient had another attack, the chief symptoms of which were pain, nausea and constipation. There was tenderness over the gall bladder; the temperature was 103°; the urine was very dark; the skin yellow. I then made a diagnosis of gallstones with chronic cholecystitis and perhaps a stone in the common duct acting as a ball valve.

In this case I also advised palliation. In my decision I was greatly aided by the prompt recovery which followed Dr. Lund's conservatism. The diagnosis was not clear, but it suggested a local infection of the deep epigastrium, probably of gastric origin. While examining this patient I was called to the Somerville Hospital to see a man with "acute epigastric symptoms, probably acute cholecystitis."

This patient was in the charge of Dr. G. A. Miles. Two days before the man had been admitted to the Somerville Hospital for acute epigastric symptoms which, in the opinion of the attending surgeon, did not demand operation. I found a tender, distended, rigid epigastrium, with lower abdomen not distended or especially resistant. The temperature was 101°; the pulse 110; the respiration 36. There was dullness in the right lower chest, with a few râles and diminished respiration. I believed the case to be chiefly pulmonary, but felt anxious about the abdominal symptoms. Operation was not deemed wise because of the rapid respiration and bad general condition.

The next morning he was slightly improved. The epigastric symptoms were less severe, and the lower abdomen was softer. The bowels had moved. I asked Dr. Palfrey to make a white count and to examine the lungs and abdomen. He reported that the liver dullness was gone; there was a loud splenic friction sound; blood in the vomitus; and a leucocytosis of 23,000. His diagnosis was perforation of a gastric ulcer, and he advised operation. I saw the patient the next morning and found his condition about the same; but in no way encouraging an exploration.

I left directions for Dr. Jones to be called if Dr. Miles, during my absence of a few days, deemed it advisable. On my return I found that the patient had died, and that autopsy had showed a perforated duodenal ulcer with no lung complication.

Dr. Miles's early suspicions were in the right direction; Dr. Palfrey's diagnosis of perforation was correct; my observations and deductions were wrong. In the light of the autopsy, how plain the history of previous gastric trouble, as shown by the sudden epigastric pain, rigidity and distention, the vomiting and general peritonitis! How significant the white count, the absence of liver dullness and the presence of splenic friction!

If my listeners agree with me that the diagnosis of perforated gastric ulcer should have been made and that an operation was indicated (except on the ground of operative hopelessness and possible spontaneous recovery), if they feel sure of this, let me ask them to tell me, in the discussion, what happened in the Quincy case, seen an hour before, a case closely resembling this one in history and physical signs[1].

In the third case, which was at the Massachusetts General Hospital, the patient was admitted to my service with abdominal pain, tenderness, rigidity and distention, — symptoms which, beginning in the epigastrium, had become general. The diagnosis lay between a perforated gastric ulcer and an acute cholecystitis. As the patient became gravely worse before I could get to the hospital, Dr. Beach, who was on hand, was called to operate. A perforated duodenal ulcer was found, sutured and drained. The patient made a good recovery.

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[1] This patient for a few days continued to be desperately sick, but there seemed some hope in that he did not die. He gradually improved so that he was able to go home. After some weeks his condition became good enough to justify operation. The diagnosis was local peritonitis of gall-bladder origin. On Jan. 4, 1907, I operated, making an incision five inches long through the outer part of the right rectus over the gall-bladder region. There was a mass of omental adhesions about a gall bladder which contained several large stones. Both the transverse colon and the duodenum close to the pylorus were strongly adherent to the gall bladder. When the duodenum was separated from the fundus of the gall bladder, a dark almost necrotic area, perhaps one inch square, was left on the duodenum. This area was depressed, inverted and sutured with interrupted stitches. The gall bladder was aspirated and a little pale, cloudy fluid was removed. It contained several gallstones. It was then dissected away from the liver. The tissues about the cystic duct were rather friable, and there was a large, soft gland where the cystic duct joined the gall bladder. No stones were felt in the cystic, common or hepatic ducts. Nothing abnormal was detected about the pancreas or the stomach. The diagnosis was chronic cholecystitis with gallstones. Dr. Whitney's report was ulcerative cholecystitis.

Five days later, on Jan. 7, the patient died of pneumonia.

It is quite evident in this case that the patient who could not withstand operation when in the best condition possible could not have survived an operation during the acute attack. This case illustrates again the difficulties of differentiating diseases of the epigastrium and right upper quadrant *during their acute stages*, for all have the symptoms of the causative lesion masked by those of the secondary peritonitis.

About the same time a patient (Hospital No. 150,382) with similar symptoms was admitted to my service and operated upon by Dr. C. A. Porter. A perforated duodenal ulcer was found, and this patient is now convalescent.

The patient, a man of twenty-eight years, had gonorrhea four weeks before entrance to the hospital, Nov. 22, 1906. On the day before admission he awoke with a severe pain in the right lower quadrant. This pain rapidly spread over the whole right side, especially to the shoulder and to the right testicle. Deep breathing was very painful. Respiration 24. The patient vomited clear fluid. The bowels moved, but the pain continued. It was most severe across the epigastrium and in the region of the pylorus. Nine and five weeks before this the patient had had similar attacks.

The physical examination showed an area of dullness in the right thorax extending up to the sixth rib. The liver dullness was diminished. There was spasm of the right rectus. The greatest tenderness was above and to the right of the umbilicus.

Dr. Porter, through a median cut, first sought the appendix, which was normal. A perforation was found in the second portion of the duodenum. Closely adherent fibrin had closed the perforation. The wound was drained; the patient made a good recovery.

This case recalls the one at the Somerville Hospital. The painful and rapid breathing was similar; the physical signs, especially the dullness in the right lower chest, were similar.

In the history was this expression: "He has had considerable trouble with the stomach in the morning." As he was a man who drank a great deal of beer, it was thought that his gastric symptoms may have been owing to beer. There was no blood in either vomitus or stools.

In a case like this the patient, during convalescence, should be questioned and cross-questioned as to the minutest details.

As if to illustrate this particular kind of cases, while I was writing about them a woman was brought to the hospital with abdominal pain, right-sided tenderness and fever. The attack began with these symptoms, which soon almost entirely disappeared, but which later recurred with renewed violence. The temperature was 103°; the white count 15,000. The patient's condition was so bad that it seemed to me pretty certain that she would have, in the operation and the anesthesia, a heavier burden than she could safely carry. Nevertheless, with the experience of the two gastric perforations, fatal without operation, and of the two duodenal in which recovery followed operation, I felt perhaps unduly drawn toward operative measures. It will be noted, however, that the leucocytes were not greatly increased. The abdomen contained, in small quantities, free pea-soup-like material. The appendix was not especially diseased. Nothing abnormal could be felt anywhere in the abdomen, though the regions about the gall bladder, duodenum, stomach and pancreas were examined with especial care. There was a *question* of an infection through the Fallopian tubes, but none was demonstrated. The patient, under drainage, made a good recovery.

The condition found suggested some interference with a pregnancy and I therefore, during the patient's convalescence, made special inquiries as to the possibility of an abortion. Nothing whatever was admitted by the patient that tended in the least to explain, upon grounds of pregnancy, her abdominal condition. The peritoneal lesion was at no time, however, demonstrated with sufficient certainty to base upon it any positive deductions from the history.

To abdominal cases such as these may be applied a rule, — almost a law, similar to that of Sir Astley Cooper in cerebral injuries: "None is apparently so severe that the patient may not recover, and none apparently so trivial that the patient may not succumb."

In my experience there is no abdominal case presenting acute symptoms, no matter how trivial, which may not prove fatal; and there is no abdominal case, no matter how apparently severe and unfavorable, that may not recover.

I have no doubt that, with increasing experience and skill, the greatest good to the greatest number will result from intelligent and persistent efforts at correct diagnosis in some manner like that suggested in this communication, an effort which will enable us more accurately to discriminate between the case in which the best chance lies in palliation and that in which the best chance lies in operation; an effort which will result in both accurate diagnosis and truthful indications for or against operation. In a word, the ideal course and the one to be sought for with all our might is that which avoids the unnecessary and harmful operation and which selects the necessary and beneficent one.

The type of case best illustrating this paper is that which at operation shows healed diseases, and especially healed diseases of rare occurrence. I have seen two or three cases in which there were scattered throughout the fatty areas of the abdominal viscera small cicatrices suggestive of healed spots of fat necrosis. In the explorations for acute pancreatitis I have seen a few times these areas of fat necrosis in their acute development; but the patients have all died. In the apparently healed cases I was not then impressed by the importance of post-operative studies of histories. One cannot but think that, after such demonstrations an examination into the previous history would prove rich in interesting symptoms.

The lesions which permit looking backward as well as forward in their subjective symptoms are the lesions of gallstones, of the stomach and some of the kidney and pancreas. The enlargements and displacements of the stomach, for example, which are very commonly observed, suggest a review of the history and a careful watch for gastric symptoms in the future. Gallstones discovered at other operations suggest similar studies. In the pancreas such investigations have less value because of the impossibility of telling by the fingers the exact nature of deviations from the normal.

The importance of an accurate diagnosis, if not of the exact lesion, of the complication which demands surgical intervention, need hardly be mentioned. The recognition of a gastric, duodenal or intestinal perforation at times is impossible; the recognition of a peritonitis from some cause that ought to be remedied is easy. The wisdom of operating in all cases of peritonitis under all conditions is an entirely different question and I do not consider it now beyond mere mention.

My remarks have been recently and vividly illustrated by cases which have impressed upon me my own shortcomings in diagnosis and have aroused the determination to do all in my power to cultivate the art of observation and deduction. Not that we all do not study with eagerness everything that will aid us in interpreting disease; but we occasionally lapse, I am sure, into the easy and lazy methods either of guess work or of surgical exploration, with very little attention paid to that essential and indispensable aid to diagnosis known as the clinical history.

I have no question whatever that more errors in diagnosis result from incomplete or inaccurate histories, than from imperfect physical examinations, even in those cases in which thorough physical examinations are possible, for cross-examination develops possibilities of diagnosis which may be overlooked.

In the deep and impalpable lesions like those of the epigastrium or the brain the history is vastly more important than the physical examination. A recent experience at the Massachusetts General Hospital illustrates this trite but much neglected statement.

A teamster of about thirty years was unconscious on the operating table with both pupils dilated, Cheyne-Stokes respiration, slow pulse, normal temperature. I found that he *had been run into* by another team and *knocked to the pavement, striking on his head.* There was a scalp wound on the right parietal eminence. I was summoned to consider trephining for skull fracture. There were spastic left arm and thigh without tremor or other muscular movement. I recognized the possibility at least of a meningeal hemorrhage and sent at once for Dr. Walton. In the meantime the assistant surgeon of my service examined this man who, as he was informed, *had fallen unconscious from his team* and had struck on his head. Something in the patient suggested search for a renal cause of non-traumatic unconsciousness. The urine was found loaded with sugar. This fact, brought immediately to my attention, seemed at first a brilliant stroke of diagnosis, which would have made an exploration absurd, dangerous and perhaps fatal; but on learning that this surgeon had been misinformed as to the fact that the man had been *knocked from his team while conscious,* and had not *become unconscious* and *then fallen,* I still insisted upon the neurologist and the probability of hemorrhage. Dr. Walton advised immediate trephining. An enormous clot of blood was found over the right motor area.

In making this diagnosis Dr. Walton brought out a fact which neither my assistant nor I had learned, that, after the unconsciousness of the fall, the patient for a brief time became conscious.

This case illustrates better, perhaps, than any other at my disposal, the value of clinical histories in refined deductive reasoning and it shows how narrow sometimes is the margin between a course in which death is inevitable and a course in which recovery is probable. One little variation in reading the history may lead the surgeon off the true course and to irreparable disaster, just as surely as a slight variation in the reading of the compass will make a false course and land the mariner in the breakers.

The possibility of one disease — actinomycosis — is enough to throw doubt upon the exact nature of many abdominal tumors. Since Dr. C. A. Porter first called attention to the frequency of actinomycosis in the jaw cases at the Massachusetts General Hospital, the number of instances of this disease, appearing in different parts of the body, has been apparently multiplied a hundredfold. Later, the studies of Wright stimulated a great interest in the local manifestations of this disease. In one service three of my cases proved to be abdominal actinomycosis; and in each case the tumor was, from its physical characteristics alone, diagnosticated as malignant. A review of these histories, with the demonstration of their exact nature, brought out a train of symptoms which has since suggested in more than one instance the possibility of the ray fungus.

Many cases are suggested as I write, all illustrating different phases of abdominal disease: cancer and ulcer of the stomach, hour-glass stomach, malformations and malpositions of the stomach; peculiarities of liver, spleen, pancreas and kidney; variations in shape, size, location and mesentery of the large intestine; cysts and solid tumors of the mesentery and omentum; retroperitoneal lymph glands in varying stages of anatomical change; pelvic variations of infinite variety, and many other conditions in the abdomen as well as in the thorax and the extremities, — all these things have their peculiar histories which we fail to interpret largely because we are not familiar with them. Most of them permit a correct interpretation, though many, from the nature of things, do not.

In what direction does renewed experience in diagnosis tend? In what, does increased skill? Is it not in the direction of true conservatism, by which I mean the conservation of what little remains, in the hopeless cases of life and its enjoyment and the complete restoration to health and happiness of the remediable cases? Is it not in the direction of sparing the unfortunate and hopeless sufferer an increase of his suffering, in refusing to fill to the brim his cup of bitterness in a useless attempt to empty it?

What is the lesson thus far learned in the diagnosis of obscure affections, wherever situated? Is it not that there still remains a group of lesions which, with every modern aid to diagnosis and with the accumulated skill and experience of years, it is impossible to diagnosticate with sufficient accuracy to say that surgical intervention is uncalled for? And yet is it not a group of lesions in which medical treatment is either ineffectual as in gallstones, or hopelessly procrastinating as in cancer?

The lesson which a post-operative review of histories also teaches is that a diagnosis sufficiently accurate to forbid operation is possible in an overwhelming majority of inoperable cases.

The lesson taught by a candid review of results in connection with operations in cases of wrong diagnosis shows that many of the errors were the result of haste and inadequate study, in deducing which some data were not developed and some were wrong. In a few cases the deductions themselves were wrong, though the data were correct.

The sum total of the lesson is that the measurable error in diagnosis in indications and contraindications dependent upon diagnosis may be very materially diminished by the utilizing of every opportunity for self-improvement in the post-operative study of histories, both as given before operation and as developed after an accurate demonstration of the chief anatomical lesion and of its complications.

Many errors are made in the diagnosis of perfectly plain cases by too little reliance upon the histories of subjective symptoms and too much upon the physical examination.

Three cases of ovarian cyst with twisted pedicle at once suggest themselves. They occurred long ago, before we had so good an opportunity as we have at present to observe the connection between clinical histories and operative findings.

One patient was found to have a large cyst, tense with extravasated blood. The onset of the extravasation, under ether examination, was not for a moment suspected by an experienced gynecologist. The review of the history, at my first examination, two weeks later, showed, in the light of the physical examination, a perfectly plain diagnosis, which operation confirmed (S. H. R., vol. xxxviii, p. 42).

A second patient (O. R., vol. 12, p. 189), whose chief symptom was hematuria, presented the physical evidence of a uterine fibroid. Observation for ten months led me to suspect an ovarian tumor. Finally I removed a totally adherent ovarian cyst, with a pedicle that had been twisted for no one would know how long, except for a review of the history.

A third case was diagnosticated as acute appendicitis, which I must say seemed to me, without question, the real condition. A small tumor with twisted pedicle, fastened in the right pelvis, gave the physical evidence which, added to painful onset with vomiting and rigidity, made the diagnosis of appendicitis almost unmistakable.

It is easy to see in all these cases, but especially in the last two, that the history was almost completely disregarded for the physical examination. A rule of great importance is that one should be extremely careful lest he be led into error by too great reliance upon his physical examination and especially upon his sense of touch. In most of the errors spoken of in this essay it will be noted that the diagnosis rested almost wholly upon the tactile sensibilities.

In the bimanual examination of pelvic tumors, especially, it is often impossible even under full anesthesia to distinguish between a tense cyst, a thick-walled cyst and a solid uterine tumor. So it is in the diagnosis between soft fibroids and cysts with gelatinous contents; between a symmetrical myoma and a pregnant uterus. The recognition of the pregnant uterus will at times depend wholly upon the clinical history. In most cases failure to discover pregnancy will be found to depend upon reliance upon the touch, to the exclusion of the history. Pregnancy cannot be ruled out by touch alone. Even when there is no symptom of pregnancy with the uterus in the surgeon's hands, one cannot always be so sure of his diagnosis that he will extirpate the tumor without misgivings. I recall a recent case of this kind in which the consultant, an experienced obstetrician, was, before operation, uncertain and the surgeon (myself) uncertain at operation. A review of the clinical history failed to show a single symptom of pregnancy and justified the uterine extirpation.

I have recently reported, in connection with gallstone cases, the following in which the diagnosis has at last been proved beyond question.

In this case by cholecystostomy I removed many gallstones from the gall bladder. After drainage for the usual time, the wound healed, but the patient had occasional attacks of pain. During my absence in November, Dr. Jones removed this gall bladder for acute gangrenous cholecystitis. At this operation no gallstones were found. The pain continued as bad as ever, with occasional jaundice; and once, at least, with a serious collapse. The history was carefully reviewed time and again, — not only Dr. Palfrey's history, but my own, with Dr. Homans' record of the operation and Dr. Jones's second operation. We were by this most complete record forced every time to the same conclusion — namely, that a stone caused the pain and jaundice by alternate impaction and recession in the common duct — a ball valve action. I asked Dr. Jones to explore the duct, after a reasonable delay. Fortunately, the stools were carefully and systematically examined, with the discovery, a few days later, of a gallstone. All symptoms immediately subsided. In gallstones, especially, the clinical history may show, in review, very interesting evidence upon which to base in future the diagnosis of early offending. Almost without exception I have in these cases found, in the spontaneous description of previous health, some symptom reasonably dependent upon the demonstrated condition of the biliary tract.

There is a not infrequent experience in abdominal surgery in which the diagnosis at operation is imperfect and in which the previous history is sought and studied to throw light upon the doubtful anatomical conditions demonstrated at operation.

As an illustration of this prolific field for post-operative study of histories, the following case is quite suggestive:

A young woman with jaundice was explored at the Massachusetts General Hospital for supposed gallstones. None were found, but the liver presented evidence of disease supposed to be malignant. The patient recovered from the operation, which was a cholecystostomy.

I was unwilling to accept the opinion of hopeless malignancy, and studied the patient some weeks with the idea of operating myself should there appear a good reason. The history was read and re-read; the patient was questioned and re-questioned; the abdomen and thorax were examined and re-examined. The medical men were called in one after another and all kinds of advice and all sorts of opinions were expressed. In such cases the surgeon has to be judge and jury as well as counsel, and I was unable at any time to satisfy my conscience even so far as to aspirate the right lower thorax, as was advised by one of the medical men. The patient suddenly developed an obstinate and uncontrollable nosebleed, which put operation out of the question and she died.

In this case not a man even mentioned the real lesion, which was an hypertrophic cirrhosis of the liver, as shown by autopsy.

Not a few such cases occur. I have seen them chiefly in the explorations of the pancreas in cases of obstruction to the biliary stream. In the early cases the small, hard masses in an enlarged pancreatic head, I called cancer; and some patients recovered to confound my diagnosis; some died and showed real cancer. In later cases I called the condition chronic pancreatitis when the patients recovered and cancer when they slowly died. To make sure of the diagnosis in one distressing operative death, I searched again and again the history to confirm if possible the operating table diagnosis of cancer. The history did confirm the diagnosis and the autopsy proved it.

The significance of movable kidney can be ascertained only by grouping together symptoms in patients whose kidneys have been shown by operation to be easily and extensively displaced. So common is easy displacement of the right kidney during life that it is always the rule that the lower border of this organ can be brought easily to the right pelvic brim. The knowledge that her kidney is movable, imparted to a neurasthenic, will surely bring out many complaints. Indeed, a kidney that by palpation has been demonstrated to be movable will, if this fact is known by the patient, give rise to complaints which I cannot but class as imaginary or neurasthenic, or at least exaggerated.

In the supposed neurasthenic patient the demonstration of real lesions within the abdomen often softens the feeling of impatience with which this unfortunate class is regarded. Upon the real neurasthenic, however, the demonstration of normality of the kidney, stomach, intestine, ovary and uterus has no effect. The clinical history will remain the same, or be modified by such information as the exploration happens to disclose.

The sufferings of this class of patients, whether real or imaginary, will often be modified and usually increased by the knowledge gained at operation of such real lesions as a misplaced uterus, a cystic ovary, a movable kidney, or a diseased appendix. In the light of the demonstrated lesion, the history may be of value, but from the nature of neurasthenia, the subjective symptoms must undergo a rigid study or critical examination.

Of all the lesions which come to operative demonstration, the most important for renewed study are those of the stomach and duodenum, the biliary tract and the pancreas: for it is in the treatment of lesions of these organs that most can be accomplished by early operation; that most is to be gained at least expense of suffering and danger; and possibly that most difficulty is met with in early diagnosis.

I have demonstrated many times the presence of gallstones in patients who have lived to tell me of their early symptoms; or the presence of other lesions in patients with abnormal conditions of stomach, duodenum and pancreas. Whether the time will ever come when one can detect the early lesions in these organs with the certainty with which we detect them in the pelvis, the appendix and the kidneys, is a question. It seems, from the nature of things, impossible to demonstrate, by either subjective or objective signs, the early history of cancer of the stomach; and yet by careful questioning we may, after demonstration of the real condition, be able to base upon the history alone as plausible a diagnosis as in diseases of more accessible viscera, the appendix, the ovaries, tubes and uterus.

It would seem as inexcusable to overlook lesions in the rectum within reach of the finger, as to overlook a full bladder, accessible to the catheter; but such errors are being constantly made by men of great experience. When a cancerous or other stricture of the rectum is found, after months or years of useless medication for dyspepsia or intestinal indigestion, one wonders that rectal examination is not made an invariable rule, without waiting for indications for such examinations to be found in the clinical histories.

I have just excised the rectum of a woman whose history showed a laparotomy for gallstones, an admission to the hospital for hemorrhoids, and an operation for hemorrhoids. I made an exhaustive search in the records for symptoms of rectal disease and found one or two symptoms which should have suggested the real condition.

Twice I have operated for conspicuous strangulated hernia in cases in which the patients had been treated medically for obscure epigastric symptoms.

A candid review of such occurrences makes it imperative upon the diagnostician to make routine examinations of all accessible cavities when there is the least reason for it. Indeed, in abdominal diseases he should examine the rectum at least in all cases, and, except in virgins, the vagina.

Furthermore, in all abdominal cases, without exception, he should, under full anesthesia make a final bimanual rectal or vaginal examination.

In reviewing clinical histories errors of statement become conspicuous and show at times how little dependence can be placed upon replies to definite questions, even when they are not *leading* questions.

In the effort toward refinement in diagnosis the clinical history must forbid the leading question as rigidly as the courts of law. Even questions which do not suggest the answer should not be put until the patient has been allowed to tell her own story without interruption. E. g., in a recent case in which several diagnosticians have differed, my diagnosis depended somewhat upon the character of the stools. The patient volunteered nothing; the physician knew nothing concerning them. I asked, "Have the movements been liquid like yeast and like diarrhea?" The patient said "Yes." Later I asked, "Have the movements been like hard balls and solid?" She said "Yes." The question should always be, "Are the movements liquid or solid?" In obscure internal conditions the patient must be allowed to tell her own story without a word, if we are to gain information that is to be depended upon. We must be even more particular than the lawyer. "Are the movements liquid" is a type of question which no court would exclude as leading; but it suggests *Yes* more than *No*. "Are the movements liquid or solid?" or "What is the character of your movements?" suggests absolutely nothing and is the only proper way of asking a question about a point which the patient has not of her own initiative covered. Our conclusions in medicine must be more than beyond a reasonable doubt if we are to work for perfection. Our goal is a diagnosis beyond doubt. When, therefore, knowing the fact that a patient has gallstones, or that she had an ovarian cyst with beginning but unsuspected torsion, or an ulcer of the duodenum supposed to be appendicitis, we must ask her to give her own story from as far back as she can go, and that story, whatever it suggests for later questioning, must be uninterrupted by any comment or word, no matter how discursive the patient may be, or how irrelevant her statements. When she has finished, if she is known to have gallstones, we may ask, "How is your digestion?" or some such general question. Then, "Have you had any pain of any kind anywhere at any time?" or "Have you had bilious attacks?" I would throw out absolutely all answers to leading questions and should be very critical of questions which in the remotest degree suggest an answer. I am convinced that accuracy in histories can be gained only by following these or similar rules.

And when, after unmistakable demonstration of the lesion one reviews a history taken as I have described, how significant an apparently trivial symptom! How unavoidable a correct diagnosis! How extraordinary that one could for a moment have been mistaken!

Unfortunately, in many cases the clinical history, even after demonstration of the lesion at autopsy, contains nothing significant. In the case of renal stone with perforated gastric ulcer a review of the history shows little that is conclusive. Had the patient lived, the result of examination of the history, early and late, would have, I am sure, proved quite different.

The experiences with which I have illustrated this paper are not unusual ones. They occur almost every day of my life. The greater the accumulated knowledge of a community like that represented in this audience, the greater the accuracy of observation and deduction. To show the truth of this statement, one needs only to recall our experience with appendicitis, extra-uterine pregnancy, ovarian torsions, the late effects of gallstones and actinomycosis, diseases which in the beginning were as doubtful as are now the early stages of gastric and duodenal ulcer, pancreatitis, beginning intestinal obstruction and early gallstones, besides many fully developed but unusual lesions like mesenteric cysts, intestinal diverticula, hydatids and chronic intestinal obstruction from gallstones, intestinal tumors, twists and intussusceptions.

One of the best ways of judging the value of experience is the effect of that experience on a man's routine of daily procedure, for as the burnt child dreads the fire, so does the physician or surgeon who has made mistakes practice caution. And yet so weak is human nature that we all tend toward the repetition of an error, even after having made a mighty resolve that such a thing shall never again happen.

The horrors of an overlooked pregnancy are more lasting in their educational effects than those of any other error, and I feel daily the importance of searching closely for such a condition in every woman of child-bearing age. But it has been now so many years since I had my first and last experience in the mistake that I begin to feel that some reminder, automatic and beyond human error, is desirable, especially as the field of internal surgery widens and as possibilities of serious error multiply.

In teaching young men the evils of haste and over-confidence, we cannot, on the stale assumption that young men will learn only by experience, shirk that great duty. We owe them the duty of warning them of errors even until those warnings seem tiresome and superfluous.

Many things impel me to emphasize the duty of teaching by unfortunate or unfavorable experiences, not the least of which is the assumption just mentioned — that young men will learn only by experience. Take the malignant tumor of the upper jaw, for example, as a type of the disease in which operation is hopeless and useless and so invariably unsuccessful that its performance adds to, on the whole, rather than detracts from human suffering and satisfies only the desire of friends that they may feel, after all, that everything has been done that human knowledge makes possible. As I have performed and observed the usual operation, it is a horror to be avoided, unless, as a preliminary step, the antrum is fully exposed and explored and the limitations of the disease shown to be within reasonable operative extirpation; and, furthermore, the classical extirpation is a transmittendum from those pre-anesthetic days when leisurely and tranquil demonstrations of extent and operability were impossible and when speed was the first requisite to success. And yet the operation of removing the superior maxillary shell which has been shielding the mouth from the horrors of offensive and bloody discharges, of painful deglutition and difficult speech continues to be performed on the indications and operative lines of the old days.

It is our duty, therefore, despite our unwillingness to accept always the experience of the past, to call attention to our failures and to insist that better methods be employed.

In diagnosis, let me repeat, errors arise most frequently from haste and carelessness in taking histories; less frequently from inadequate or careless physical examinations. As operative demonstrations of the real lesion prove, the history is chiefly at fault; the facts are either not elicited at all or are elicited incorrectly. The direction of improved effort, especially in difficult and doubtful cases, lies toward the correction and elaboration of the history, and to this end our endeavor should be:

1. To gain from the patient without suggestions and without leading questions a careful and leisurely statement of the symptoms from the very beginning.
2. To have the patient repeat the history at subsequent visits.
3. To compare these two or more histories.
4. To put questions which will tend to throw light upon the patient's voluntary statement.
5. To question the patient as to specific organs and diseases.
6. To bring out in detail family diseases and tendencies as particularly and extensively as in life insurance histories.
7. To cross-examine the patient on all his statements.
8. To avoid leading questions in all the details of the history.
9. To make use of every reasonable means of physical examination, excepting only those of doubtful efficacy which are painful or distressing.
10. To make repeated deductions from the above data.
11. To demonstrate, when possible, to others, the histories, the physical examination, the diagnosis and the real lesion (as in the clinical lecture).
12. To review the previous history in the light of the operative demonstration.
13. To question and cross-question the convalescent patient, as indicated by the abnormalities, old and recent, demonstrated at the operation.

Here lies the path of progress toward accuracy and effectiveness in the medical and the surgical treatment of disease.

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Massachusetts General Hospital.

CLINICAL MEETING OF THE MEDICAL BOARD. MARCH, 13, 1908.

I. CASES OF PYLORIC OBSTRUCTION.
II. A CASE OF TUBERCULOSIS PERITONITIS.
III. TWO CASES OF PERSISTENCE OF THE INFANTILE TYPE OF THE MALE GENERATIVE ORGANS.

BY A. K. STONE, M.D.

I. During my past service in the Male Medical Out-Patient Department I had several cases of dilated stomach with pyloric obstruction about which I wish to speak for a few moments. And possibly you will agree with me that they point a moral.

They were all easy cases to diagnose and there was nothing remarkable about them as all the signs were typical. They were all well advanced cases. (There were other cases which were puzzling in the extreme and had to be observed over a long period in order to come to a correct opinion, and some were obscure even after being studied carefully.)

There were 6 of these cases about which I specially wish to speak. In 4 there was a tumor to be felt or at least a resistance which was interpreted as a tumor; most of the men were usually emaciated and gave a history of distress in the stomach with vomiting, and the vomiting had come at periods of increasing frequency until it was persistent. Often large quantities were vomited, and in some instances it was reported that food of several days' standing had been seen in the vomitus. Already a diagnosis of pyloric obstruction was possible. In one or two instances blood was seen. The stomach tube showed a large amount of residuum, and in all cases food that had been ingested at least twelve hours before and in some instances several days before. One case was quite remarkable,— the patient had vomited repeatedly, during the examination, several ounces of a greenish watery fluid. The stomach tube when passed revealed about 1,000 ccm. of thick brownish material. The chemical examination showed that 4 of these patients had large amounts of free HCl present. Yeasts were found in one in abundance, and in two others, sarcinæ; and in spite of the tumors to be felt all of the 4 cases were considered as non-cancerous conditions.

The two other cases presented a different picture at the examination. There was in one the symptoms of dilatation; blood was present and there was an absence of hydrochloric acid and the presence of lactic acid. In the other the tumor did not cause obstruction, but the free hydrochloric acid was absent, Oppler-Boas bacilli were found in great numbers, and a piece of the tumor, a microscopic fragment, was found in the sediment which enabled the diagnosis to be clinched.

The two groups were totally distinct, and clear cut from the clinical point of view; 2 were cancer and 4 were non-malignant. When the latter group came to operation 3 of them were supposed by the surgeons to be malignant when they came to study them at close hand, not that they in all cases felt sure of the matter, but their leanings were that way. The thickening at the pylorus or at the seat of the ulceration was such that the suggestion was strong that they were dealing with malignant disease. In one case the old ulceration in healing had made a dense inflammatory mass behind the stomach. Here the lymph nodes were enlarged along the greater curvature, and one examined during the operation showed only inflammatory hyperplasia. In another case the old ulcer was practically in the pylorus which was much indurated, and just above this was a mass of lymph nodes; and an inch and a half to two inches from the pylorus was an open ulcer more than a quarter of an inch in diameter. The stomach wall was thickened and edematous about this ulcer, but nothing malignant was found in the excised portion of the stomach or the lymph nodes from above the stomach. In none of these cases did the pathologist find any signs of malignancy.

I simply report these observations because it has become the fashion for the surgeon to pay but little attention to the clinical and laboratory findings of the stomach cases. These typical clear-cut cases whose clinical findings have been borne out in the face of anatomical conditions which would naturally have justified other supposition, make the eloquent plea that the surgeon shall carefully consider the results of the laboratory findings and know definitely before the operation whether they are clean cut and definite, or whether they are doubtful.

II. My only excuse for introducing this young woman is that she may serve as a text for a few words on tuberculous peritonitis, for she is what I consider a typical case.

Her mother died of phthisis when she was three months old. She is now twenty-two years of age, In February, 1907, she had a sudden attack of abdominal pain and vomiting. She had been doing house work up to the time of attack and had felt a little below par for several weeks. She came to the Massachusetts General Hospital three days later and the abdomen was found to contain free fluid and later became tense with the large amount which accumulated. Fluid appeared in both sides of the chest, more on the left than the right. She remained about one month and came to the House of the Good Samaritan where she stayed till June. When she left this hospital her temperature had come to normal and did not again go up. The fluid quickly left the right side and began to subside in the belly and left pleural cavity. Absolute rest, outdoor life day and night, and plenty of good food brought her to apparent health with no fluid in the chest and none to be made out in the abdomen, though this still remained tense and slightly tender on pressure. From June to October of 1907, she was in Prince Edward Island, and then she returned to work in Boston thinking that she was better than she had ever been before in her life. But she could not stand the strain of working and began to run down; and in January, 1908, she re-entered the hospital with fluid again in the left chest. She is once more at the Samaritan, and if I can help it she is not going to work again for a year or more.

There has been no sign of fluid in the abdominal cavity and all the spasm and tenderness has disappeared. There is a little more resistance to be felt along the ascending colon and in the appendix region, though nothing definite is to be made out in the way of a tumor or mass of matted intestines. During all this time there has been no pain at menstruation and nothing in any way to call her attention to her pelvic organs, excepting at this very last menstruation she had a little pain for three days.

1. Sudden onset is common in tuberculous peritonitis and to be found in about one quarter of all cases. Fluid both accumulates and disappears rapidly.

2. It is not uncommon to have women go through the disease without any menstrual disturbance.

3. At this hospital in the last seventeen years the men and women having tuberculous peritonitis were in about equal numbers. It is improbable that the tubes are to be considered as the foci of infection in any great number of cases, and this in spite of the statement of the Mayos who have drawn their experience from a clinic where there are 4 women to 1 man, having this disease.

In this patient the recurrence has come not in the belly but in the chest. Recently I saw a case with Dr. Jackson where fluid had distended the abdomen during the five days previous to our seeing the case. It was found that the patient had had a pleurisy with exudate five years previously.

As yet there has been nothing in this young woman's case that has seemed to me to call for surgical interference, but rather for strict hygienic treatment. The great difficulty in these cases, as in those of pulmonary tuberculosis, is the proper environment after leaving the hospital.

III. The persistence of the infantile type of genital organs is not uncommon in the female, and I have seen a number of cases in the female medical out-patient department, but I have never chanced to see such a case in the male, and therefore report this case as a curiosity.

Patient is a stout, healthy young man of nineteen years of age. There is absence of hair on his face, under the arms and over the pubes, and the penis and testicles are practically those of a boy of ten. His voice has changed, and his nose has developed to accord with his age.

His general appearance and figure when stripped is that of a well-developed boy, but without any signs of obesity.

A similar case coming under Dr. Jackson's care was shown:

The patient was a boy of eighteen with the general appearance of a boy several years younger. Whether he was fully developed mentally had not been carefully studied, but he has earned his living by working in a mill.

There was an undescended testicle on the left. This could be felt in the canal and was about the size of that of a boy of ten or twelve. In the right side of the scrotum was the rudiment of a testicle, no larger than a pea. The penis was very short with a diameter of less than one half an inch. There was a small amount of hair under the arms and over the pubes. The voice had not fully changed.

This boy had sexual feelings.

REMOVAL OF THE TONSIL IN CAPSULE.

BY D. A. HEFFERNAN, M.D.

In the light of our present knowledge it is, I believe, the consensus of opinion that a diseased tonsil should be removed. Concerning the function of the tonsil we know but little at present; one thing we do know and that is, that, following complete removal, no appreciable change is noted clinically except for the good. Given a diseased tonsil the question immediately arises as to the best means of removal. It is not my intention to enumerate the many different methods which have been and still are used to remove the tonsil, but to call attention to its removal in capsule as advocated by Ballinger,[1] Jackson,[2] Pynchon [3] and others. This method of removal is particularly adapted to submerged or partially submerged tonsils. For large pedunculated tonsils the cold snare is by all odds the best and quickest. However, it is not the large tonsil of this type which is most apt to produce and keep up systemic infection. In surgery it is a general rule to remove as much diseased tissue as is possible; why hesitate in the case of the tonsil? That the tonsil is often the source of infection is, at the present time from clinical evidence, not to be disputed. Just how infection does take place through the tonsil we do not know; it would seem, however, that the deep crypts, because of their imperfect drainage, especially in the submerged type where they are partially covered by plica or drain into the supratonsillar fossa, would favor the absorption of infectious material.

Soon after birth the tonsil develops to the outer side of the plica triangularis and gradually fills in the tonsillar fossa which is formed by the anterior and posterior pillars of the fauces in front and behind, while to the outer side lies the superior constrictor muscle of the pharynx. On its internal or faucial surface, the tonsil is covered by a thin layer of connective tissue and epithelium which passes over on to the pillars. Externally it is limited by a firm but thin fibrous capsule which surrounds the tonsil everywhere except on its faucial aspect.

In the submerged or partially submerged tonsil, the plica covers the tonsil to a varying degree; it is not at all infrequent to see half of a tonsil submerged by plica in its lower half.

The capsule sends out into the tonsillar tissue numerous trabeculæ to which the lymphoid tissue is adherent and forms the tonsil. The constrictor side of the capsule is more or less adherent to its surroundings. Under normal conditions these adhesions will be found mostly in the lower two thirds of the tonsil, but if previously inflamed may be found everywhere and of considerable density. As a rule, even when previous inflammation has existed, the upper third and that portion of the capsule lying beneath the pillars or plica will be easily detached from the overlying tissue. The vessels of the tonsil enter and leave it in the lower two-thirds so that it is in this region that hemorrhage occurs.

From an anatomical standpoint it is clear that, in certain types of tonsils, drainage of the crypts is almost impossible. Now if this is true, and I believe it is, why temporize with a diseased tonsil any more than with disease elsewhere? Tonsillotomy only temporizes and still leaves the danger of re-infection which is not at all uncommon. The complete removal of the tonsil in its capsule is the only way that immunity from infection through the sinus tonsillaris can be obtained. As to whether it is judicious to remove the whole tonsil or not is not open to much discussion, because of our present knowledge concerning its function. Goerke,[4] after reviewing the subject of the function of the tonsil, was unable to say that it had any, yet was inclined to believe that it had some share in the protective system of the body.

Technic. — The tonsil is seized with a volsellum forcep, the tongue being depressed by an assistant. At first strong traction upon the tonsil is not necessary; fixation is the desired object. Having grasped the tonsil an incision is made beginning above in the supratonsillar fossa and carried forwards and downwards through the thin tonsillar coat and plica until the incision reaches nearly the base of the tongue. It is of first importance that the knife should have a sharp edge. As the incision is carried downwards, the edge of the wound will gape from the traction upon the tonsil. A sharp Hartmann raspatory is then used to push back the anterior pillar and plica. As the anterior pillar retracts the shining white capsule of the tonsil appears and is immediately grasped by the forceps. The tonsillar capsule will stand any amount of reasonable traction. In commencing the dissection it is best to free the anterior pillar and plica and then free the upper part. The line of dissection is from above downwards and gradually backwards. The anterior pillar and upper third of the tonsil are, as a rule, not firmly attached to the capsule and separate quite readily. Firm fibrous bands and muscle fibers will be found between the capsule and the aponeurosis of the superior constrictor in the lower and the posterior two thirds. Dissection is therefore more difficult in this region than in the upper third and in front. It is also the place where hemorrhage occurs. In dissecting in this region one should keep as close to the capsule as possible; by so doing one does less damage to the superior constrictor and is less apt to have troublesome hemorrhage. As a rule one can entirely remove the tonsil in capsule by the aid of the raspatory alone; however, if the adhesions in the lower third are very dense, scissors may be used. The use of a snare will hasten but at the same time it defeats the desired end, namely, removal of the entire tonsil.

Hemorrhage is overcome by releasing the traction on the tonsil and allowing it to slip back into its normal position when all bleeding will cease in a few moments. Danger of post-operative hemorrhage is real and not imaginary. In one case operated upon by myself it was necessary to apply tonsil clamps in order to control the bleeding. By retracting the anterior pillar one may be able to see the bleeding vessel and snap it with a long artery clamp. In severe cases one may have to resort to ligature of the external carotid artery.

Either general or infiltration anesthesia can be used; if ether is used complete relaxation is necessary.

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[1] Ballinger: Annals of Otol., Rhin. and Laryngol., 1907, p. 1057.
[2] Jackson: Annals of Surgery, Dec. 21, 1907.
[3] Pynchon: Annals of Otol., Rhin, and Laryngol., March, 1907.
[4] Goerke: Arch. fur Laryngol., Rhin, etc., Bd. 19, Heft 2, p. 44.

I. URETERAL CALCULUS.
II. HYDRONEPHROSIS.
III AND IV. PAPILLOMA OF THE URINARY BLADDER.
V. UMBILICAL HERNIA.
VI, VII, VIII. CASES OF GASTRIC ULCER.

(Cases from the East Surgical Service.)

BY CHARLES L. SCUDDER, M.D.,
AND
LINCOLN DAVIS., M.D.

Case I. Ureteral calculus. A young male adult, nine months previously, had sudden sharp pain over the region of the right kidney. Similar attacks of pain appeared at varying intervals. After three months the pain was referred along the course of the right ureter and into the scrotum. These attacks lasted some two hours. Three months ago the attacks became more severe and hematuria was present. The last attack of pain was two weeks ago, when the pain was present in the region of the bladder rather than in the region of the kidney.

The x-ray showed a shadow in the course of the right ureter near to the bladder, well below the pelvic brim.

Cystoscopy by Dr. Davis demonstrated that it was impossible to pass a ureteral catheter more than a short distance into the ureter.

Operation. — The lumbar iliac incision for exposing the iliac artery was made. The peritoneum was reflected to the ureter; the stone found and displaced upward into the dilated ureter. The ureter was incised over the stone; the stone extracted; the ureter sutured with interrupted linen sutures: a wick of rubber tissue was placed down to the line of suture; the wound was closed. After four days the wick was removed. At no time was there any leakage of urine through the ureteral suture line.

Remarks: Gibbons procedure of opening the peritoneum in order to facilitate the removal of the stone was not found necessary. This procedure, however, may be of distinct value. The importance of a consideration of stone in the ureter as the cause of pain ordinarily attributed to a chronic appendicitis was emphasized. The comparative ease with which a ureter may be palpated throughout its lower portion by the iliac incision was demonstrated in this case.

Case II. Hydronephrosis. A young adult male had had pain in the left hypochondrium at fairly regular intervals lasting twenty-four hours during the past two years. These attacks of pain have come as frequently as each month. Examination found slight tenderness to palpation in the costo-vertebral angle.

Cystoscopy by Dr. Davis found a patent left ureteral orifice but no appearance of indigo carmine one-half hour following injection.

The x-ray showed three small shadows, but these shadows were a little to the left of the left ureter.

Operation. — The left lumbar iliac incision was made, the peritoneum was reflected off the ureter, no stone was felt. Following the ureter to the kidney pelvis a hydronephrosis was found. An aberrant renal vein and artery stretched across the ureter at its entrance into the pelvis of the kidney. In view of the fact that upon incising the pelvis of the kidney the ureter was found patent throughout its whole length, these aberrant renal vessels were thought to be the occasion for the development of the hydronephrosis. The opening in the pelvis of the kidney was sutured so as to replace the ureteral opening in a more advantageous situation for drainage. A rubber tissue wick was placed to the line of suture and the wound closed. No leakage occurred. The patient has convalesced satisfactorily.

Remarks: The abnormalities of the renal vessels were spoken of and the various causes of hydronephrosis dwelt upon. It will be interesting to follow this case to determine if possible whether the function of the kidney is restored to normal and the obstruction permanently relieved. Voelker's indigo carmine test will be used later in the study of the function of this left kidney.

Case III. Papilloma of the urinary bladder. Young adult male had had hematuria and pain for some days.

Cystoscopy by Dr. Davis discovered a pedunculated papilloma situated above the left ureteral orifice.

Harrington's operation of transperitoneal cystotomy was done. The pedunculated papilloma was excised; the base sutured; the bladder was closed by three layers of sutures and the abdominal wall closed without drainage. The bladder was drained by a soft rubber catheter in the urethra for nine days. The man made an uninterrupted recovery.

Case IV. Papilloma of the urinary bladder. A young adult male had had hematuria for a year and a half.

Cystoscopy by Dr. Davis discovered a papilloma situated above the right ureteral orifice.

Operation. — Harrington's transperitoneal cystotomy was done and the tumor removed; hemorrhage was controlled by sutures; the bladder wall was sutured in three layers; the abdominal wall was closed without drainage. The bladder was drained for nine days with a soft rubber catheter. The patient made an uninterrupted recovery.

Remarks: The operation of transperitoneal cystotomy was advocated by Dr. Harrington some fourteen years ago.[1] The advantages of this approach to the interior of the bladder are, the ease of access to an intravesical growth, and the complete control of hemorrhage. The incision through the bladder wall is unattended by much bleeding; the closure of the bladder wall should be made by three layers of sutures, plain catgut being used in the mucous membrane; chromic catgut being used in the muscular layer and fine linen in the peritoneal layer.

Case V. Umbilical hernia. A woman weighing 237 lb. has had for several years an umbilical hernia as large as a derby hat.

Operation was done by the Mayo method. The patient was shown at the meeting.

Remarks: By the old method of treating umbilical hernia the sac was opened and the adhesions and contents of the sac dealt with immediately. An attempt was made to approximate the recti muscles. Dr. Mayo by his method, the efficiency of which has been satisfactorily demonstrated in his experience and in the experience of other surgeons, approaches the hernial opening directly, amputating the hernial tumor together with its omental contents. A suture is made of the peritoneum and an overlapping suture of the anterior abdominal fascia is made transversely to the axis of the body.

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[1] See Annals of Surgery for October, 1893.

Cases VI, VII, and VIII. These three cases were transferred to the surgical service from Dr. F. C. Shattuck's wards where they had been carefully studied. Each of these cases illustrated different stages of gastric ulcer. Each presented obstructive pyloric symptoms. Each had been treated outside the hospital for from twelve to fifteen years for symptoms of indigestion and dyspepsia. In each the stomach was somewhat dilated. Hydrochloric acid was present in the stomach contents of each. In the *first* case (Case VI) dense adhesions were found obstructing the pylorus. Posterior gastro-enterostomy was done. Excepting for a bronchopneumonia convalescence has been uninterrupted. In the *second* case (Case VII) a small hard tumor was found at the pylorus causing obstruction. A posterior gastro-enterostomy was done and an uninterrupted convalescence has occurred. In the third case (Case VIII), because of the extent of the indurated ulcer, the whole of the lesser curvature and the ulcer-bearing area were resected. The duodenum and divided stomach were closed. A gastro-enterostomy was done. This man has likewise made an uninterrupted convalescence.

These three cases of chronic gastric ulcer illustrate the importance of a careful study of the physical conditions present previous to surgical operation, and they illustrate also the quiet and satisfactory convalescence following operation upon the stomach.

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Reports of Societies.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, Feb. 5, 1908.

The President, Dr. James Tyson, in the chair.

A CASE OF MULTIPLE, SACCULATED, THORACIC ANEURISM SUCCESSFULLY TREATED BY WIRING.

Dr. James M. Anders and Dr. Joseph P. Mann (by invitation) reported the case of a colored man, aged thirty-six years, who had been admitted to the Medico-Chirurgical Hospital in January, 1907. Four years ago there had developed retrosternal pain and a small throbbing, painful protuberance to the right of the midsternal region; this largely disappeared under absolute rest and certain remedial agents. In December a severe cold caused cough and pain in the area of swelling. In January, while on a "spree," the man felt suddenly a sharp, intense pain, accompanied by a sense of "something giving way" in the chest. The swelling rapidly returned, and four days later, when admitted to the hospital, it was about the size of a small orange. An x-ray examination by Dr. Pfahler showed an aneurism extending 3½ inches to the right of the median line on a level with the third rib and also approximately 2½ inches upward and downward from this level. The upper portion of the aneurismal shadow just overlapped the origin of the aorta. Medical treatment failed to improve the condition. The apex of the tumor mass became necrotic in appearance and rupture seemed imminent. Accordingly, Dr. Joseph P. Mann inserted into the sac about ten yards of fine silver and copper wire. Almost immediately the expansile pulsation was markedly diminished and the tumor mass was less prominent. About two weeks later an additional slight elevation above the second rib and to the right of the sternum was visible. This also gave an expansile pulsation and increased in size, and several yards of silver were introduced by Dr. Mann. Pulsations became less marked and there was diminution in the size of the mass. Within three weeks following the original operation the entire upper surface of the primary tumor-mass sloughed off, exposing the wire coiled up in the aneurismal sac. A firm granulating surface was visible beneath the wire. The wire steadily protruded and small portions were removed each day. For a long time after the mass had disappeared there was slight oozing of blood and subsequently a small hemorrhage. The wound slowly healed by granulation. A slight pulsation was still present over the second elevation. The patient was discharged in the following July.

SACCULATED ANEURISM OF THE ARCH OF THE AORTA RUPTURED INTO THE SUPERIOR VENA CAVA, WITHOUT SYMPTOMS OF VENOUS OBSTRUCTION. (Exhibition of the specimen.)

Dr. Joseph Sailer spoke of the rare occurrence of perforation of the venous structures. In all the cases with which he had been familiar there had been associated some visible signs. Speculating upon the absence of these visible signs, he said that the only plausible explanation of obstruction not taking place in the superior vena cava was a purely hypothetical one and did not satisfactorily account for the condition. It was that in some way in the large sacculated aneurism the pressure of the blood in the sac was not as great as it must have been in the rest of the arterial system. In other words, the pressure in the sac at the site of the opening must have been approximately equal to the pressure of blood in the veins. The appearance of the specimen suggested this possibility.

THE PATHOGENESIS OF ANEURISM OF THE AORTA. (Exhibition of specimens.)

Dr. Joseph McFarland referred to blood pressure and a morbid condition of the vessel wall as etiological factors in aneurism. When these two factors cooperate the explanation seems simple. When either one fails the explanation is more difficult. A case was cited in which there had seemed to be a perfectly normal aorta undergoing spontaneous rupture on account of abnormally great blood pressure. The man had entered the hospital complaining of great pain in the precordial region. The resident physician, seeing that the cardiac action was hurried, concluded that the man needed digitalis and consequently administered a few doses. The man suffered great and agonizing pain and died a few hours afterward. At autopsy the pericardium was found to be moderately distended with blood and a rupture was found in the wall of the aorta immediately above the aortic valve. There was a transverse incision very clean cut. There were practically no signs of disease of the aorta. Had this laceration not extended so as to permit fatal hemorrhage, an aneurism would have formed, the result of internal traumatic influences. This case exemplified the fact that abnormal blood pressure acting upon what was supposed to be a normal vessel might result in aneurism.

THE X-RAY DIAGNOSIS OF ANEURISM OF THE AORTA.

Dr. Henry K. Pancoast referred to the x-ray examination as a most valuable and accurate method of diagnosis of thoracic aneurism and one that should be employed in all instances as an adjunct to the clinical examination. It is not invariably conclusive in itself. While the fluoroscope may be more satisfactory and reliable than the radiograph in some instances, its advantages cannot justify the risks entailed in its routine use.

From the radiographic standpoint, aneurismal shadows are to be differentiated from those of mediastinal tumors, enlarged mediastinal lymph glands, localized empyema, thickened pleura, displaced aorta, tortuosity and other variations of the aorta and dilated aorta. Pleural effusions, if extensive, may completely obscure the outlines of the heart and vessels and make a correct diagnosis impossible. The appearance of normal shadows of the thoracic aorta is the most reliable evidence against aneurism. A definite diagnosis should not be rendered unless the skiagraphic details are satisfactorily clear. The skiagraph is of great value in cases in which the clinical diagnosis is uncertain and it is a safeguard against error if the clinical diagnosis is apparently certain.

THE WIRING OPERATION IN THE TREATMENT OF ANEURISM OF THE AORTA AND THE INFLUENCE OF DRUGS BEFORE AND AFTER THE OPERATION.

Dr. Hobart A. Hare presented several points upon this subject bearing more especially upon the remarkable results of the operation. The first and most definite result was the remarkable diminution of pain. A second noteworthy result was the diminution of dyspnea. In a case cited in which the suffering had been most extreme there was relief before the electricity had been passing through the tumor for fifteen minutes. Another point of interest was that in some sixty operations of this kind recorded there had not been a single instance of accident occurring during the operation. In no instance had there been puncture of the sac or the sweeping off of a loose colt producing secondary lesions. In the case referred to there had been, three hours before the operation, partial hemiplegia and aphasia. This condition was undoubtedly due to embolism because later it had entirely disappeared.

In the vast majority of cases in which aneurism occurs Dr. Hare said it occurs as a manifestation of general vascular disease, and the history of all the cases he has operated upon or seen reported has been that after the wiring the adjacent blood vessel has given way. Cases, however, are on record in which life has been prolonged for considerable periods of time in comfort and usefulness.

It was urged that great care should be exercised that the needle is not pushed by inadvertence so far into the aneurismal sac that the shoulder of the needle comes into contact with the skin, otherwise an electrolytic burn will result. One such case was cited.

Dr. Hare has used gold wire in nearly all of his cases. While he believes silver may be rather more easily handled, he feels that gold wire after entering the mass may better adjust itself to the uneven surfaces of the sac as silver would not.

Dr. Robert N. Willson, Jr., had operated upon three cases of aneurism. Two were still living and one had died within a week or two after the wiring.

Dr. William S. Newcomet, exhibited fluoroscopic pictures of a case operated upon by Dr. Hare. He believes that if the fluoroscope is used with proper precaution there is little danger to the operator.

Dr. M. Howard Fussell, speaking of the absence of symptoms in Dr. Sailer's case of rupture of the aneurism into the superior vena cava, said that two years before he had gone over the literature and in all the cases reported there was sudden, almost instantaneous, venous edema.

Dr. J. Alison Scott, cited one case of death within twelve hours after wiring an aneurism on the left side of the neck. In a case under his care at the present time an aneurism the size of a small lemon had been wired in July. Improvement followed, but at the present time the man has an aneurism the size of a cantaloupe spread out over the entire right side of the neck. Dr. Scott attributes the sudden and remarkable decrease of pain upon wiring to the effect of the electricity rather than to the sudden ceasing of the pressure, unless the sac diminishes very rapidly in size. Regarding the duration of life in the presence of aneurism, he had known of one case in which the patient lived for eighteen years.

Dr. John B. Roberts recalled the first work of this kind done in this country, in the treatment, in the Pennsylvania Hospital, of a man with subclavian aneurism, by Dr. Levis. The man had been better for a few days and then died. There was no such thing as asepsis in those days and horse hair was thrust into the aneurism to cause coagulation.

MULTIPLE AND CONSECUTIVE OPERATIONS UPON THE KIDNEYS FOR CALCULI.

Dr. W. Wayne Babcock reported seven cases indicating the feasibility of operating upon both kidneys at the same time, or of doing repeated operations upon the same kidney. Upon one of the patients a bilateral nephrotomy was done for calculous disease; a year later a bilateral nephrolithotomy; at a later time a drainage and a nephrectomy; finally from the residual kidney five stones were removed. Two years later the patient was active and fairly vigorous. The second patient had six consecutive connective operations for recurrent calculous disease and pyelonephrosis, and after a bilateral nephrostomy, wore catheters in the kidneys for one and one-half years. Finally, the patient came under the author's care. One kidney was removed, the opposite ureter catheterized and the nephrostomy drainage abolished. Following this the urine cleared and the patient gained over twenty pounds in weight. In all, twenty-five operations were done upon the seven patients for the symptoms produced by stone with one death. The author concludes that in the absence of infection, bilateral consecutive operations upon the kidneys are well borne. Nephrolithotomy, especially when done in the presence of pyelitis, for large, crumbly, or for multiple calculi frequently is followed by reformation of stone in the kidney. Nephrotomy gives better late results than pyelotomy. Nephrostomy may not only fail to cure or prevent pyelonephrosis or recurrent nephrolithiasis, but may even favor these conditions. In operating for simple calculous disease of the kidneys, drainage through the loin should, if feasible, be avoided, or used only temporarily and with the most rigid aseptic precautions. In bilateral or consecutive operations upon the kidney, spinal anesthesia by tropacocaine or stovaine is to be preferred.

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Book Review.

Healthy Boyhood. By Arthur Trewby, M.A., with an introduction by Sir Dyce Duckworth, M.D., LL.D., Consulting Physician to St. Bartholomew's Hospital, and a Foreword by Field-Marshal Earl Roberts, K.G., K.P., V.C., O.M., P.C., G.C.B., G.C.S.I., G.C.I.E., D.C.L., LL.D. New York: Longmans, Green & Co. 1907.

This is a small booklet addressed to boys. It is a plain statement of the various evils to which they may fall victims, and teems with good advice. The suggestions throughout are wise and moderate, and the book should do its part toward bringing about a more healthy attitude in the minds of the young toward various sexual matters.

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AN OUTBREAK OF TYPHOID FEVER FROM CONTAMINATED MILK: EXPLAINED BY AUTOPSY.

THE unusually extensive outbreak of typhoid fever in Jamaica Plain, Boston, which began to show itself on April 3, and at the time of writing had reached a total of nearly three hundred cases, illustrates in a most striking manner the danger to which the public is exposed through possible pollution of the milk supply at any point between that of production and the home of the consumer; the difficulties with which even the most efficient official supervision has to deal and the urgent necessity of making and enforcing, in the interest of the public health, the strictest regulations concerning the production, transportation, handling and distribution of the most important of foods.

As soon as the number of reported cases was large enough to attract the attention of the health authorities, it became evident that the infection was milk-borne, all but an insignificant proportion occurring in the homes of customers of two milk dealers who were supplied from a common source; and as the number mounted into the hundreds the evidence became more and more conclusive. Investigation showed that while the supply of each of the dealers was derived from farms in the same country district, in which no cases of the disease appeared to exist, there was but one producer whose milk was delivered to both, and attention was naturally directed to his premises, the insanitary condition of which has several times been brought by the State Board of Health to the attention of the only authority which has actual power to compel the owner to maintain cleanly conditions and methods, namely, the town board of health.

No history of the existence of typhoid fever or anything in any way simulating it among those dwelling or working on this farm could be obtained and the extreme improbability that the milk received its specific contamination there was shown by the fact that some twenty cans, one third of the entire product, had for some weeks been shipped daily to a neighboring town, in which no cases of the disease had occurred. There was some evidence of remotely possible contamination during transportation, and this was examined with negative results.

The probable source of the infection was made clear, however, by the death of one of the milkmen concerned, who was one of the early victims of the outbreak. Autopsy revealed the characteristic lesions of the disease, among which was an ulcer of presumably three weeks' standing, and it was learned that for two weeks before taking to his bed, he had been ailing to such an extent that his work had been limited to testing and handling the milk. This would account for the specific contamination of his own supply, but not for that of the other dealer, had it not been brought out that he had been having first choice of the entire lot of forty cans and that the cans which, after being tested and handled, were rejected by him, were taken by the other.

Existing regulations prohibiting those with communicable diseases from handling milk intended for sale are evidently inadequate to reach those whose cases are not sufficiently well marked to prevent them from attending to their work in some degree, and whether an extension of the same to those who are ailing to only a slight extent could be enforced is open to grave doubt. No blame can be placed upon the authorities for the occurrence of this extensive outbreak, and, indeed, it is a pleasure to record that one and all acted with commendable promptness in preventing the further distribution of the infection and in seeking its source.

There is another feature of this case to which we must allude. An attempt was made to turn this unfortunate affair to the advantage of an enterprising contractor, who heats his milk before shipment to the city and delivery to the retailer, and who asserted through the press that had the milk at fault come from him no trouble would have occurred. Inasmuch as the pollution occurred after delivery to the retailer and since there is abundant proof that pathogenic bacteria increase more rapidly in heated than in raw milk, such a claim must fall to the ground. What is needed is cleanliness at every stage, from the milk ducts of the cow to the lips of the consumer, and this the public should demand and insist upon.

REACTION OF THE SKIN AND OF THE EYE IN DIFFERENT DERMATOSES.

Six months ago Von Pirquet, of Vienna, made a communication in Berlin with regard to the local reaction produced by the inoculation of tuberculin into the skin, in which he gave the results of his investigations of 500 infants or young children. The conclusion he arrived at was that it is only tuberculous children who present, at the point of inoculation, a characteristic red papule, and he put forward this reaction as a new method of diagnosis of tuberculosis. Since then Von Pirquet's method has been made the object of numerous studies.

Nicolas and Gauthier[1] have tested this reaction in a variety of subjects. A 1% solution of tuberculin was used, which was applied to the anterior surface of the forearm. A very light scarification was then performed and the spot covered with a dressing.

The reaction begins to be apparent after several hours, usually, with its maximum most often at the end of twenty-four hours. The reaction varies in intensity from the production of a large, red, very prominent papule — with much infiltration and an inflammatory areola, which soon shows exudation in its center and results in a small ulceration — to a small papule followed by desquamation. There are all degrees of transition between these different forms. In no case has there been a swelling of the glands or any constitutional disturbance. The local phenomena are always mild and do not produce any disagreeable sensations. There is simply a little pruritus in the first hours.

Sixty-seven patients were tested, which were divided into three groups:

1. The first group comprised those who had some typical form of cutaneous tuberculosis. In this group the positive reaction was constant. In two children, of eight and ten years, affected with lupus in the face, it was violent. In these patients no local inflammatory phenomena were produced at the seat of the cutaneous lesions, contrary to what is seen after the injection of tuberculin in these cases.

2. The second group comprised patients who were subject to dermatoses which have some special relation with tuberculosis, lupus erythematosus, etc. It was seen that almost a third of these patients reacted positively.

3. The third group was made up of patients taken haphazard in the dermatological clinic. These gave twenty positive reactions as against twenty-two negative and two doubtful. Some of these, however, were tuberculous, so that it was affirmed that a quarter of the patients who were clinically non-tuberculous gave positive reactions. Their statistics also disproved the theory that the reaction becomes more frequent the older the subject.

The conclusion is reached that the reaction of the skin to tuberculin has but a very relative value. Negative reactions seem to have a greater value since all the cases of cutaneous tuberculosis have given positive reactions.

The same writers tried the reaction of the eye to tuberculin according to the method of Calmette. A drop of a 1% solution in the eye of the patient shows, when the reaction is positive, at the end of the third to the sixth hour usually, a conjunctivitis, with very slight subjective symptoms. But in four cases of lupus erythematosus there was a really violent reaction with painful subjective symptoms, and all of these symptoms were very much prolonged. In hitherto published results it will be seen that disagreeable reactions are by no means rare, and that cases of conjunctivitis, lasting from eight to fifteen days, have frequently been noted. Nineteen patients, of whom 8 were suffering from cutaneous tuberculosis, 2 from lupus erythematosus, 4 from psoriasis, and 5 from different dermatoses, were tested. These 19 furnished 10 positive reactions, 8 negative reactions and 1 doubtful. It was positive in all the cutaneous tuberculoses, with the exception of lupus of the face, which was doubtful.

In order to compare the cutaneous with the ocular reaction, the two procedures were practiced successively on 13 patients. The ocular reaction was first practiced, and ten days later the cutaneous reaction. It was found from these cases that the two methods accorded in all but one instance, that of a lupus of the face in which the cutaneous reaction alone was positive. Still, the writers consider that the number of cases is too small to draw any conclusion in favor of one or the other of the methods. The two methods may offer certain indications, but only a probability can be accorded them, at least as regards positive reactions. The method of Von Pirquet is preferred on the ground that the ocular reaction is often disagreeable and may sometimes produce unpleasant consequences.

MEDICAL NOTES.

Essays on Economic Waste Due to Occupational Diseases. — The president of the American Institute of Social Service, New York, notifies us that the time limit specified for the reception of essays, in competition for the Inman prize, on "The Economic Waste Due to Occupational Diseases," has been extended from April 1 to June 15.

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[1] Annales de Derm. et Syph., Dec., 1907.

The Southern Medical Journal. — A new Medical Journal, with the above title, illustrated, and representative of the South, is announced as to be published in Nashville, Tenn.

The Chaille Memorial and Jubilee. — The alumni of the Medical Department of Tulane University, Louisiana, are planning to celebrate the anniversary of the fiftieth year of teaching service of Dr. Stanford G. Chaille, professor and dean of the Medical Department. The exact form which the memorial is to take is not as yet definitely determined, but it is hoped to establish a chair in some department of medicine.

Middleton-Goldsmith Lecture. — The Middleton-Goldsmith Lecture of the New York Pathological Society was this year delivered by Dr. F. B. Mallory, Associate Professor of Pathology in Harvard University, on the subject, "The Results of the Application of Special Histological Methods to the Study of Tumors." The lecture was profusely illustrated.

Reforms in Prisons. — Dr. Beverley Robinson, of New York, contributed to a recent number of *Charities and the Commons* some suggestions on reform in the administration of prisons and county jails. He dwells upon the necessity for food inspection in prisons and the appointment of a dietitian to see how the food is prepared and cooked. He also advocates the establishment of consulting or advisory medical boards, such as obtain in hospitals and charitable institutions, which should have supervision of all sanitary matters and of all matters pertaining to the physicial and moral health of prisoners. There should also be regular visiting and visitors, who should report to the State Prison Commission.

Return of Dr. Hamilton Rice to Civilization. — Some anxiety has recently been expressed regarding the fate of Dr. Hamilton Rice, of Boston, who for more than a year past has been exploring the region about the head waters of the Orinoco River in South America. No news had been received of him, with the exception of a brief communication on Nov. 5, for about a year. The country he has been exploring is practically unknown, and its dangers manifold. It will, therefore, be a satisfaction to his friends to know that he is none the worse for his year's experience. Dr. Rice is a graduate of the Harvard Medical School, and served as house officer at the Massachusetts General Hospital.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 15, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 62, typhoid fever 272, measles 239, tuberculosis 45, smallpox 0.

The death-rate of the reported deaths for the week ending April 15, 1908, was 19.94.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, April 11, 1908. was 219, against 203 the corresponding week of last year, showing an increase of 16 deaths and making the death-rate for the week 18.74. Of this number 131 were males and 88 were females; 215 were white and 4 colored; 138 were born in the United States, 75 in foreign countries and 6 unknown; 53 were of American parentage, 133 of foreign parentage and 33 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 56 cases and 2 deaths; scarlatina, 61 cases and 2 deaths; typhoid fever, 289 cases and 1 death; measles, 221 cases and 2 deaths; tuberculosis, 45 cases and 26 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 28, whooping cough 1, heart disease 31, bronchitis 8, and marasmus 8. There were 14 deaths from violent causes. The number of children who died under one year was 47; the number under five years 66. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 74.

There were 2 cases and 1 death reported from cerebrospinal meningitis during the week.

Scarlet Fever at Harvard College. — Up to April 14, 18 cases of scarlet fever have been reported among the students at Harvard University, Cambridge. The cases are being treated at the Stillman Infirmary in connection with the college, and are all of mild form.

Appointment of Dr. Francis S. Watson. — Dr. Francis S. Watson, of Boston, has been elected president of the American Branch of the

International Association of Urologists and vice-president at the first session of the society, which is to be held in Paris in October.

Burning of the Frost Hospital, Chelsea, Mass. — Among many public buildings and institutions burned in the recent disastrous fire at Chelsea, Mass., the Frost Hospital was completely destroyed. The patients were taken to places of safety, and so far as known no fatalities among them have occurred as the result of their enforced removal.

Dinner in Honor of Dr. William H. Carmalt. — A dinner has recently been given by the faculty of the Yale Medical School, in honor of Dr. William H. Carmalt, Professor Emeritus of Surgery at that institution, at which President Hadley, of the University, physicians in New Haven and many other alumni were present. At the time of his resignation, Dr. Carmalt had occupied a position on the faculty of the Medical School for twenty-five years. He was a graduate of the College of Physicians and Surgeons of New York in 1861.

Appointment of Dr. Herbert B. Howard. — The announcement in another part of this issue that Dr. Herbert B. Howard, resident physician of the Massachusetts General Hospital, has been appointed to the superintendency of the projected Brigham Hospital, soon to be erected on the grounds adjoining the new Harvard Medical School buildings, must be regarded as most appropriate. Dr. Howard's long experience as the managing head of institutions fits him peculiarly for the responsible task which he is about to assume. The unusual difficulty which he met and overcame at the Tewksbury almshouse, many years ago, will be remembered by all who have followed the development of our public institutions. His later experience at the Massachusetts General Hospital during a period of rapid growth and development will, no doubt, render the superintendency of the new hospital an easier task. The trustees are to be congratulated on having obtained the services of so competent a man as Dr. Howard, in the construction and equipment of this notable addition to Boston's hospitals.

NEW YORK.

New Buildings for Hebrew Sheltering Guardian Society. — At the annual meeting of the Hebrew Sheltering Guardian Society on March 29 it was announced that the directors had decided to give up the present building at 150th Street and Broadway and establish the institution at Pleasantville, Westchester County, on the cottage plan. The plans for the new buildings, about thirty in number, have been prepared, and the erection of these will be commenced as soon as $100,000 has been added to the building fund already accumulated, which amounts to over $500,000. Instead of housing the thousand children which the society cares for under one roof, as at present, they will be divided among the cottages, each of which will accommodate twenty-five and be under the direct care of a house mother.

Award of Gibbs Prize. — The New York Academy of Medicine has awarded the Gibbs prize for the best thesis involving original work on the subject of the etiology, pathology and treatment of diseases of the kidney, to Dr. Norman E. Ditman, of New York. The Gibbs prize was offered six years ago, and the contest for it closed in October last. Dr. Ditman, who is the pathologist to the Sloane Maternity, assistant pathologist to Roosevelt Hospital and an assistant physician to St. Luke's Hospital, was aided in his researches by William Walker, of the University of Pennsylvania.

A Case of Heart Suture. — A case of heart suture, which bids fair to result in complete success, is reported from St. Joseph's Hospital in Yonkers. The patient, Robert Inglis, a vigorous young man of twenty-three, who is a prominent member of a local athletic club, was on his way home with some friends, at a late hour on April 4, when the party got into an altercation with three foreigners, and Inglis was stabbed in the heart with a knife. At an early hour on the fifth the operation of resecting two ribs and suturing the cardiac wound was performed at the hospital. The condition of the patient immediately after the operation was favorable. This continued to be the case later, and on April 8 he was reported as still improving.

The Visit of Professor Koch. — Dr. Robert Koch, who arrived on the *Kronprinzessin Cecilie* on April 7, was met at the quarantine station by a committee from the German Medical Society, headed by Dr. Carl Beck. During the week a number of private entertainments were given in his honor, and he visited the Health Department, Quarantine and various hospitals. He expressed his gratification at the work being done in these institutions, particularly the laboratory work, and was especially interested in the methods which Health Officer Doty has for several years been employing for the extermination of the mosquito on Staten Island, where the quarantine station is located. On the evening of April 11 Dr. Koch was tendered an elaborate banquet at the Waldorf-Astoria by the German Medical Society. Dr. Beck was chairman of the banquet committee of the society, and on the honorary committee were the German Ambassador, the German Consul-General at New York, Surgeons-General Sternberg and Wyman, Dr. Nicholas Murray Butler, president of Columbia University, Andrew Carnegie, Drs. Theobald Smith, H. P. Bowditch, F. Flick, W. H. Welch, W. S. Halsted, V. C. Vaughn and E. L. Trudeau, representing the profession in other places, and a number of the most prominent physicians of New York. More than five hundred were at the tables, and Dr. Beck, who presided, made the address of welcome. Other speakers were: Mr. Carnegie, Dr. William H. Welch, of Johns Hopkins University, Dr. Abraham Jacobi, and Dr. Koch himself, who made his remarks in German. The balconies were crowded with ladies, among whom was the wife of Dr. Koch. Altogether it was the most notable event in the history of the society.

Obituary.

JOHN BRYANT, M.D.

Dr. John Bryant, the son of Dr. Henry and Elizabeth B. Sohier Bryant, was born in 1850. From his father, one of the leading ornithologists of his day, an army surgeon of high rank and ability, and head of the great Lincoln Hospital, erected in Washington, where the Congressional Library now stands, he inherited a great love of travel, sport and science. Dr. Bryant graduated from Harvard College in 1873 and from the Harvard Medical School in 1877, in the mean time having taken a trip round the Horn in a sailing ship, and an extended shooting trip in South Africa.

After his marriage in 1878 he spent a winter in Vienna, where most of his time was devoted to the study of anatomy, of which he was very fond; and on his return to America he began work in the Anatomical Department of the Harvard Medical School as a volunteer, making a series of most beautiful dissections, many of which are now in the Warren Museum.

He never practiced as a physician, but always kept up an interest in medical matters.

For many years he busied himself with photography, and his "lantern talks" to boys' clubs and, in fact, to any audience of the poor that wished to hear him, took many evenings of his year.

As a sportsman he represented the highest type, always keen, fair and generous; as a splendid sailor, a wonderful boxer, a remarkable shot, an enthusiastic fisherman, he will always be remembered, even by those who only knew him slightly.

To those of us who were so fortunate as to know him well and enjoy his love and friendship, the man himself meant more than anything else. There was something most wonderfully attractive in his personality, an almost feminine sweetness of disposition, a loyalty to friends that nothing could shake, a thoughtful kindliness showing itself towards all with whom he came in contact, that made him one of the best loved men it has been our good fortune to know. Through all his life, in sunshine or shadow, and there were many clouds in his life, he was always the same true gentleman, and in his last months, when his former splendid strength was gone and he found himself face to face with a fatal disease, his courage, patience and hope were superb. He has left many friends, no enemies and an honored memory behind him.

Current Literature.

Medical Record.

Feb. 29, 1908.

1. *Stern, H. *Chronic Sigmoiditis.*
2. Gibb, W. Travis. *Cardiac Hydrothorax. Report of a Case Aspirated 311 Times.*
3. Gordon, A. *Acute Bulbar Paralysis with an Unusuol Symptom.*
4. Kopetsky, S. J. *Significant Features of Middle Ear Suppurations in Infancy and Childhood.*
5. Price, J. S. *Dongers Attending Operative Intervention in Gonorrheal Salpingitis.*
6. Loree, D. *Ether Anesthesia.*

1. Stern describes chronic sigmoiditis as a chronic inflammatory state of the sigmoid flexure, characterized by frequent exacerbations, lasting from several hours to several days, of the otherwise more or less subdued phenomena, viz., tenderness or pain in the lower left lateral and median anterior regions of the abdomen, increasing on pressure, moderate abdominal distention, with some resistance in the left iliac fossa, slight elevation of rectal temperature, obstipation, burning and aching sensations in the buttocks and left thigh, various nervous phenomena, and frequently vesicular irritation in the male, and spasmodic leucorrhea in the female. The author considers the condition to be much more common than supposed, in fact, he believes that inflammatory processes in the sigmoid flexure occur fully as often as in the cecal and appendiceal region. The cases are about four times as frequent in women as in men. In differential diagnosis we should consider neoplasm, adhesions, prolapse of the left kidney, wandering spleen and diseases of the female internal organs of generation. For inspection of the sigmoid some form of sigmoidoscope should be used; the author has used a long Kelly tube with reflected light to good advantage. As to treatment, atropine may be given subcutaneously for the spasm, or some mild nerve narcotic, if the spasm recurs persistently. An atonic condition may be present, for which a large-residue diet, active and passive exercises, hydrotherapy and electricity produce the best results. For the pain of an acute attack opium or its derivatives should not be used. Usually an evacuation of the bowels is followed by relief of the more intense pain. Complete suppression of peristalsis is contra-indicated. Local treatment may be applied through a soft rectal tube. For soothing the inflamed surface, the

author recommends the compound infusion of sage warmed to 110°, and as a mild astringent a 2% boric acid solution. Very astringent applications should only be applied through a rectoscope, because they are so harmful to the normal intestine. Thin pastes made up of eucalyptus, bismuth, olive oil and gum acacia are very useful as protectives. [W. B. R.]

March 7, 1908.

1. Satterthwaite, T. E. *The Opportunities of a Great Medical Society.*
2. Ely, L. W., and Whitbeck, B. H. *Report of Three Years' Work at the Sea Breeze Hospital for the Treatment of Surgical Tuberculosis in Children.*
3. Wachenfeld. *Some New Facts Regarding Heart Disease.*
4. Konkle, W. B. *"The Flowers that Bloom in the Spring" — with Variations and Digressions.*
5. Hancock, F. H. *A Plea for the Correction of Uterine Displacements.*

The Journal of the American Medical Association.

March 11, 1908.

1. Starling, E. H. *The Chemical Control of the Body.*
2. Bernheim, B. M. *Passive Hyperemia by Means of the Cupping Glass of Bier and Klapp.*
3. *Anspach, B. M. *The Frequency and Significance of Endometritis from the Standpoint of Treatment.*
4. Burr, C. W. *Delirium during and after Tetanus.*
5. Haskell, C. N. *A Typhoid Fever Epidemic from Infected Milk.*
6. Thomas, H. M., and Cushing, H. *Removal of a Subcortical Cystic Tumor at a Second-Stage Operation without Anesthesia.*
7. Crook, J. K. *American Mineral Waters in the Light of Recent Analyses.*
8. *Herrick, J. B. *The Oatmeal Diet in the Treatment of Diabetes Mellitus.*
9. Posey, W. C., and Hirst, J. C. *The Importance of an Ocular Examination in Pregnant Women Manifesting Constitutional Signs of Toxemia.*
10. Clark, W. L., Jr. *The Use of Anthracite Coal Ash as a Surgical Dressing.*
11. *Beck, E. G. *Fistulous Tracts, Tuberculous Sinuses and Abscess Cavities. A New Method of Diagnosis and Treatment by Bismuth Paste.*

3. Anspach analyzed 483 cases, in which there had been a histologic examination of the endometrium. He found that the endometrium was diseased in no more than one half of the cases in which the curettement was done for a suspected endometritis. He emphasizes the fact that a uterine discharge is often not cured by curettement, and rarely cured by the direct application of antiseptic or caustic solutions to the uterine cavity. A chronic discharge from the uterus, which is dependent on pelvic disease, usually requires more than a curettement or intra-uterine applications. When no pelvic origin of the uterine discharge is apparent, general tonic and hygienic treatment is indicated.

8. Herrick, in the main, confirms von Noorden's claim for the oatmeal diet. In the milder types of diabetes there were no ill effects, but the benefits seemed slight. In the cases of moderate severity it seems of especial help in establishing tolerance for carbohydrates and in warding off impending coma. In Herrick's cases, he found it to exert a very favorable influence in the diabetes of children, if employed early.

11. Beck has employed a bismuth-vaseline paste for the diagnosis and treatment of fistulas and abscess cavities. He finds it contra-indicated only in intracranial sinuses, biliary fistulas, and those communicating with the urinary bladder. Radiographs taken after the fistulas have been injected with bismuth paste show the extent of the fistulous tract and are of great value in radical surgery. The bismuth paste when mixed with wax and soft paraffin and injected in a liquid state, solidifies in the fistula and serves as a framework for new connective tissue. Apparently, there are no unpleasant or dangerous symptoms, and the injections are painless. Frequently one injection was sufficient to cause healing of old persistent fistulas. [R. I. L.]

Bulletin of the Johns Hopkins Hospital.

March, 1908.

1. Hemmeter, J. C. *Albrecht von Haller: Scientific, Literary and Poetical Activity.*
2. *Davis, J. S. *Primary Hemangiomata of Muscle.*
3. Wight, O. B. *Pulmonary Complications Following Anesthesia.*
4. *MacCallum, W. G., and Voegtlin, C. *On the Relation of the Parathyroid to Calcium Metabolism and the Nature of Tetany.*

2. Davis adds 6 cases of primary hemangiomata of muscle from the records of the Johns Hopkins Hospital. He reviews the 135 reported cases in the literature. He concludes that it is not a very rare condition. The tumor is usually congenital in origin, but seems occasionally to follow trauma. It may occur in any striated muscle. Compressibility, change in size on raising or lowering a limb, and pain are three typical symptoms, although any one, or all of them, may be lacking. The diagnosis is often made only at operation. The treatment is excision. Partial excision has, however, in a number of cases proved entirely efficient. The prognosis is excellent. There were no cases of malignant transformation or metastases.

4. MacCallum and Voegtlin found that all the violent symptoms produced by parathyroidectomy, muscular twitching, fibrillary tremors, increased rapidity of the heart, etc., may be almost instantly cured by intravenous injection of a solution of a calcium salt. The acetate or lactate in a 5% solution was usually employed. Subcutaneous injection or the introduction by mouth seemed as effective, but acted more slowly. The tetany may reappear in twenty-four hours, but disappears immediately upon the renewed administration of calcium. Magnesium salts seem to have a somewhat similar effect, but the results are obscured by the toxic action of the salt. Potassium salts intensify the symptoms. Incomplete studies of the excreta and blood of the parathyroidectomized animals tend to show an increased output of calcium in the excreta and a diminished calcium content in the blood. The writers construct the working hypothesis that the parathyroids control the calcium metabolism of the body. [R. I. L.]

The American Journal of the Medical Sciences.

February, 1908.

1. *Bloodgood, J. C. *The Clinical and Pathological Differential Diagnosis of Diseases of the Female Breast.*
2. *Collins, J. *Some Fundamental Principles in the Treatment of Functional Nervous Diseases with Especial Reference to Psycho-Therapy.*
3. *Wilson, R. N. *The Pathogenesis and Treatment of Neurasthenia in the Young.*
4. *Stengel, A. *Nervous Manifestations of Arteriosclerosis.*
5. Fremont-Smith, F. *Arteriosclerosis in the Young.*
6. *Kaufmann, J. *Lack of Gastric Mucus (Amyxorrhea Gastrica) and its Relation to Hyperacidity and Gastric Ulcer.*
7. Claytor, T. A. *The Etiology and Symptomatology of Cerebrospinal Meningitis.*
8. Selby, C. D. *The Complications and Sequels of Typhoid Fever.*
9. Rieser, W. *The Laryngeal Complications of Typhoid Fever with the Report of Two Cases.*
10. Henry, J. N., and Rosenberger, R. C. *Purulent Cerebrospinal Meningitis Caused by the Typhoid Bacillus without the Usual Intestinal Lesions of Typhoid Fever.*
11. Bunting, C. H. *Chronic Fibrous Myocarditis in Progressive Muscular Dystrophy.*
12. *Symmers, D. *Certain Unusual Forms of Hepatitis.*
13. Veasey, C. A. *A Case of Unilateral Mixed Nystagmus Benefited by Treatment.*

1. Bloodgood calls attention to the fact that of diseases of the breast malignant tumors are by far the most frequent, and urges that any tumor of the breast be regarded as malignant until positive proof of its benignity

is established. The article is devoted mainly to brief descriptions of a large number of conditions, both benign and malignant.

2. Collins' article is a general description of the mental influences which can be brought to bear for their favorable influence in functional nervous disease and psychasthenic states. The power which these influences possess has been undeniably shown by the cures effected in certain cases by the faith curists of various sects. Neglect of this fact by legitimate practitioners necessarily tends to our discredit; even in organic disease psychic treatment may do more than drugs to restore bodily tone and to improve nutrition. Use of such methods does not require special skill beyond that of the general practitioner. The first step is to secure the patient's confidence by careful attention to his story. The patient's complaints almost invariably have a basis of fact upon which apprehension and dread of consequences has built, until in many cases the state of agitation, anxiety, or discomfort is the predominant condition, and the cause falls into oblivion. In such obscure cases the method of psychic analysis largely developed by Breuer and Freund, with or without hypnosis and similar means is of value. The condition of psychasthenia must also be recognized, having its origin in heredity and carrying with it a susceptibility to obsessions and compulsory ideas, and a lack of self-reliance. The actual treatment of the patient is difficult of specific description, but consists largely of plain statement of fact concerning the origin of the patient's ailment, the manner of its development, the reasons why it will be overcome and how it will be overcome, constantly holding up the happy contrast when it is overcome. At the same time self-reliance and fortitude in enduring temporary ills is to be urged. The bodily health is to be improved by isolation, alimentation, rest and exercise and mechanical measures. At some time in the day the patient should be made for a period to concentrate his mind upon something requiring the use of his intellectual faculties. Gradually there is thus brought about through a re-education of will power, a condition of satisfaction and usefulness.

3. Wilson reports a series of cases of neurasthenia of severe form in young adults. These cases were treated with great care, under strict supervision of the physician, who devoted much time daily to them, especially training them in gymnastic exercises. The results are so striking as to warrant the conclusion that no case should be given up as hopeless.

4. Realizing the tendency too often shown to attribute to arteriosclerosis all symptoms encountered in advanced age not otherwise explained, Stengel enumerates briefly the more prominent nervous symptoms which may be fairly attributed to vascular disease. He includes in his list the pain associated with the obstruction of peripheral vessels, painful sensations preceding senile and diabetic gangrene, pains and other nervous symptoms in the extremities less certainly attributable to arteriosclerosis, abdominal pains in association with arteriosclerosis, pains in arteriosclerosis of the thoracic aorta, cerebral manifestations of arteriosclerosis, including convulsions, disturbed breathing and heart action, sleepiness, vertigo, stupor and coma, and finally psychic manifestations, such as memory weakness, dementia and confusion.

6. Kaufmann, from observations on the amount of mucus found in stomach contents, believes that the secretion of gastric mucus is a necessary function, and that lack of mucus leads to serious disturbance. He judges the amount of mucus by the coherency, both macroscopic and microscopic, of the bread particles present, the presence of myelin droplets and of visible mucus fibrils; in the absence of mucus the starch granules are separated and sharply outlined by the absence of binding substance. Absence of gastric mucus has been found in many cases; it is apparently much more frequent than an increase of mucus. The symptoms in the cases observed have been similar to those of hyperacidity and are attributed by the author to loss of the normal protecting substance which should prevent irritation of the mucous membrane by the gastric juice. Treatment by lavage with solutions of silver nitrate has proved of great benefit in these cases. Absence of gastric mucus is further a possible etiological factor in the development of gastric ulcer. This fact adds to the importance of its recognition and treatment.

12. Symmers describes a condition of the liver which he has found in 5 cases, differing essentially from atrophic cirrhosis and from any recognized acute degenerative or inflammatory lesions. This condition is characterized anatomically by enlargement and induration of the liver, by cloudy swollen liver cells, and by the formation of prominent bands of actively proliferating embryonic connective tissue distributed throughout the organ in an extremely irregular fashion. The clinical picture may simulate atrophic cirrhosis, and the connective tissue proliferation resembles, in an exaggerated degree, changes that have been described as the initial step in the production of cirrhosis. But the cloudy liver cells, constant in this condition, have nothing to do with cirrhosis. Exudation of polymorphonuclear leukocytes and fresh hemorrhages occurred in some cases. The condition is taken to be a definite entity, in the form of a subacute diffuse hypatitis. [F. W. P.]

The Lancet.

March 21, 1908.

1. *Symonds, C. J. *Lettsomian Lectures on Tuberculosis of the Kidney and Malignant Disease of the Cecum.*
2. *Armour, D. J. *Hunterian Lectures on the Surgery of the Spinal Cord and its Membranes.*
3. Telling, W. H. M. *Acquired Diverticula of the Sigmoid Flexure, Considered Especially in Relation to the Secondary Pathological Processes and Their Clinical Symptoms.* (Continued article.)
4. Gibson, G. A. *Preliminary Note on Some Aspects of Splenic Anemia.*
5. Firth, A. C. D. *A Case of Obstruction Caused by Sarcoma of the Small Intestine.*
6. Waldo, F. J. *Deaths under Anesthetics.*

1. Symonds, in the first of the Lettsomian lectures, speaks on tuberculosis of the kidney. In nearly all of his cases a tumor was present, with a history of more or less continuous pain interrupted from time to time by acute attacks of renal colic. He describes in detail 5 cases.

2. Armour, in the third of the Hunterian lectures on the surgery of the spinal cord and its membranes, first classifies tumors involving the spinal cord. He speaks of vertebral tumors, benign and malignant, the symptoms, diagnosis and treatment. The most common site is in the dorsal region. Prognosis in malignant disease is absolutely bad. Antisyphilitic treatment should invariably be tried. Surgical measures in carcinoma should be avoided, as complete removal is impossible. Occasionally sarcoma can be entirely extirpated. In inoperable cases section of a number of the posterior roots will sometimes relieve the pain. He then speaks of intravertebral tumors, extradural and intradural. Such tumors affecting the cord are rare. The ratio of these to tumors of the brain is 1 to 13; they are usually malignant. Treatment in a majority of these cases consists of laminectomy for the relief of the compression paraplegia, the cause of which is not usually recognized until operation. If a cyst is found it should be scraped out and the wound irrigated with a strong solution of corrosive sublimate. Great care should be taken to see that the compression is entirely removed. [J. B. H.]

The Practitioner.

February, 1908.

1. Berker, A. E. *Clinical Lecture on the Causes and Operative Treatment of Umbilical and Ventral Hernia.*
2. *Colbeck, E. H. *Mode of Production of the Presystolic Murmur in Mitral Stenosis.*
3. Rankin, G. *Infantile Parolysis.*
4. *Walker, J. W. T. *Radicol Treatment of Cancer of the Prostate.*
5. *Edgecombe, W. *Metastatic Affection of the Pancreas in Mumps.*
6. Mayou, S. *Ophthalmia Neonatorum.* (Continued.)
7. *Robson, W. M. *The Contracted White Kidney.*
8. Hewlett, R. T. *Review of Tropical Diseases.*
9. Shaw, H. B. *Review of Diseases of the Blood, and Blood-Forming Organs.*

10. Gardiner, F. *The Treatment of Chilblains.*
11. Leeson, J. R. *Statistical Inquiry into the Cases of Cancer Occurring at Twickenham for Twenty-one Years, from 1882 to 1902, with Observations and Remarks.*
12. Sharp, J. G. *Chorea, and a Convenient and Trustworthy Method of Exhibiting Arsenic Therein.*

2. Colbeck presents various theories which have been formulated to explain the murmur in mitral stenosis. He believes that this presystolic murmur is due to vibrations excited in the large anterior flap of the valve by the impact of the blood stream, during the auricular systole. He supports this theory by careful anatomical and clinical reasoning. The short, sharp first sound in mitral stenosis must be the abnormally sudden and forcible closure of the mitral valve, which is occasioned by the ventricular systole. The closure of this valve is more violent than usual, for the reason that the large anterior curtain exposed to the impact of the inflowing blood stream is not floated up so near to the mitral opening during the filling of the ventricle as under normal conditions, and with the occurrence of the ventricular systole the vibrating flap is suddenly and forcibly impelled into the position which it occupies during the closure of the valve; hence the sudden cessation of the murmur, and the incidence of the short, sharp first sound. The total disappearance of the murmur in this condition, which sometimes occurs, he believes is due to the total destruction of the anterior flap of the mitral valve.

4. Walker goes over the history of operations for cancer of the prostate, and the methods of operation, describing in detail the suprapubic and the perineal operations, and also Young's operation.

5. Edgecombe has recently studied an epidemic of 33 cases of mumps in a boys' school. In 5 of these cases there was what he believes to be a metastatic affection of the pancreas. In these cases on the fourth or fifth day there was epigastric distention, rigidity, tenderness and pain, with vomiting, constipation, furred tongue and a high temperature. The urine showed no sugar or albumin, but acetone and diacetic acid were present in every instance. He goes over the literature of this subject.

7. Robson describes a form of chronic nephritis occurring in comparatively young people, usually under thirty, characterized pathologically by a contracted white kidney, and clinically by a very insidious onset, marked nutritional changes and great emaciation, progressive weakness and frequent deep pigmentation of the skin, with the characteristic changes in blood pressure, and an hypertrophied heart. The arteries are thickened and fibrous. Headache is so troublesome as to suggest intracranial tumor. Albumin is present in large amounts. There is no anasarca. Bleeding from the mucous membranes is not infrequent and ocular changes are common. Scarlet fever and other acute infections do not hold the same etiological relation to this disease as they do in acute nephritis and in chronic parenchymatous nephritis. Lead can account for only a small number of cases. He believes that the disease is due to a prolonged action of some not very potent poison, probably some metabolic disorder. Treatment is of little avail, but should be constitutional rather than local. He does not mention the relation of syphilis to this condition.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 7.
Feb. 13, 1908.

1. Rosenheim, T. *Severe Chronic Inflammation of the Colon.* (Continued article.)
2. *Strasburger, J. *Recent Knowledge in Regard to the Physiology and Therapy of the Stomach.*
3. *Stadelmann, E. *Cutaneous and Conjunctival Reactions to Tuberculin.* (Concluded.)
4. Gaupp, O. *The Ophthalmo-Tuberculin Reaction.*
5. Schultz, W. *Biological Investigations of Liquor Ferri Albuminati.*
6. Sultan, G. *Suture of the Heart after Gun-Shot Wounds.*
7. Baisch, B. *Investigation of O. Schmidt's Alleged Protozoön-like Parasite of Malignant Tumors and of "Cancroidin."*
8. Becker, F. *Amblyopia in Eyes that Squint.*
9. Eiselt, J. *Powder Insufflator for the Trachea.*

2. Strasburger reviews what has been learned in late years about the physiology, pathology and treatment of the stomach. In therapy the most important advance has been made by Grützner, who has confirmed the fact that the food first taken into the stomach lies around the periphery, and that taken in later lies inside this and does not come in contact with the mucosa even if the food be more or less fluid. This fact that the food lies in layers is very important in treatment. If HCl is given after a meal, it naturally lies in the middle of the stomach contents, and does not come in contact with the pepsin secreted at the periphery, and, therefore, digestion is not improved, unless pepsin be given with the acid. Leo prescribes one half to two teaspoons of a mixture of 5 or 10 parts each of HCl and pepsin in 50 parts water, taken during or after a meal. If we wish to stimulate the stomach secretion, the HCl should be given alone, just before a meal and in smaller doses, without pepsin. These facts also show that the Sahli and Mathieu tests of the stomach are liable to give misleading findings as to the real functional powers of the stomach.

3. Stadelmann's extensive experience with the ocular and cutaneous reactions of tuberculin leads him to conclude that in all probability the positive response to the ocular test indicates the existence of an active tuberculous process in the body, and the positive response to the cutaneous test, the existence of an active or inactive process. He advises the combining of both tests in every case. He found that both reactions were liable to flare up again if tuberculin were injected in the ordinary way for treatment or diagnosis. This might occur weeks after the original ocular or cutaneous test. He also states that the delayed reaction to the cutaneous test has no diagnostic importance. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 7.
Feb. 18, 1908.

1. *Weber, A. *The Importance of Animal Experimentation in the Diagnosis of Tuberculosis.*
2. *Sehlbach, P. *The Frequency of Tuberculosis in Infancy, Etc.*
3. Reuschel, F. *Tuberculin Reactions in Childhood, a Comparative Study.* (Continued article.)
4. Wohlwill, F. *Occurrence of the Influenza Bacillus in the Bronchi.*
5. v. Herff, O. *Zinc Chlorid in Cancer Therapy. Phenol in the Treatment of Endometritis.*
6. Vulpius, O. *The Value of Arthrodesis.*
7. Pototzky, C. *CO_2 Baths for Hands and Feet.*
8. Voigt, J. *A Rare Indication for Cesarian Section.*
9. Beyer. *A Case of Cholesteatoma.*
10. Scheunemann. *An Improved Vaginal Douche.*
11. Bacmeister. *The Precipitation of Cholesterin from the Bile, and in Relation to the Pathogenesis of Gall-stones.* (Concluded.)
12. Gruber, M. *Obituary Notice. Eduard Buchner.*

1. Weber has found after injection of suspected material into the inguinal regions or peritoneum of guinea pigs, an enlargement of the inguinal or peritoneal glands, beginning at the end of sixteen days. On removal of these glands, tubercle bacilli may often be found on microscopic examination, though no sign of pathologic tissue change can be demonstrated. If the inguinal glands are bruised at the time of injection, the bacilli grow faster, and may be recognized after from twelve to fourteen days. He has never found the bacilli so early as nine days after injection, the average period of time for their appearance, according to Bloch. After careful experimentation with the smegma bacillus, the author believes that this organism never grows, nor causes a pathologic lesion in guinea pigs. The only absolute way, according to Weber, of differentiating between the smegma and tubercle bacillus in a suspected urine is by animal experiment, morphological differences and staining reactions being entirely unreliable.

2. Sehlbach reviews a large number of post-mortems on tuberculous children in his own clinic, and embodies also the results of other observers in his paper. He concludes that in infancy the frequency of tuberculosis does not increase progressively from month to month, as before supposed, but about the end of the second year there is a

lessened average predisposition; that the two most common periods of infection are (1) during the first quarter of the first year, so called "cradle infection," and (2) "creeping infection," about the end of the first year, when the child creeping about in the dust of the floor becomes infected; that it is most undeniably true, that artificially-fed children are much the most prone to infection; next in order are children fed for a part of their early life on the breast, and last are the children who have been breast-fed for the normal period.

Berliner Klinische Wochenschrift. No. 7.
Feb. 17, 1908.

1. Kirchner, M. *The New Organization for Studying Epidemics in Prussia.*
2. Jaffé, M. *The Treatment of Perforations of Gastric and Duodenal Ulcers.*
3. v. Dungern and Coca. *Hemolysis with Combinations of Sodium Oleate, Oleic Acid, Silicic Acid and Serum.*
4. Benda, C. *So-called Periarteriitis Nodosa.*
5. Gasis, D. *The Differentiation between Different Plant Albumins, by Means of Specific Sera.*
6. *Robson, A. W. Mayo. *Relations Between the Anatomy and the Diseases of the Pancreas.* (Concluded.)

6. Robson classifies the different forms of inflammation of the pancreas, arising from a simple catarrh, which may result in abscess formation or chronic inflammation. Then follows a description of the ordinary surgical injuries of the organ, which without exception are fatal without operation. Owing to the nearness of the stomach and intestines, ulcers may perforate through into the pancreas, and cause acute or chronic inflammation. In all cases of cysts of the pancreas, the anatomical relations of which are minutely described, the author found the Cammidge reactions positive in the urine. The cause of the so-called catarrhal icterus is often a swelling of the head of the pancreas, rather than a swelling inside the ducts, as is the generally accepted idea. For the diagnosis of diseases of the pancreas the two most important points are the presence of a positive Cammidge test in the urine, and the presence of neutral fat in the feces. Glycosuria is rarely present in diseases of the pancreas, except when the process is so far advanced as to affect the islands of Langerhans. [R. D.]

◆

Correspondence.

LETTER FROM PARIS.

[*From our Special Correspondent.*]

Digitalin versus Preparations of Digitalis Leaf.

Paris, March 24, 1908.

Mr. Editor: I had occasion not long ago to read a very interesting paper by Bardet on the digitalis question. This forms the basis for a never-ending controversy over here; every few years the subject is brought up afresh before one of the scientific societies, and the whole affair is gone over and threshed out anew: digitalin and digitoxin; diuretic or non-diuretic, etc. Not but what the French have long ago made up their minds about the active principle of the plant. There may be room for discussion concerning the mode of action and effect of the remedy, and of its component parts; but as regards its active principle they feel quite satisfied with the one they have discovered and use: *crystallizable digitalin, soluble in chloroform.*

The trouble lies with their neighbors, the Germans. The great chemical manufacturing companies across the Rhine are pretty active concerns, and come out every now and then with some new glucoside which they claim to be *the* active principle of the plant, more effective, less toxic, etc., than those known. This, of course, arouses the fury of the French camp, who then proceed to demonstrate that the new product is impure, that its active part is a glucoside already well-known, and so forth, ending up with renewed eulogies for their own trusty digitalin, with its fixity of substance ($C^{34} H^{54} O^{11}$) and certainty of action; and there is no gainsaying that since this glucoside has now stood the severe test of *forty years'* service (discovered by Nativelle in 1868), there seems a fair chance that the French are in the right.

When I had read Bardet's article I looked the subject up in a familiar American textbook, and there found that as regards the different preparations made from the plant the two writers were at complete variance. If they had deliberately sat down to contradict each other on all important points, they could hardly have succeeded better! You people at home do not probably have this difficulty to contend with; but we poor worms over here are caught between the fires of four different schools of medical thought and their corresponding books on pharmacy, materia medica and therapeutics, French, German, English and American, and are frequently quite at a loss to know what to believe.

In the case in point, the French all use digitalin, and by the term I shall always mean the glucoside above referred to, crystallizable and soluble in chloroform. They use this now almost exclusively, under the guidance of their great heart men, and of Potain in particular. If they were to make a second choice they would unquestionably name what they call the "maceration," which is prepared by letting powdered leaves soak in *cold* water for twelve hours, and is clearly distinguished from the infusion, which is made rapidly with hot water. Last of all would come the tincture, with the extracts "not placed." A French physician in face of a serious case of asystole would *never* give the tincture; he would use digitalin or the maceration.

Now listen to what the American textbook, a good one, says on the subject: "Digitalis contains a number of substances, no single one of which acts as do preparations of the crude drug. In other words, all these compounds must act together to be therapeutically active." The writer then mentions the various glucosides and says: "None of these substances should be used in medicine to take the place of digitalis."(!) Farther on: "The dose of digitalin, which ought not to be used as a substitute for digitalis, is," etc., and his apparent final choice of preparation lies between the fluid extract, which the French bar absolutely as unreliable, and the tincture, which no Frenchman really intending to get a therapeutic result would think of employing.

So there you are! That is an instance of how the history of materia medica is written. And yet there are medical men who wrap themselves in their dignity when the vulger herd refer to medicine as an art, and reply, "It may have been so at one time, but it is a science *now*."

I thought that this would be a good chance to go and look up my friend the chemist, whom you have heard me refer to before; and after a talk with him in the quiet of his musty back office, I came away a good deal wiser than when I went, and impressed, as usual, with the number of things that that man knows that are of little use to him as a pharmaceutical chemist, but which I as a practitioner would have had the greatest interest in knowing, but am in complete ignorance of,— another outcome of the curriculum enforced by the very famous school of medicine of which I am a graduate, and to which you have likewise heard me refer on previous occasions. Some of the points given me by this chemist may be of interest; I found that there were sides to the digitalis question of which I had never dreamed.

A feature that strikes you at once is that these eternal discussions always go on about digitalis, but not about other drugs! We do not have these recurrent battles about the opium plant, or aconite, or belladonna; yet aconite, at least, comes, in this part of the world, from the very same region as digitalis, — the mountains. The Alps are filled with monkshood everywhere; the foxglove used in medicine comes from their next-door neighbor, the Vosges. Now there is manifestly a reason underlying all these discrepancies about digitalis and its variations in effect, and this reason is probably the following: the differences in the plant according to its provenance and preparation.

This point has long been known. There is certainly the greatest difference in the action of digitalis according to where the plant is grown. The American textbook referred to remarks, "The wild digitalis is stronger than the cultivated, and the English or German digitalis is better than the American." Sir Lauder Brunton has found the greatest variation between the digitalis of England, Scotland and America. In France only the wild plant from the Vosges is employed in medicine.

How else can be explained the difference in action of this drug? In France the dose of powdered leaves given in infusion is from 0.20 to 0.40. What, then, are we to think of such veterinary doses as 15.0 in infusion (Edinburgh), 4.0 ditto (London), or 10 to 12 (Roumania), unless the plant be altogether different?

The fact is that the preparation of the digitalis leaves is practically a fine art, and requires quite as much delicacy as the tea industry, for instance. You do not simply stroll abroad in the fields, gather a foxglove, dry it and put it in a glass jar on a druggist's shelf.

The influence of soil seems paramount in the question; thus the digitalis cultivated on the plains is useless. There is something about the geology of the Vosges that gives certain qualities to the plant that cannot be acquired elsewhere, just as the geology of Champagne, Burgundy and Gascogne creates the special qualities of the wines with which you are familiar; and, to carry this wine simile farther, just as in these districts, according to season, wet, dry, etc., some vintages are immeasurably superior to others, so is the digitalis plant of certain summers richer in therapeutic power than that of others. So that if we physicians were to content ourselves with using the raw plant as its Galenic preparations, instead of its active and invariable glucoside, we ought in all logic to add, in prescribing, the district whose plant we prefer and the year of its growth, just as we would tell the *sommelier* to bring a Château-Yquem 1876 or a Pommery & Greno 1893, if we were convoying a prominent financier from whom we wished to get the proper tip on stocks.

You will pardon a little professional weakness if I remark that I think the question of altitude has also something to do with the difference between the digitalis of plain and mountain; the soil is probably not the whole thing. It is known to all mountaineers interested in botany that the high Alpine plants, though small in stature, have a vividness of color and delicacy of aroma unknown elsewhere. It has struck me that this may be a provision of nature to ensure cross-fertilization; insects at those altitudes are scarce, and the plants have to make an extra effort in order to secure the perpetuation of their species. The chamomilla alpina is a little plant the size of your forefinger; but those who do not know its aroma do not know what chamomile can be; in the same way the Alpine wild strawberry is a tiny, almost black, fruit, so small that it takes a small boy a day to pick a dish of them; but its taste and perfume are so exquisite that the cultivated berry is simply nowhere in comparison. In addition to the constitution of the soil, the factors of moisture, rapidity of growth, great variations in temperature between night and day, and intense solar radiation, must enter into the problem of the differences between plants grown in the mountains and those from the plains.

Again, Huchard has found that even in the same region the value of the plant varies according to position, and particularly exposure; this is also true in the various wine districts, the finest *crus* coming from some small and strictly limited spot with physical characters that do not occur elsewhere. Thus the Barsac, Sauternes and Château-Yquem wines all come from one tiny section of the Gironde district; from the same ridge of ground, in fact; but whereas the first is only a good white wine, the last is the king of white wines in Europe, and its best years sell for fantastic prices.

The part of the digitalis purpurea used in medicine is the leaves, after removal of stem and ribs, — leaves of the second year's growth, chosen somewhat above the ground, shortly before the plant flowers, and gathered on a dry day. Even such a detail as the drying of these leaves has its importance. The leaves, which should be kept separate from each other, can be dried either in the sun, in the dark in a drying oven, or in a vacuum with moderate heat. They are then powdered and kept in the dark in carefully stoppered yellow glass bottles; moisture and light facilitate the action of an oxidizing ferment they contain, which destroys the digitalin so rapidly that in six months the tenor of the leaves in this substance is reduced by 50%, while at the end of a year it is reduced to almost nothing. This is why the druggists can never keep a large supply, and makes it easy to understand the disappointments apt to occur from the use of the powder of digitalis in maceration or infusion.

With such a complicated natural history as this, and in view of the great care and delicacy required in gathering and preserving the plant, we are in a position to see why such conflicting opinions have been published concerning its preparation and action; and it becomes clear that such preparations as the tincture, extract, or maceration must vary constantly and enormously, not only in different towns, but in the different drug shops of a given town, and even according to the time of year at which the remedy is prescribed, — a certain dose of powder, let us say, in the month of January varying altogether in strength from a dose given in June!

Huchard, in his enthusiasm as a heart specialist, refers to digitalis as *the* great remedy in the pharmacopeia. In this the majority of practitioners will differ from him categorically, as the poppy unquestionably comes first among the means hitherto discovered for the relief of suffering man. But still, if opium is the sun of the pharmaceutical system, digitalis is at least a very big planet, and it is, then, in our interest to know all about it, and to have very definite ideas about the best form in which it can be prescribed in organic heart trouble.

From what has preceded it would seem that there can be no hesitation whatever in the choice of a remedy for strengthening the systole of a myocardium that is giving out, in face of a mitral incompetency. The French claim, through long experience, that their digitalin is a perfectly well-defined, stable substance, always the same, giving excellent results, and far preferable in every way to the Galenic forms of digitalis. Even if other things were equal, the irritating and nauseating effect of the digitonin contained in preparations made with the plant itself would make the digitalin preferable; it is probably the action of this saponin that accounts for the diuretic effect of the maceration, through irritation of the renal epithelium.

There is a rather curious point about this very complex plant. We have seen that the French digitalin can replace in organic heart trouble all the other preparations, and to advantage. Yet this digitalin is practically insoluble in water and not much so in alcohol! Consequently the aqueous and alcoholic preparations must be devoid of it, or very nearly so, as the digitonin does act on the digitalin slowly in solution and dissolves up a little of it; these preparations must then owe their efficacy, such as it is, to the by-products, the amorphous digitalin and the digitalein which they contain.

These various details make it apparent that the French method of procedure in handling this drug in clinical medicine is a logical one, and to be preferred in serious cases to all others. And it may be of interest to tell you how that wonderful clinician and heart specialist, Professor Potain whose death a few years ago left here, whether he be considered as a man or as a physician, a void that certainly never has been filled and is not likely to be, — used to proceed when circumstances were such as to enable him to act as he thought to the patient's maximum advantage:

Rest in bed; a drastic; to be followed by absolute milk diet. Then, during one day, in one or two parts, fifty drops of the French codex solution of digitalin in a moderate amount of water, after which the patient takes no more medicine for three weeks. The codex solution referred to is 1-1,000, the dissolvents being a mixture in certain proportions of alcohol, water and glycerin. Fifty drops by the French officinal dropper are the exact equivalent of 1 mgm. of their digitalin. The effect of this method in a well-chosen case is something as near to a miracle as we can work on this terrestrial sphere.

With all the regard due to the eminent writer of the American textbook referred to, it will not do to tell a disciple of the much regretted Potain that on no account should digitalin be used to replace the preparations of the plant itself; or that the only reliable and pure digitalin is a digitoxin (happy name!) prepared by a German firm. Why, then, does this firm mark in its catalogues, "digitoxin (crystall., chloroformic digitalin of the French codex)" ? Such arch-heresies are enough to make the kindly old gentleman's bones writhe in his tomb.

"SPECTATOR."

RECORD OF MORTALITY

For the Week ending Saturday, April 4, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	8	2
Chicago	—	—	Waltham	11	2
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	3	1
Baltimore	195	55	Brookline	5	—
Cleveland	—	—	North Adams	7	3
Buffalo	—	—	Chicopee	4	2
Pittsburg	—	—	Northampton	7	2
Cincinnati	—	—	Medford	6	1
Milwaukee	—	—	Beverly	4	—
Washington	—	—	Leominster	4	2
Providence	60	18	Hyde Park	5	3
Boston	250	72	Melrose	5	2
Worcester	47	14	Newburyport	—	—
Fall River	55	26	Woburn	3	—
Cambridge	22	6	Westfield	8	4
Lowell	34	14	Marlboro	5	1
Lynn	35	5	Revere	2	—
New Bedford	35	10	Attleboro	6	1
Springfield	17	4	Peabody	—	—
Lawrence	31	12	Adams	2	—
Somerville	14	6	Clinton	3	1
Brockton	14	4	Gardner	3	2
Holyoke	14	7	Milford	—	—
Malden	5	1	Watertown	6	2
Chelsea	13	3	Plymouth	—	—
Newton	9	5	Weymouth	5	2
Salem	13	3	Framingham	4	—
Haverhill	13	3	Southbridge	—	—
Fitchburg	9	5	Wakefield	—	—
Everett	16	5	Webster	—	—
Taunton	19	2	Arlington	4	—

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 11, 1908.

G. E. H. Harmon, medical director. Detached from command of the Naval Hospital, New York, N. Y., and ordered home to wait orders.

R. H. Green, medical inspector. Detached from the Navy Yard, New York, N. Y., and ordered to command the Naval Hospital, New York, N. Y.

G. A. Lung, surgeon. Detached from the "Hancock" and ordered to the Navy Yard, New York, N. Y.

L. W. Bishop, passed assistant surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the "Hancock."

R. E. Stoops, passed assistant surgeon. Commissioned passed assistant surgeon from Dec. 26, 1906.

G. L. Wickes, passed assistant surgeon. Commissioned passed assistant surgeon from April 12, 1907.

W. Chambers, C. F. Stearne, assistant surgeons. Appointed assistant surgeons from March 19, 1908.

T. W. Richards, surgeon. Ordered to the "Kansas" when discharged from treatment at the Naval Hospital, Mare Island, Cal.

G. F. Abeken, passed assistant surgeon. Detached from the Naval Training Station, San Francisco, Cal., and ordered to the "West Virginia."

R. W. Plummer, passed assistant surgeon. Ordered to the "Idaho."

P. R. Stalnaker, assistant surgeon. Detached from the "West Virginia" and ordered to instruction at the Naval Medical School, Washington, D. C.

K. C. Nelhorn, acting assistant surgeon. Ordered to the "Wabash."

G. C. Rhoades, acting assistant surgeon. Ordered to the "Franklin."

J. E. Page, surgeon. Retired from active service from April 3, 1908, under the provisions of Section 1453, Revised Statutes.

C. R. Morgan, acting assistant surgeon. Resignation accepted, to take effect April 8, 1908.

J. A. Bielle, acting assistant surgeon. Ordered to duty at the Naval Hospital, Portsmouth, N. H.

F. P. W. Hough, acting assistant surgeon. Ordered to the Naval Proving Ground, Indian Head, Md.

L. W. McGuire, acting assistant surgeon. Ordered to duty at the Naval Hospital, Charleston, S. C.

S. Bacon, acting assistant surgeon. Ordered to duty at the Naval Hospital, New Fort Lyon, Colo.

J. Z. Ziegler, acting assistant surgeon. Appointed acting assistant surgeon from April 6, 1908.

APPOINTMENTS.

Dr. H. B. Howard, now Resident Physician and Superintendent of the Massachusetts General Hospital, has been appointed by the trustees of the Brigham Hospital superintendent of that institution, and has accepted the position.

Dr. John Warren, lately Demonstrator of Anatomy, has been appointed Assistant Professor of Anatomy at the Harvard Medical School.

Dr. F. S. Newell has been appointed Assistant Professor of Obstetrics and Gynecology in the Harvard Medical School.

Dr. David Cheever, has been appointed Demonstrator of Anatomy at the Harvard Medical School.

Dr. William H. Davis has been appointed by the Mayor of Boston a medical inspector of the city's Board of Health.

SOCIETY NOTICES.

American Academy of Medicine. — The Thirty-third Annual Meeting of the American Academy of Medicine will be held in Chicago during the meeting of the American Medical Association.

Association of American Teachers of the Diseases of Children. — The Association of American Teachers of the Diseases of Children will hold its Annual Meeting in Chicago, at the Great Northern Hotel, corner of Jackson Boulevard and Dearborn, on June 1.

Requirements for membership in this Association are somewhat unique. To be eligible one must be a regular physician resident in the United States, Canada or Mexico, who is in good professional standing and membership in his county or local medical society and actively engaged as Professor or Associate Professor or Clinical Professor of Pediatrics, or as adjunct to such a chair, or who holds the position of Lecturer on this branch or an equivalent position in a recognized medical college, or who is a member of a properly organized hospital or dispensary staff actively engaged in the treatment of children. All such are invited to join the association; and all physicians and surgeons interested in children are invited to attend the meeting. Its objects are the study, the teaching and the practice of pediatrics.

Robert A. Black, M.D., *Secretary*, Chicago.

Mississippi Valley Medical Association.— The Thirty-fourth Annual Meeting of the Mississippi Valley Medical Association will be held in Louisville, Ky., Oct. 13, 14, 15, 1908, under the presidency of Dr. Arthur R. Elliott, of Chicago. The Address in Medicine will be delivered by Dr. George Dock, Professor of Medicine in the University of Michigan, Ann Arbor; and the Address in Surgery by Dr. Arthur Dean Bevan, Professor of Surgery in Rush Medical College, Chicago. The local Committee of Arrangements in Louisville has selected the Seelbach Hotel as headquarters, the general sessions and the section meetings being held in the hotel's large auditoriums.

Henry E. Tuley, M.D., *Secretary.*

RECENT DEATHS.

George Eben Thompson, M.D., M.M.S.S., died in Boston, April 11, 1908, aged forty-eight years.

Francis O'Connell, of Brooklyn, N. Y., died at Montclair, N. J., on April 4, after a long illness. He was a native of Newark, N. J., and fifty-one years of age. He was a graduate of Fordham College, and Notre Dame University, and received the degree of M.D. from Bellevue Hospital College, New York, in 1878. For a number of years he was a member of the medical board of the Brooklyn Eye and Ear Hospital.

BOOKS AND PAMPHLETS RECEIVED.

A Text-Book on the Pathogenic Bacteria. By Joseph McFarland, M.D. Fifth edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Co. 1907.

A Text-Book of Pathology. By Alfred Stengel, M.D. Fifth edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

A Text-Book of Diseases of Women. By J. Clarence Webster, B.A., M.D. (Edin.), F.R.C.P.E., F.R.S.E. Illustrated. Philadelphia and London: W. B. Saunders Co. 1907.

A Manual of Pathology. By Guthrie McConnell, M.D. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

Atlas and Text-Book of Dentistry Including Diseases of the Mouth. By Gustav Preiswerk, M.D., Ph.D. Authorized translation from the German. Edited by George W. Warren, A.M., D.D.S. Illustrated. Philadelphia and London: W. B. Saunders Co. 1906.

Original Articles.

ORTHOPEDIC HERESIES ON FEET AND THEIR TREATMENT.*

BY L. R. G. CRANDON, M.D.,
Assistant in Surgery, Harvard Medical School; Assistant Visiting Surgeon, Boston City Hospital.

Synopsis.

1. *The foot has adapted itself to vicious shoeing conditions and has become a hind-foot or hoof.*
2. *Acute foot symptoms are only a part of general muscular flabbiness and ligamentous relaxation.*
3. *Chronic foot symptoms are due partly to general lack of tonicity and partly to vicious shoes.*
4. *The reason that some cases get well using plates is that they develop muscles trying to get away from the uncomfortable plates.*
5. *Modifications of the plate idea equally bad.*
6. *The fallacy of foot-prints and plaster casts as means of diagnosis.*
7. *Treatment. The education of the patient in standing and walking.*
8. *Right shoeing.*
9. *Cases.*

Continued experience and study in the matter of feet and shoeing fills one thoroughly with the belief that much of the physical future of civilized people lies in the hands of the maker of shoes. Right shoeing must be a beginning in the reform of clothing which may restore natural poise and flexibility to the whole human form.

Since we have come to wear the shoe-machinery product, the welted shoe, with its arbitrary, tilted, unyielding sole, "well-fitting" and arranged in one-fourth sizes, the human foot, figure and gait have undoubtedly changed. Some one has said, "One third of the people in this city are cripples." This is true in the sense that they little know the possible power and endurance of their feet. The horse evolved from a five-toed animal, through the three-toed stage, until he finally bears himself on a single toe nail, a fixed, arched hollow wall or concave shell, balancing on the frog, with heel, or hock, off the ground, the implement adapted from constant running. So in the human foot, there is an evolutionary adaptation to vicious shoeing conditions. Ligaments stretch, joints become stiffened from disuse, and the muscles of the foot and toes atrophy until the foot is left hardly more than a weak and stiff right-angled attachment to the leg. In the shoe as it is made, a gait consisting of a tip from heel to toe, a "hock and hoof" gait, is possible, and the foot becomes more and more of a "hind-foot" and a "hind-foot" only.

This is not a form of evolutionary change to which we need submit. The foot is not merely a "hind-foot," with a fixed arch, but is properly an extremity taking place of both hind and fore feet, retaining characteristics of both. Thus, as the foot is thrown forward in stepping, it comes down on the heel, rolls along its outer edge, the prehensile toes grasp the earth to establish a base; all of this is "fore-footing." The weight shifted forwards on the metatarsal frog, and the transformed foot pushing out behind makes "hind-footing." One may "hock, arch and hoof" indefinitely and not know how much his powers are limited. He then increases in weight or gets below par in general health, all ligaments or parts which keep up figure and poise become flabby and loose, and the atrophied foot collapses. This constitutes the flat-foot of the orthopedists.

Crude and unphilosophical methods are then adopted to cure this condition. Plates of steel or other material are given, which serve as mechanical braces, which give a push or lift to neutralize a present defect. Such a measure must be inefficient, not only giving no cure but at best only permanent dependence — one error tending to neutralize another for a time. Those who get well after the use of such plates do so because the cause of the collapsing foot was temporary and disappeared. All other cases are permanently enslaved. Walking is changed in form and action to types which perhaps are natural but are not normal.

A tilted or twisted plate does not twist or tilt the foot, but on account of its arbitrary fixity only makes the foot try continuously to get away from it, and causes painful spasm. This leads to the question,

Why do some cases get better wearing plates?

First, because, in certain cases, the feet work so hard to get away from the plates that they develop muscular power and strengthen ligaments. To get a result by this method, however, is indirect and illogical. There is much work and discomfort with little result.

Second, some cases may develop into a fixed conventional type of walking and adapt themselves to fixed attitudes, with the range of foot action diminished. The foot at each step hurdles the plate in hock, arch and hoof fashion.

The use of braces and plates is firmly fixed in the orthopedic mind. Thus, Whitman says, after twenty or more years of experience: "The influence of the modified shoe, the attention to posture and the cultivation of muscular strength may be quite sufficient to cure milder cases of disability if the co-operation of an intelligent patient is assured. In most instances (of flat-foot), however, the tendency towards deformity has advanced so far that it cannot be controlled by the patient, and as cure depends upon the reconstructive changes in adaptation to the prevailing uses and attitudes, the importance of preventing recurrence of deformity is apparent. For this reason a brace is usually an indispensable adjunct in curative treatment. One is often asked how long a support of this character is required and the treatment of the weak, relaxed foot. In early childhood one cannot depend upon anything but the enforcement of attitude and the ordinary changes incidental to growth. This may require many years. In the most favorable cases a period of from three to six months is necessary. In other instances the habitual use may be indicated to hold the unpleasantly deformed foot in a symmetrical attitude."

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* Read before the Obstetrical Society of Boston, Nov. 26, 1907.

Ochsner's method of strapping for acute flat-foot appeals to me as being better than providing plates or other direct support. As he says, they relax the muscles, thus securing rest and relieving pain, and they furnish massage to the extremity, with their strapping, and, therefore, favor regeneration of the muscles and ligaments. I feel certain, however, that this measure should be considered only palliation, for it is fallacious to expect to develop muscles or ligaments by doing their work for them, and I have attempted to use this method only when I discover a case which cannot be immediately relieved by a roomy, flexible, balancing-heel shoe.

It is a satisfaction to see, however, that in some quarters the long, wide, steel plate, or the plate with the corrective edge about it, has been largely dropped, but the idea of substituting one fixed plane in a shoe to neutralize another fixed, or incorrect plane, has not been dropped. Thus we find here and there the soft-soled, flexible-shank shoe recommended, but on the inner edge of the heel there is a wedge to permanently cant the heel outwards. Thus Whitman,[1] in a recent article, says, "From the first I have insisted upon the importance and also in the treatment of a particular type, both for children and adults, of the shoe with a well-pronounced, forward twist (right and left). This shape is essential, as it aids in preventing abduction. A second point of importance is to make the inner prop of the sole and heel thicker, or slightly wedge-shaped, so that the foot is inclined toward inversion. This is one of the oldest remedies, one that is constantly discovered, but applied to the uninstructed patient these shoes wear away on the inner side. The principle is also applied by the expert blacksmith and if the shoes were firmly attached to the foot instead of merely containing it, the expedient would be of much greater advantage in the treatment of human beings."

With this opinion I entirely disagree. This wedge is essentially the same as a plate and does not stimulate the muscles and ligaments of the foot to restore themselves to their youthful resiliency. This hump on the inside of the heel only substitutes a club-foot for a flat-foot. With the orthopedist and his plates and humps and wedges there can be no compromise.

Another procedure which has tended to maintain self-deception on the part of the doctor, and hence to perpetuate the plate industry, is the taking of plaster or wax casts. With plaster-of-Paris or wax of varying consistency, one can take scores of different impressions of the same foot and deduce anything one pleases from them. Of one cast of a healthy foot, I have heard the opinion expressed that the front arch was broken down, needing support; of another cast of the same foot that the child was half club-footed and needed operation. Others agree in this belief. Thus Ochsner[2] says in a recent article that "we must not forget that there is no direct relation between the sinking in of the arch and the severity of the symptoms or the degree of the disability. A beginning flat-foot may be so painful as to incapacitate the patient from all work and show almost no loss of arch," and he quotes Whitman, saying that this condition is "a compound deformity in which the abnormal relation of the foot and leg, causing the improper distribution of weight and strain and disuse of normal function, is of vastly greater importance than the depression of the arch, which has given the name to the disability."

Casts impress the patient. They have no real bearing on the treatment. Proper walking, the strengthening of the feet, the restoration of foot and balance are accomplished alone by proper shoeing, proper muscular stimulation and mental direction. Right shoeing *allows* one to walk rightly — it does not *make* one walk rightly. Nor can the foot be restored to its proper functions by the physical-culturist or exercise-nurse in the office, for the patient is apt to regard these methods as medicine, to be taken and finished.

The *treatment* of these cases is very simple. For the acute, aching, collapsed feet following influenza or other acute or exhausting general affection, vibratory massage of the feet, legs and thighs, and the application of static electricity in the form of sparks, or the so-called "waves," will in two or three sittings give entire relief. For these cases, for those less acute, and for the chronic ones, there should be a complete physical examination as to balance while standing and in walking, as to any or every degree of arbitrary stiffness in clothing, wise counsel from the surgeon as to the manner of walking and standing, and providing shoes which are mechanical moccasins to furnish complete freedom and control of balance. As Ochsner says, "If one simply tries to relieve the loss of arch of the foot without treating the whole patient one will be about as successful in treating the flat-foot as was the oldtime physician in giving digitalis as a routine measure, without looking after the exercises and general hygiene of his heart-patients."

Proper walking is the proper exercise for all the waking hours. Proper walking will restore the stiffened feet, and every minute of proper walking is a part of the treatment. Special exercises to restore the feet give the patient the wrong conception of his essential trouble. The foot symptoms are only a part of the general laxity, lack of freedom and lack of balance. In a previous article,[3] proper walking was analyzed thus:

1. As the foot goes forward, the weight comes on the rounded heel.
2. As the sole comes to the ground the rounded heel throws the weight along the outer ridge of the plantar region to the distal end of the fifth metatarsal.
3. The toes take the ground in order, beginning with the little toe.
4. As the toes take the ground, the weight leaves the heel and the whole foot grasps the

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[1] Royal Whitman: Med. Rec. N. Y., vol. lxxii, no. 9, p. 337, Aug. 31, 1907.

[2] Edward H. Ochsner: Jour. Am. Med. Asso., Nov. 23, 1907, p. 1744.

[3] Crandon: Boston Med. and Surg. Jour., Nov. 1, 1906, clv, 505.

ground like a hand. Heel and great toe approach each other and every joint in the foot combines in "arching." Thus, the walking foot is not a "hock, arch and hoof," but rather a hand with the heel a grasping talon.

5. All weight lastly rests on a triangle bounded by great and little toe, its apex behind at the ends of the middle metatarsals. From this triangle the final push is given as the foot leaves the ground.

The education of a patient may be outlined thus:

1. This picture (above) of proper walking is made clear to the patient.

2. He is told to get into the way of standing with the feet parallel, spreading his toes out enough to get the requisite broad base for balance. Ochsner wisely says, "There is a false idea prevalent that toeing out is graceful. This common belief has its origin to a large extent, I believe, in the Infantry Drill Regulations adopted by the United States Army, and copied by the National Guards and military schools. This directs that 'the recruit at attention stand with his feet turned out equally and forming with each other an angle of about 60°.'" It would be much better if the instructions read that he stand with his feet parallel.

3. The patient is then told to get Chinese slippers, straw-soled slippers, with soft top on the front, and none on the heel, in which he walks about at all convenient times. To keep this sandal on the foot the foot must at each step flex on itself in a prehensile fashion.

4. He is encouraged, if it is feasible, to walk barefoot on turf or sand.

5. He is not told to do toe and heel exercises, which tend only to stretch the atrophied plantar structures, but rather to practice standing on one foot, the other curled round his standing leg. The effort to balance in this position works every muscle of the foot and leg.

6. He is told to stand, stocking-foot or barefoot, on a rubber door-mat, legs crossed, feet as far apart as possible but parallel, with soles firmly planted on the mat. The leg which is behind is then swung round in front and crossed over to its former position, and so on, alternately crossing one leg in front of the other in a standing position.

7. He is then told to walk in this cross-legged fashion.

These instructions are sufficiently specific to satisfy the patient. These exercises are interesting to the patient and will, therefore, be carried out.

The patient thus educating himself cannot alternate between his moccasins, or wise shoeing, which is superior to moccasins, and his old shoes. Moccasins, or their equivalent are "foot-wear." Shoes, as they are made, are "hoof-wear." A recent case exemplifies this point. A moccasin-wearing Canadian guide comes into the city and wears common shoes with heels, toes and welts curling upwards and is obliged to "hock and hoof" along. He immediately becomes lame. The shoes have brought pressure on all his healthy foot muscles. The shoes have held his foot in an unnatural position until they are cramped, and from the tire and numbness of this pressure the foot relaxes and slumps, giving an aggravated condition of pronated, collapsed foot. The doctor gives him a steel plate (Fig. 2) and in two weeks he is a cripple.

The converse is equally true. A man, by adaptation well used to "hoofing" along in a shoe of commerce, puts on tennis shoes and spends a strenuous half day in them. This effort is followed by an acute attack of pronated, aching feet. He, too, gets steel plates and joins the list of dependents.

More destructive criticism is necessary before beginning the constructive relief of present shoeing conditions. The present machinery-made shoe not only permits little or no freedom in the mediotarsal joint, not only allows no approximation in a grasping fashion of front and back of foot, but with the welt and the filling under the inner sole, and the tight fitting upper, fixes the foot in a trough. The foot is forced down into two hollows at each end of the stiff arched shank, and the edges of the foot everywhere are higher than the middle. In this way the first effort of the foot to assume a grasping posture is prevented and the foot is held "hoofed in," put out of action and held out of action. It has no chance. The front of the foot "frogs" together and we have symptoms which the orthopedist classes as "flatness of the front arch." For this he gives a hump of felt sewed into the inner sole (Fig. 17), all with the misconception that the foot has a *fixed arch*, whereas the physiological, intelligent conception is that the foot has the *power of arching*. The corrective arch does not restore arching, but holds up the bones like a crutch, with no curative value.

Machine-made shoes, as we now get them, accentuate and perpetuate a wrong principle, namely, the idea of feet and fixity where only covering and instability should be given. Right shoeing uses gravitation and elasticity to stimulate continuous foot-action whether standing or walking. It provides constant mechanical suggestion and maintains not balance but balancing.

Shoe construction may not be covered in an article such as this, largely because shoe construction is not our business. A shoe can be constructed, however, next to the foot, a nonarbitrary moccasin, giving all freedom and stimulation to complete healthy foot action. Undoubtedly, then, there can be added to the outside of a shoe so constructed an outer or ground-shoeing to look more or less conventional and at the same time not to interfere with the freedom already allowed. Such shoeing stimulates nature's own under-foot conditions by setting gravitation and elasticity to work to control balancing, mobility and flexibility.

At present the constructors of shoe machinery and shoe stores control the situation. Evil shoes are causing and maintaining diseases of the feet, which the orthopedists are attempting to cure.

The logical remedy is to create a demand for good shoeing and possibly to return to the day of the individual artisan-made shoe, that the shoe may be made for the figure and foot-action of the individual. This suggestion is not so extravagant or expensive as may appear. A shoe properly constructed and properly worn has almost no pull or strain or scuffing to endure, but like the moccasin or the barefoot, goes lightly along, and is not quickly worn out.

ILLUSTRATIVE CASES.

Case I. A nurse who had been twelve years in active practice, after a particularly long and trying case, developed symptoms of collapse of her feet and legs. A doctor took casts of her feet and gave her steel plates. She wore the plates and took the treatment, consisting of the usual bandaging and arch raising, faithfully for two months and then reported again to the doctor. Examination at that time showed a large callus along the anterior internal aspect of the os calcis due to constant pressure of the plate. The doctor then told her that the callus should be excised and that the fascia under it should be cut and cauterized because the scar would tighten up and hold her arch together; that "scarred tissues never stretch." This treatment she declined and went to another foot and shoe surgeon.

This man told her that she needed a soft, light plate, and gave her a sole-leather plane and bunch of curled hair (for $8.00). This plate crippled her so much that at the end of an hour she took it out of her shoe and put it away. The patient was then provided with shoes which were mechanical moccasins; she was told how to walk and how to stand and was well in four days.

Case II. A woman of thirty-three years, weighing one hundred and sixty pounds, leading an active life, developed foot and leg symptoms, as part of a general relaxation of some muscles and over-tension of others as a logical sequence of postural defects and arbitrary shoes. She went to a prominent New York practitioner and was provided with a stiff plate, "saddle-shaped," with a long, high, internal flange and a narrow, high, external flange. (See Fig. 4.) Under treatment she adapted her form and action to this plate an increasing length of time each day until finally she was wearing it all day. She became accustomed to hobble about with the plates, but nervous symptoms appeared and increased, amounting to neurasthenia. It would seem that these symptoms were directly connected with the plates because at the end of six months, on arising in the morning, she got into the habit of reaching for the plates behind her back and putting them into her shoes, all behind her and out of sight. If she saw the plates she vomited immediately.

She presented herself for education in Boston, showed a natural foot, atrophied and spasmodic, but perfectly flexible. Right posture, walking and intelligent balancing shoes enabled her to walk without symptoms at once.

Case III. This woman, aged thirty-three, had never worn corsets. She was a "faddist" on "physical culture" but had had foot and figure symptoms for about eight years. She had had aches between the shoulders, sacral back-ache, got tired very easily, could not walk or stand long without feeling "that sinking feeling" and that her feet would collapse. The worst foot symptom was pain in the front part of the plantar surface, commonly called the ball of the foot. This became so annoying and constant, increasing in intensity, that standing and even walking became an agony. The front part of her foot collapsed and flowed together with the result that there was constant abnormal pressure on plantar surface under second, third and fourth metatarsals, with neuralgia.

She went to a surgeon who gave her an inner sole in which was sewed a round hump of felt "to support her anterior arch" and "to cure Morton's toe." (See Fig. 17.) Constant pressure on this hump produced a true pressure paresis. Her general neurasthenic symptoms increased distinctly at this time until she had to be confined to a nervine hospital. She emerged from this little or no better, keeping up remedial gymnastics advocated by the orthopedic specialist. She came under the care of a woman physician, a wise counsellor, who, the victim declared, was the first to make a complete physical examination. This showed the patient to be muscular but unevenly developed, showing, for example, great spasm of back muscles with prominent flabby hips. She wore high, prescription, stiff shank orthopedic "high arch" shoes with elevated heels and, as a last affliction, the inner-sole and hump seen in the illustration. This woman was a type of graduate from the "physical culturist," over-developed and tense in some muscles, relaxed in others; in short, without balance or unity, always conscious of a pose and a desire to rest.

She was told to take off her splints (shoes) and was started in on a course of proper standing, proper walking and, for the first time in her life, learned something of real human co-ordination. Moccasin-like mechanical balancing shoes were prescribed and her whole system was allowed to get back into the normal tonicity of a child. She was well in three months.

Case IV. A nurse of thirty years, doing active district work, weighed forty pounds more than she had. Most of the muscles were flabby from wearing tight, stiff-shanked, high-heeled shoes. She developed a so-called muscular rheumatism, almost universal. This condition yielded to salicylates, but on getting out again great weakness of foot and legs appeared, together with much pain in heels and knees. A doctor provided her with a steel plate (see Fig. 5), with a small internal flange "to hold up the astragalus," and a wider, high external flange to prevent lateral excursion of the foot. In addition to this she was given a certain amount of harness to press back on the pelvis. No symptom was relieved. The feet became so sensitive that walking was agony. Her feet were so nearly normal and her intelligence so keen, that after a half hour's lesson in right posture and walking, she was able to walk out with a pair of moccasin shoes almost without symptoms. There was some knee and foot ache for about three weeks while the ligaments were attaining resiliency and the muscles their tone. The rheumatic tendency has still to be fought but the feet are well.

Case V. This boy of three years was observed by his parents to evert his feet in walking and to make his internal malleoli appear unduly prominent. He was taken to an orthopedic doctor who said "his arch is down and it needs support." The child was given a pair of aluminum plates (see Fig. 3) because they were light in weight. The child with these fixed arches was then put into educational orthopedic shoes, so-called, with Thomas heels and prescription shanks, and he was shortly able to stump round with all the grace so often seen in aged negroes. The only motion allowed in his feet was at the ankle.

This went on for some three years until he presented widely everted feet, knock-knees and a saddle back, all from this unnatural monotony of foot action.

The child was then, under other advice, put into moccasins with balancing soles, a bull-dog was bought for him and he was sent out to play. He was practically well in three weeks and in three months could run like a deer with the grace of an Indian. This case was a doctor's child and is spectacular.

CASE VI. This woman of fifty-five years had been under the care of the family physician, two of the best orthopedic surgeons, an osteopath and a masseur for fourteen months for foot prostration. She was given the strengthening shoe and the plate shown in figures 19 and 14. This plate was made based on an imprint of her sole in plastic sand. The heel was plunged down first and then the weight was thrown forwards on the toes and the result was a "saddle" impression of the foot in action. On this saddle was cast a steel plate and it was encased in leather to prevent rusting.

She was then handed over to a "remedial gymnastic nurse" who had the patient stand back to the wall, weight on the front part of the feet and alternately raise and lower herself, bending ankles and knees and hips, but keeping the back close against the wall as if scratching it. This resulted obviously in stretching and straining the plantar fascia and the plantar muscles already stretched to a grave degree, the plantar fascia and muscles being held tightly pressed on this saddle plate between treatments. She was told never to go without supports.

The first time the patient stood on the plate she fainted. The first time she went through the gymnastics just described she fainted, and an eight months' course at this resulted in her becoming seriously neurasthenic.

After this she took a course in "Christian Science," and was better in many respects except that she still could not walk. Next she was induced to try a new form of "Psycho-therapeutics." Here at least she got spiritual relief and a certain amount of relaxation by hypnotic suggestion, for she improved enough to be able to return to her orthopedic instruction. The feet got only worse.

Another surgeon who was consulted now advised some bloodless surgery for the hip and sacrum which were declared to be the seats of the trouble. At this the patient and her family rebelled and she went to an osteopathic practitioner who said that the case was not his business but recognized that the woman did not know how to stand or walk, or handle her body in any way approaching normal. She was provided, at his suggestion, with normal under-foot conditions in shoes and boots. She got well, but says that osteopathy did it. She was really cured by simplicity in shoes and instruction in control of them.

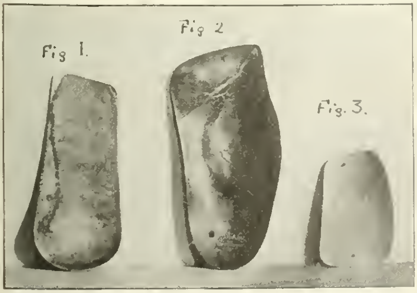


FIG. 1. A plate, or crutch, convex on the front end, meant to support the so-called anterior arch.
FIG. 2. This deforming plate was put on a strong, healthy foot during an attack of acute foot collapse and kept the patient a cripple as long as he wore it.
FIG. 3. This aluminum plate was put on a boy of three years. (See Case V.)

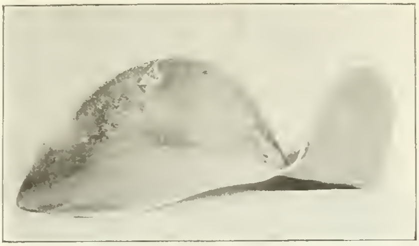


FIG. 4. The saddle-shaped plate with a long, high, internal flange, and an inner high external flange. These flanges are supposed to prevent rocking motion of the ankle, a motion which may be shown by casts of any normal ankle in action to be not only normal but necessary to right ankle and foot motion.

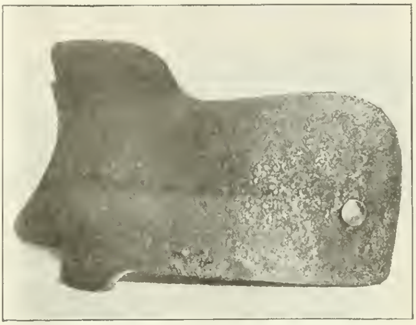


FIG. 5. A popular form of prescribed plate. The wide external flange is supposed to prevent lateral excursion of the foot. The small internal flange is to hold up the astragalus, the whole making an absolute preventive of normal foot action.

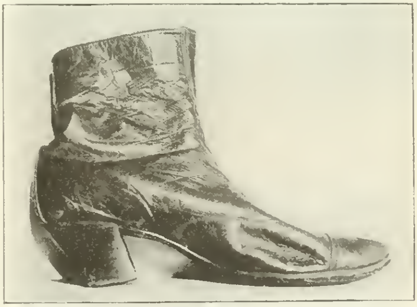


FIG. 6. A strong foot always runs over a heel of this type. Also note the hoof effect given by this fixed elevation of the heel.

To give the specifications of a good shoe except by series of negations and exclusions is very difficult. It should be light in weight, soft and flexible in all its parts, and the flat heel should be rendered balancing and unstable by making the outer front corner of soft rubber, after the fashion (and patent) of Small. The construction should be such that in size and shape the shoe shall not pinch the expanded foot bearing all the weight of the body, and the inner sole so made that the foot shall not after a short time sink down in the middle of the plantar region as into a trough.

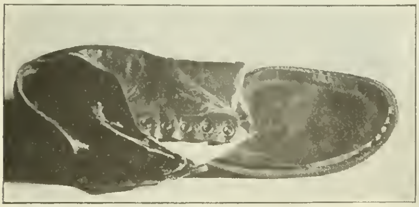


Fig. 7. In this shoe note that the foot rests in a trough. The outer edge lifted by the welt, the foot squeezes itself, convexes downwards on the cheap filling under the inner sole.

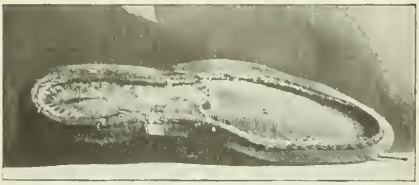


Fig. 8. The athletic shoe. The construction of this shoe is such that the center of the plantar surface slumps down, giving the foot no opportunity for prehensile flexion.

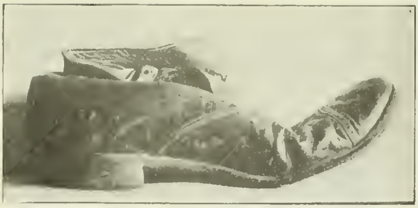
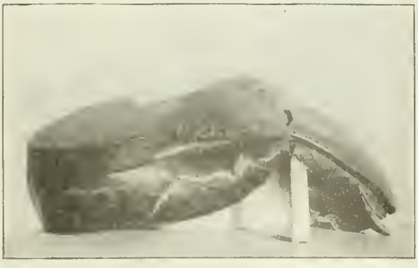


Fig. 9. Note the long, stiff inside counter giving a cradle effect, which prevents ankle motion and lames the heel.



Figs. 9 and 10. A custom made "arch support," $18 shoe. The shank contains six layers of the steel "shoe machinery" arches, made like a wagon spring. This shoe could only be worn when it was literally "broken in," and it broke at the only place it could naturally, at the forward end of the shank.

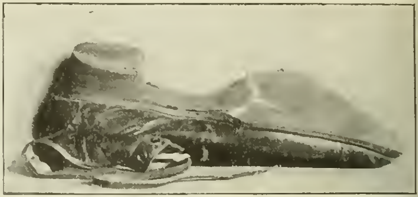


Fig. 11. This shoe embodies some one's suggestion of a lift or elevation under the anterior end of the first metatarsal. This suffices to run over the heel, as may be seen in the effort of the strong foot to overcome this artificial plane, and results in canting the foot to a fixed club-foot position. It causes soreness of the end of the first metatarsal, and spasm of the plantar fascia.

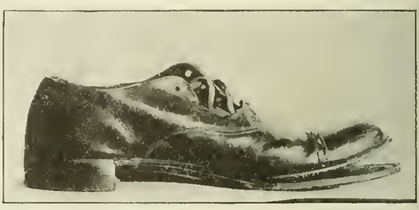


Fig. 12. An ordinary custom-made shoe, so constructed that heel and toe are practically turned up to prevent any effort of the foot toward natural plantar approximation of toes and heel. In other words the grasping effort is prevented.

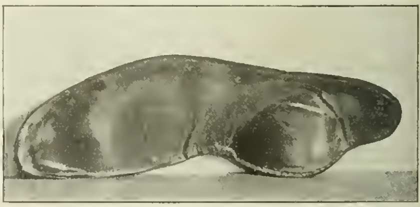


Fig. 13. A college athlete, 185 lbs., got from a tight shoe an abrasion on the flexor tendon of the great toe. This led to a succession of nervous chills and other neurotic symptoms. He went to an orthopedic surgeon, but did not want a steel plate, because he had had one in the past. The doctor made this leather inner sole and pad. Note that the foot action was able to crumple up this inner sole, because it was a strong foot, but the pad resisted normal arching. The forward end shows how the toes were crushed together and out of action. He was not in any way relieved by this apparatus, but a mechanical moccasin enabled him to walk without symptoms in an hour.

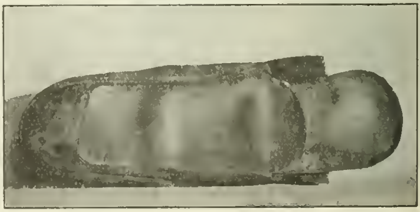


Fig. 14. This long, stiff plate encased in leather to prevent its rusting, shown partly withdrawn, fills up an already close fitting shoe, prevents all plantar mobility of the foot, provides a saddle in the middle of the toes on one end and heel on the other, and in short, so far as possible, prevents any freedom of foot action.

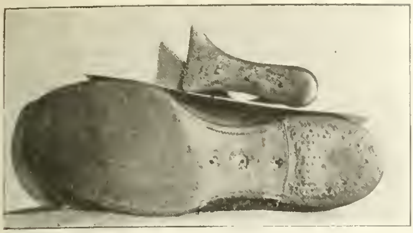


FIG. 15. This is the so-called cast steel arch prop riveted inside the shank — a new form of torture.

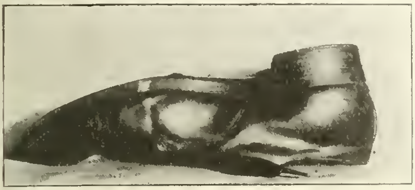


FIG. 16. The supportive shoe. Note the vicious strength of splint-like shank. The strong unyielding construction of the Blucher top and of the shank prevents all motion of the foot as far forward as the toes, and here the edge of the shoe tip tightly binds down the toes, bearing on the tendon of the great toe particularly. This prevents arching up of the great toe in grasping motion and injures the toe. The condition resulting from this is often treated for neuralgia.

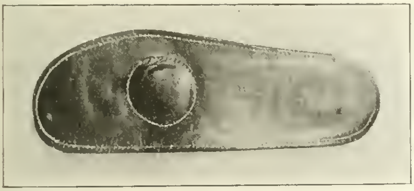


FIG. 17. This is an inner sole containing a hump of felt sewed under the leather as a treatment for "flatness of the anterior arch" and for "Morton toe." This is like having a pebble in the stocking, and is of value only because it is so uncomfortable that the foot, constantly trying to get away from it, acquires strength and mobility.

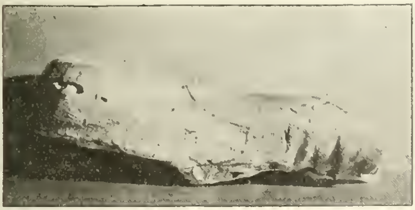


FIG. 18. Cast of the inside of a shoe. Here a strong foot has been moulded into this cramped position, convexes downwards by the faulty shoe; neither foot nor toes can flex.

The upper should be high enough in front to allow the freest toe flexion and over the middle of the foot to let the dorsum of the foot raise itself as the toes grasp the sole. The counter should be low to allow free motion at ankle and between astragalus and calcaneum. There should be no "fit," in the usual sense of the word, but yet enough fitness for the particular foot for a loose lacing to prevent slipping at the heel.

This method of instruction in foot-use in standing and walking is not a little matter of orthopedic therapeutics for those suffering from foot symptoms, nor is it only a preventive of foot symptoms. Foot-education, combined with the requisite lib-

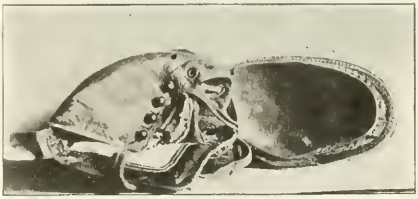


FIG. 19. Here the welt and the lip of the inner sole make a fixed everted arch or nest in which the middle of the plantar arch sinks. In this shoe also there has been added at the posterior end of the first metatarsal a leather wedge, which is intended to cant the foot over into a club-foot position, but as a fact only prevents first metatarsal and great toe from reaching the earth effectively. This shoe has a flexible shank, but lacks other good features and, as a result, it buckles down in the middle at the shank and the ends of the foot turn up front and back.

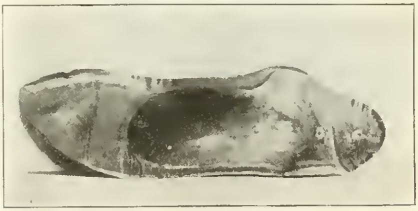


FIG. 20. This plate is supposed to hold up the anterior arch by a convexity where the front rivet is seen. It only becomes bearable when its front edge has cut a hole into the sole of the shoe and the hump has ceased to be potential. The inner flange posteriorly is supposed to prevent the os calcis from making an excursion downwards and inwards, and to assist in buttressing the so-called arch. What it really does is to furnish an inclined plane for the calcis pad to slip back. This chokes the circulation of the arch and produces plate-injury over the posterior rivet. The outer flange is supposed to keep the foot from running over. In reality it furnishes a prop on the outer side of the heel, elevated by cant of the body, heel and shank of the shoe. The only good that this plate can do is that it hurts so much that the patient pulls away from it and thereby gets some muscular activity in the foot. The short flap of leather furnishes a slippery surface to prevent the anterior pads of the foot from getting a grip for proper co-ordination.

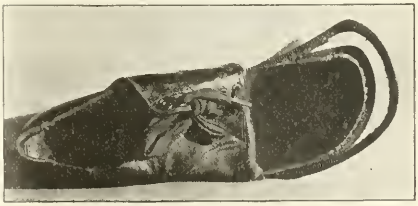


FIG. 21. Anatomical shoe, so-called. This shoe perpetuates the arching mistake in its anterior construction; accentuating the welt wall under the margin, turning up the toes, having the same effect as a pointed-toe shoe. A vicious tread forces the foot down into hollow, giving a one-toe or hoof action, defeating dissociate toe action. The fixed inside straight line and broad toe appeal only to the unthinking, for they are purely matters of form without bearing on action or mobility.

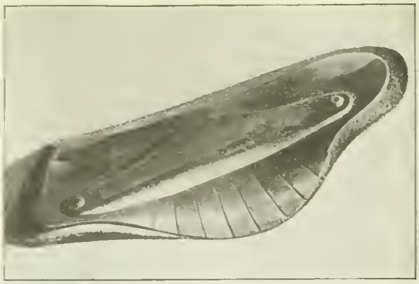


Fig. 22. This plate is sold in drug stores and shoe shops, but it has the advantage over many prescribed plates in that the split flange on the inside is bent out of the way by the action of the strong foot.

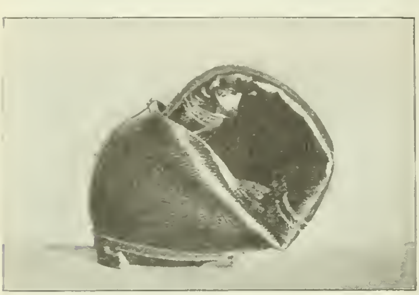


Fig 23. A turned shoe — sells for 90 cents. This shoe shows the mobility of a mechanical moccasin having nothing to restrain action of foot or ankle.

erty of foot-action, such as comes with rational shoeing, is universal in its benefits. All the civilized world from childhood to age needs foot-freedom. The moccasin would allow it and be feasible if we could still walk, as in the beginning, on the mould of the forest and the turf of the fields. To accommodate the flexible arching foot to the unyielding planes on which we must walk, the shoe must offer a series of unstable balancing platforms with nothing fixed in position. Such shoeing, to one accustomed to the tight, unyielding leather boxes of present use, makes walking a new function, a revelation of comfort.

ROSENMUELLER'S FOSSÆ AND THEIR IMPORTANCE IN RELATION TO THE MIDDLE EAR.*

BY FRANCIS P. EMERSON, M.D., BOSTON.

The object of the following paper is to try to point out an important source of infection of the middle ear, which has heretofore been overlooked. The literature, clinically, is exceedingly meager, consisting of one paper by Dr. Brunk, which appeared in the August number of the *Laryngoscope.* With this timely and excellent paper, I fully agree. The textbooks, as he pointed out, even the latest, have nothing to offer. Notwithstanding this, I shall try to show that in the fossæ of Rosenmüller there is to be found very frequently, in adults, as well as in children, a large amount of degenerate tissue. This is more constant than we have supposed, and is an important factor in causing or maintaining morbid conditions of the middle ear. When present, it can be seen by posterior rhinoscopy in only a small per cent of cases, therefore a digital examination is necessary for diagnosis, and this should be done as a routine procedure.

Anatomically, Kyle says, "The third or pharyngeal tonsil differs little in structure from the faucial tonsils." This tonsil extends from the median line on each side to a well marked depression termed the fossa of Rosenmüller or recessus pharyngeus, which separates it from the Eustachian orifice. The agglomerate glands are most numerous behind the projections which contain the Eustachian orifices (i. e., in the recessus pharyngeus) and are closely grouped together on the upper surface of the soft palate. The term "adenoid vegetations" includes enlargement not only of the pharyngeal tonsil, but also of the closed follicles situated in the mucous membrance of the posterior surface of the vault and the postero-lateral walls of the nasopharynx. Later, he adds that, "pathologically, we really have to deal with four different varieties of enlargement of the pharyngeal tonsil," and says that "there is a soft variety which appears as a smooth semi-fluctuating mass that spreads over almost the entire nasopharynx, which is largely influenced by atmospheric changes and the physical condition of the child." This variety is composed almost entirely of the lymphoid structure, is very friable and is covered with a thin layer of epithelium, with ill-formed basement membrane and submucosa. The structure is so soft and friable, that it can easily be broken up by pressure with the finger. The enlargement seems to be due to an over-development of lymphoid tissue.

In another variety, which may be called edematous or cyanotic, there is very little increase in the actual gland structure, but the enlargement is due to venous stasis and edema produced by leakage from the vessels. This is the variety that is directly associated with intestinal irritation and irregularities in systemic circulation most commonly observed in children who are suffering from some form of intestinal parasites. The structure is smooth and tense, although easily compressible.

In the hard or hyperplastic variety, there is an increase in the lymphoid structure, with a decided overgrowth in the connective tissue element. The mucous membrane lining is well formed, and there are usually several layers of epithelial cells. The surface is more lobulated, although smooth to the touch.

Clinically, it would seem to be the first variety which by retrograde change produces the pathological conditions found in the fossæ. This tissue normally should undergo physiological atrophy from the tenth to the fifteenth year, but digital examination shows it to be still present in the fossæ. It is, I believe, an active factor in the causation of recurring attacks of salpingitis in adult life. Its position and constant reinfection may be one of the active causes of lateral pharyngitis. The investigations of Goodale and others in tracing the focal source of infection of the cervical and bronchial glands, as well as the apex of the lungs, to the tonsil and adenoid tissue, must lead us also to have the fossæ of Rosenmüller in mind. This is particularly true, as often the recessus pharyngeus is very deep and contains a large amount of soft, friable tissue, offering an ideal harbor for micro-organisms. The lymphatic connection with the cervical nodes makes the fossæ second only to the tonsil as a direct source of infection. With the Eustachian tube, it not only from its position offers a harbor for bacteria, causing a low grade inflammation, which infects its orifice, but mechanically it interferes with the action of the levator palati muscles. That it is an important factor in obstructing the venous return current from the tympanum and labyrinth is shown in the marked relief of some cases of tinnitus.

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* Read at a meeting of the New England Otological and Laryngological Society, Nov. 17, 1907.

This was shown in instances where the tube was not occluded, and therefore could not be attributed to ossicula impaction from atmospheric pressure. Clinically, its arrangement is as follows:

Fig. 1. One or more bands pass from the posterior and upper part of the recessus pharyngeus to the Eustachian tube. These can be seen by post-rhinoscopy.

Fig. 2. The entire fossa is filled with a soft friable mass that is smooth and which cannot be seen by the eye. The finger, however, sinks into and easily removes it. In this class the recessus is deep and there is a large amount of tissue, which bleeds almost as freely as at the average adenoid operation.

Fig. 3. The recessus is studded with irregular masses, which may be scattered, though not large in amount. Objectively, then, we do not have anything pathognomonic, as this condition may be associated with chronic secretory or suppurative otitis media and locally it can only be detected by digital examination. Clinically, however, there is a very definite picture. These patients complain not so much of absolute as of relative deafness, i. e., their hearing fluctuates and is influenced by changes in weather, dust and physical conditions. They feel as though there is something over the affected ear or ears. There is tinnitus and referred abnormal sensations in the throat. The hearing test is normal for a long time. If they have an acute infection, it recurs constantly on the same side.

The correction of abnormal conditions anterior to the vault does not protect the patient from subsequent attacks of salpingitis. These are the cases that have obtained temporary relief by the use of silver nitrate to the vault and catheterization or, if there was a more acute condition, the Politzer bag. As in the nasopharynx, all palliative measures are being supplanted by surgical procedures, so here is one more reason for discontinuing the use of the much-abused catheter. That the Eustachian tube will open physiologically and remain open, if we can prevent or cure the inflammation of the tissues about its orifice, I believe to be the trend of opinion among otologists. Those who hold this view find less indication for continued treatment by inflation. The influence of pathological conditions of the recessus pharyngeus in continuing a suppuration of the middle ear over a long period is shown in Case I, which was unmodified for four years by hospital and private care.

Case I. June 6, 1906. Miss M. C. Hospital. American, sixteen years. Born in Massachusetts. Gives a history of chronic suppuration since childhood. During this time, the right ear has not been dry except for a period of two months, two years ago, while in the hospital for an adenoid operation. The left ear has discharged intermittently. She has been treated regularly at the hospital during this period and has had an ossiculectomy, besides an adenoid operation. The middle ear was cleansed carefully with a middle ear syringe. She is of more than average intelligence and has followed directions carefully at home. During the last two years, she has been under the constant care of one of our best men as a private case. She says that during this time there was no improvement that she could see. On June 6, the fossæ were cleared of a mass of soft degenerate tissue that bled as freely as at the average adenoid operation. Within twenty-four hours, the right ear became dry and has remained so. The left ear showed possibly two or three drops of pus. Although the right ear has been dry only two weeks, it followed immediately the clearing of the fossæ after treatment had been ineffectual for years.

In Case II., the effect on tinnitus and referred sensations in a chronic secretory ear is hardly less striking.

Sept. 6, 1906. Miss H. T. Private case. American. Schoolgirl, sixteen years. Born in Massachusetts. B.—O. M See. C.—R. Tinnitus is continuous. Hearing fluctuates. Stuffy sensation in the ears.

Previous history. — Nose was cauterized and tonsil cut four years ago.

Examination. — Right tonsil, upper angle not clear. Left tonsil, central mass present. Right Rosenmüller's fossa filled with soft granular tissue.

Treatment. — Rosenmüller's fossa freed and treated twice with iodo-glycerin.

Result. — Tinnitus and abnormal sensations stopped in twenty-four hours and have not returned. There has been no reinfection of the right tube.

Although these two examples are hardly fair representatives of each class, they are by no means unusual, especially in private cases that report for treatment until the pharyngeal mucosa has been restored to its normal function. The technic which I have employed to free the fossæ is very simple and requires no anesthetic. Standing on the right, the left arm is placed around the neck of the patient and a wooden tongue depressor introduced between the teeth to protect the forefinger of the right hand, which is passed behind the soft palate. At this stage, I wait until the patient is assured that he will not be choked and respiration has become regular. This relaxes the soft palate and the finger passes through one and then the other fossa, with very little discomfort. A simple spray of cocaine can be used for the hypersensitive.

I have found degenerate tissue so often and its removal has been attended by such immediate results, that I do not feel justified in subjecting a patient to prolonged treatment without digital examination of the fossæ without reference to age. This conclusion has been reached after the examination of over 100 hospital and many private cases, extending over a period of over four years. It is done immediately if they present the classical symptoms of stuffiness, fluctuating hearing, tinnitus and recurring unilateral salpingitis.

Some of the following cases were reported at a meeting of the Roxbury Clinical Record Club a year ago, before Dr. Brunk's paper was published. I offer this statement, not with any idea of claiming priority, but to show that we have been working along the same lines and have come independently to the same conclusions. Through the courtesy of Dr. Jack, in the fall of 1905, I followed the history of 12 cases to note the effect, if any, on tinnitus. In early cases this procedure was more immediately beneficial and lasting than any with which I am acquainted. This is shown in Case III, where there were distinct bands, which could be seen with the mirror.

Case III. Nov. 6, 1906. Mrs. G. H. B. Born in Nova Scotia. Repeated sore throats as a child but no sickness since. Comes for tinnitus especially after colds.

Examination. — Distinct bands in both fossæ which can be seen with a mirror. A small amount of adenoid tissue on each lateral wall at the margin of the fossa, from which the bands start. Hearing normal. B.— O. M. Sec. C.

Treatment. — Bands removed under gas. Topical applications to the fossa.

June 12, 1907. No return of the tinnitus.

It is obvious first that in freeing the fossæ we not only remove a mass of degenerate tissue, which keeps up a low grade inflammation, subject to acute exacerbations and reinfections that are communicated to the Eustachian tube, but, second, we deplete the engorged blood vessels and relieve stasis more effectively than by any topical application, and third, we allow deglutition to once more exert its physiological action on the tubal muscles in normally ventilating the middle ear. Cases could be multiplied indefinitely, but as the results follow in so short a time, the patients cease to report for observation.

Case IV. July 23, 1906. J. C., twenty-eight years. Single. Born in Cambridge. Hospital. Teamster. B.— O. M. Sec. C. Hearing normal. Ears feel closed, as though there was a cloud over them, especially on a dull day. Better, clear days. Tinnitus (steam) constant at night, intermittent during the day. B. fossæ filled with a soft glandular tissue, which bled very freely on removal. Oct. 29, tinnitus gone. Hearing more constant. Still feels that one ear is closed and is relieved by inflation.

Case V. Jan. 15, 1906. Miss H. B. J. Hospital. American. Bookkeeper, twenty-seven years. B.— O. M. Sec. C. Hearing normal. Naso-pharynx clear except fossæ which contain soft granular tissue. Left ear tinnitus like a whistle and is continuous. Right ear tinnitus like wind and is continuous.

Treatment. — Fossæ freed with the finger.

Result. — Tinnitus not noticed except a very little at night.

In the following case prolonged treatment for a year of the anterior naris and vault had not given any relief to the tinnitus. This consisted of the removal of adenoids and surgical measures directed to the septum and middle turbinates followed by topical applications and sprays for the naso-pharyngitis. The tinnitus was so pronounced as to interfere with her work and sleep.

Treatment. — The fossæ were freed digitally.

In response to a letter of inquiry, she replied in person and said that during the last year she had been free from symptoms.

Case VI. Jan. 15, 1906. Mrs. C. H. R. Thirty-one years. American. Housewife. Hospital. Hearing right 2-25 watch. Dench 80, otherwise normal.

Naso-pharynx clear except fossæ. Right fossa has tense fibrous bands running from the Eustachian eminence to the posterior pharyngeal wall. Left, small amount of glandular tissue. Tinnitus rushing in character, rising and falling with varying pitch and is continuous.

Result. — Tinnitus stops for long intervals and its character has changed to a humming sound. Hearing remains unchanged.

Case VII. Mrs. H. M. Housewife. Irish-American. Hospital. Hearing, right 18-25 watch. Dench 80, otherwise normal. Left, 4-25 watch, Dench 80, otherwise normal.

Tinnitus, low rumbling constant but worse following colds. Right fossa, but little abnormal found. Left fossa, glandular tissue.

March 6. Tinnitus better but not wholly stopped.

Case VIII. Mrs. A. K. Married. Twenty-nine years. Hebrew. Housewife. Hospital. Tinnitus both ears five months. Like engine. Intermittent. Hearing normal by test, but fluctuates, not being as good damp days. When tinnitus is present, she sometimes has frontal pains on bending forward. Left ear worse. O. M. Sec. C.

Examination. — Naso-pharynx normal except fossa. Left, distinct bands. Right, small amount glandular tissue.

Result. — Ceased to report for treatment.

May 20. C. S., single. Irish-American. Twelve years. State ward. B.— O. M. S. C., for two years. During this time he had been treated weekly at the hospital and twice daily at the home. His adenoids had been removed but the ear discharged continuously for two years. Both fossæ were filled with soft friable tissue which was removed and the discharge ceased in forty-eight hours.

CONCLUSIONS.

1. Pathological amounts of lymphoid tissue are present in Rosenmüller's fossæ in a large number of cases of chronic secretory and suppurative ears.

2. This cannot be detected with certainty by posterior rhinoscopy alone, even where a good view of the vault is obtainable.

3. In every chronic case there should be a routine digital examination.
4. Where much tissue has been found and removed, the process of healing should be watched that no fibrous bands form.
5. It is possible in a large majority of cases to predict the involved ear by the condition of the corresponding fossa.
6. Results, where after-treatment is followed, are particularly good in removing abnormal sensations, restoring uniform hearing without fluctuations in the partial or complete relief of tinnitus, and in the prevention of recurring salpingitis.
7. If directions are given to blow one side of the nose at a time and carefully, the affected tube is no more apt to be infected later than its fellow.

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A PERIOSTEAL FLAP FOR USE IN PRIMARY AND RADICAL MASTOID OPERATIONS, WITH AN ILLUSTRATIVE CASE.*

BY GEORGE A. LELAND, M.D., BOSTON.

I simply want to show you one case: a woman, about twenty-five years of age, operated on a week ago for chronic inflammation of the middle ear and mastoid with caries. The patient's trouble began at seven years of age after measles and scarlet fever, both so near together as to practically be at one time. At nine years of age had discharge from left ear of uncertain duration. Five years ago she had discharge which lasted two months, and at that time there was some tenderness over the mastoid on pressure with very disturbing symptoms which, however, disappeared later. A week before she came into the hospital she had an earache with more or less absorption, shown by malaise, temperature, dizziness, headache and tenderness over the mastoid tip. The radical operation as usual was performed; the whole of the mastoid process being taken away (it was sclerotic in part) including the brittle tegmen antri. There was hardly any pus. The antrum and middle ear were more or less carious throughout.

The reason I bring forward this case is to show the results of a method I have been using for a couple of years to obliterate the posterior exenterated mastoid cavity, so that after the completion of the process the dermatized middle ear may be seen at the bottom of an external canal not much larger than before. The posterior cavity is a nuisance to a great many patients, depending, of course, on its size. Sometimes we have a very large cavity which one or more times a year, or oftener, has to be cleared out on account of the accumulation of cerumen and effete epithelial débris in this cicatricially dermatized cavity. Therefore, we have occasionally to perform more or less of a toilet to keep this cavity clean. Now, how can this be obviated?

Let me first recount the procedure in acute cases.

In ordinary mastoid operations for acute cases we clear out the cavity, pack it, and allow it to fill up. If in the healing we get a deposition of bone in the aditus then our mastoid cavity is shut off. If we have a deposition of new bone throughout the whole cavity we have no cavity to be reinfected, therefore we do not get secondary mastoiditis. Probably many of us have had to do a mastoid operation over again, much to the disgust of the patient and others, including ourselves. The reason is, as you know, that if we get infection through the Eustachian tube into the middle ear and into the aditus, and our posterior cavity has not been filled up, we have the same liability to mastoid disease that we had in the first place. It has happened to me to have to do a secondary mastoid after a few months, and I had one such operation eleven years after the primary one was done, and within the last two weeks three or four such cases have come into my hands.

It has been interesting in these ante-mortem pathological examinations to see how much of bone was actually deposited in the mastoid cavity. Sometimes there is hardly any, but fibrous tissue lines the bony cavity enclosing, as in a capsule, a mass of old, pale, tough, loosely packed granulations, and then we have a real nice cavity for infection. Sometimes there is a greater deposit of new bone around the periphery of the cavity and a smaller mass of granulations, in the center of which a fistula leads down to bare bone near the aditus and so affords a good place for reinfection.

For several years I have been mulling over a method to prevent these secondary mastoids. I talked it over with several of the New York men and we agreed to try a piece of rubber tissue, first used by Dr. Abbe of New York (I think it was), in his operation for resection of branches of the fifth pair to prevent bridging over. I tried this in three or four cases to shut off the aditus, hoping almost against hope that it would remain, as of course the middle ear side of the rubber tissue was exposed to infection, whereas the posterior side, being covered by granulations, might be all right; but eventually this piece of rubber tissue made its way out.

About this time, I sought the aid of Dr. E. H. Nichols, our surgical pathologist, as to whether a piece of living tissue could be placed over the aditus and be made to grow there. The result of our conference was to try to obtain a large flap of periosteum with a broad base to insure its nourishment. For the last two or three years I have been using this flap. In the operation the usual curvilinear incision is made through the skin and the superficial muscles down to the fascia. Then the skin is dissected up from the fascia forward, till the depression is reached between the cartilaginous canal and the anterior mastoid wall; backward, it is then dissected upward for something like an inch and a half. With the posterior edge of the mastoid process as a guide an incision is then made down to the bone, from the tip upward and backward to the junction of the mastoid and occipital bones and then curved somewhat backward and then upward to the level of the linea temporalis; then forward on this ridge or a little above it upon the fascia, covering the lower edge of the temporal muscle. If the posterior edge of the mastoid process is strictly followed there will be almost no danger of cutting the mastoid emissary vein. The elevator is then passed down to the bone and this flap, including the periosteum and the fascia and the tissue between, is dissected upward and forward till the anterior edge of the mastoid process is bared, as it is in the ordinary mastoid operation. The flap is then drawn forward by the retractor and the operation completed as usual. After the cavity is thoroughly cleaned out this large flap is drawn backward and its tip pressed down into the antrum so as to cover the aditus, and is there packed rather firmly by gauze wicks. Should the flap be a little too short the posterior wall of the meatus may be somewhat shortened by the forceps, so the flap will reach well into the aditus. At first I tried to place this flap in position and then allow the wound to fill up with a blood clot, so as to get one of Dr. Sprague's blood clot organizations, but it always floated out, so I found it had to be firmly anchored in position. The posterior part of the cavity can be packed more lightly. The wicks which hold the flap in position are not disturbed till the second or third dressing, that is, about ten days after the operation. They can be then carefully removed, and in almost every instance I have found that the flap remains there and grows firmly in its new position.

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* Read at a meeting of the New England Otological and Laryngological Society, Nov. 15, 1907.

Having done that in acute cases, it seemed to me we could do it in chronic ones; and now in this case, my fifth or possibly sixth, I have excavated as usual, taken away all the posterior wall down to the facial canal which, of course, is left as a ridge between the mastoid cavity and the middle ear, then brought this large flap down and put it directly on to the facial canal, holding it there by gauze on both sides. If both these cavities are clean and the flap is accurately placed it grows directly on the facial ridge, and we can take out the posterior packing, all except that down on the ridge at the first dressing; the second or third time we can clean out both sides, being careful not to dislodge the flap from the ridge.

This case was operated on ten days ago and this large flap placed down on the facial ridge. The posterior cartilaginous wall was slit and carried up and down as usual. We have a pretty large canal to look into, and if necessary that can be dermatized even now. I expect to dermatize it tomorrow. The posterior wound is granulating as in an ordinary acute mastoid, and is even now well filled; and it is found that the posterior wound fills more rapidly than usual, on account of the proliferation of fibrous tissue from the upper surface of the periosteum.

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The Detroit Academy of Medicine celebrated its fortieth anniversary on Feb. 25. Five of the original thirteen members are still alive, and one of them, Dr. A. B. Lyons, was present at the meeting. Dr. Leartus Connor reviewed briefly the life and work of each of the deceased charter members, and personal reminiscences of the eight deceased members were given by members of the academy. — *New York Med. Jour.*

Clinical Department.

REPORT OF A CASE OF CARIES OF THE MIDDLE EAR, MASTOID PROCESS AND INTERNAL EAR WITH EXTRADURAL ABSCESS, PACHYMENINGITIS AND DESTRUCTION OF THE SEMICIRCULAR CANALS.*

BY GEO. H. POWERS, JR., M.D.,
Assistant Surgeon, Aural Department, Massachusetts Charitable Eye and Ear Infirmary.

The patient, Miss R. McC., single, age twenty-three, domestic, presented herself at the Aural Out-Patient Department of the Massachusetts Charitable Eye and Ear Infirmary on March 8, 1907, suffering from right chronic suppurative otitis media and dizziness. The disease began during an attack of scarlet fever at the age of two, since which the discharge from the affected ear has been continuous. The patient states that she has been more or less dizzy ever since she can remember and that there has always been a foul odor to the discharge. For five days the dizziness had been increased with the addition of a slight feeling of nausea at times.

Examination revealed a large polyp protruding from the right external meatus with a thick purulent discharge from the middle ear which was foul in odor. The middle ear was not seen owing to complete occupation of the canal by the polypoid mass. The hearing was tested in the usual manner:

Low spoken voice heard at five feet.

Rinné test: Two hundred and fifty-six fork not heard by air; bone conduction six seconds.

Weber test: Vibrations appreciated only by left ear.

Galton whistle: Normal.

Low limit: 1,024.

Under cocain and adrenalin anesthesia, part of the polyp was removed by the snare, and as the dizziness and nausea were assumed to be middle-ear pressure symptoms, she was allowed to go home and instructed to return on the following day.

On March 11, the patient was admitted to the House for observation, the dizziness and nausea having increased. In addition she was suffering from frontal and temporal headache. On admission the temperature was normal, leucocyte count 9,300, no disturbance in the nervous reflexes, no mastoid tenderness, hearing test as above, remains of polyp filling the middle ear and about one third of the canal. Treatment consisted in rest in bed, and syringing the ear every three hours.

March 12. Temperature normal. Slight dizziness. No pain.

March 14. Temperature normal. No pain. Slight nausea.

March 16. No pain. No dizziness. No nausea. Free discharge from middle ear.

March 19. Discharged. Condition improved.

March 25. The patient re-entered the hospital with increased dizziness, nausea and vomiting, prostration, temporal and occipital headache and occasional chills. On admission the temperature was 104.6° F. Leucocyte count 23,000, pupillary reflexes normal, engorgement of retinal vessels in right eye on fundus examination, cerebration good, knee jerks delayed, doubtful Kernig sign, no Babinski, marked ankle clonus. There was no mastoid tenderness. The patient was prepared for operation in the usual manner, the field shaved and scrubbed and free catharsis obtained.

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* Read at a meeting of the New England Otological and Laryngological Society, Nov. 17, 1907.

Under ether the usual incision over the mastoid was made, the periosteum incised and elevated, exposing a white negative-appearing cortex which was found very thick and sclerosed. When an opening had been made through the bone a quantity of pus, evidently under pressure, welled up. The sinus was found exposed and very far forward, the sinus wall appearing normal. The tegmen mastoidei was found defective for an area of about 1.5 cm. in diameter, the dura being covered with dark sluggish granulations. In the center of this area of exposed dura was found a small perforation through which could be passed a fine probe to the depth of about 1 cm. On account of the presence of considerable quantities of pus no further exploration in this direction was undertaken. The membranous canal was then separated from the posterior bony canal wall, retracted forwards and the posterior wall removed, a Stacke protector being used to avoid injury to the facial nerve. The antrum and middle ear were found filled with granulations, inspissated pus and the remains of the large polyp before mentioned which was proceeding from the attic. The head of the malleus (found dislocated and free in the tympanum) and the intact incus were removed. The middle ear was carefully curetted, all granulation tissue removed and the tympanic opening of the Eustachian tube curetted to insure its occlusion. The canal was divided by two parallel incisions, the resulting flap thinned down by removing cartilage and trimming off soft tissue (after Körner) and the flap of integument sutured back for use when closure of the wound should be attempted. The cavity was packed with sterile gauze.

March 27, the day following operation, temperature dropped to 99° F. Patient complained of nausea throughout the night after operation with pain in the temporal region.

March 28. Temperature rose to 101° F. in the evening, pulse rate 80. Pain and nausea continued. General condition poor. Herpes of lips appeared. The fundi were again examined and found negative. Complete facial paralysis on right side.

March 29. Under primary ether the packing was removed from the wound and the cavity found dry and clean. An incision about 2 cm. in length was made in the exposed dura, liberating a considerable quantity of sero-sanguineous fluid, but no pus. (Culture from this fluid was negative.) The dura was soft and much thickened, dura, pia and arachnoid membranes being firmly adherent to such an extent that a fine probe could not enter between the dura and pia mater, nor between the pia and arachnoid No further extension into intracranial structures was found, although the brain tissue was carefully probed to a depth of 3 to 5 cm., to detect the possible existence of more deep-seated infection. The wound was packed with sterile gauze, a small wick being left in the dural opening.

March 31. Patient vomited several times during the night, complained of headache and chilliness. Temperature rose from 99.4° F. in the morning to 100.4° F., in the evening.

April 1. Wound dressed and a considerable serous discharge (not clear cerebrospinal fluid) found. It may be added that at the time of the secondary procedure there was no escape of cerebrospinal fluid. The patient's general condition was apparently much improved on this date. In dressing the wound, tight packing to prevent the growth of granulation tissue was not attempted, as such packing would necessarily interfere with free drainage from the dural opening. The dressing was done daily.

The patient's condition gradually improved, she being allowed to leave her bed on April 9. On April 13, under ether anesthesia, the cavity was freed from granulation tissue, the wound in the dura having healed and an attempt made to skin graft. This however, was unsuccessful as the entire graft sloughed away on the third day. At this time there was noticed a small cavity between the external semi-circular canal and the sigmoid sinus in the depths of which carious bone was detected by the probe. A blunt middle-ear curette, carefully inserted, brought away a small quantity of cholesteatomatous material, very foul in odor. The opening of this cavity was slightly enlarged backwards, the cavity sponged out and a small wick left for drainage. At the time it was thought that a small lead had been overlooked during the first operation and but little importance was attached to it as careful probing failed to reveal any further lead.

On April 29 a probe introduced into this cavity detected a sequestrum anteriorly. The patient complained of two attacks of vertigo during the previous twenty-four hours, both of which were, however, momentary. The sequestrum appeared to be about 1 cm. in width and could not be easily dislodged.

On May 8, after several ineffectual attempts at removal, the sequestrum was found free in the mastoid cavity and was easily extracted. The surfaces were covered with granulation tissue, after the removal of which could be seen the entire superior semicircular canal, the internal half of the external canal and the internal third of the posterior canal. The sequestrum measured 11 x 8 x 7 mm. After the removal of the sequestrum the cavity above mentioned, now enlarged to about four times its original size, was carefully cleaned out and lightly packed. There was no return of the vertigo after the sequestrum was removed.

It was about this time that a slight confusion in the patient's speech was noticed. There was no difficulty with short words, nor with single long words; she could name objects correctly; but in trying to speak sentences of any length or containing long words, considerable hesitation was noticed. It was even necessary at times for her to stop and wait a few seconds before being able to speak the correct word. This condition obtained for five weeks.

A second attempt at skin grafting was made on May 28, under ether. A large graft was taken from the thigh and inserted into the cavity, after all granulation tissue had been carefully curretted out. The graft covered the walls of the entire cavity except the anterior wall which was covered by the membranous canal. One June 1, the fourth day, the plug over which the graft was applied was removed and the graft found everywhere adherent, except in the region from which the sequestrum had come. This locality was marked by a small collection of serum under the graft which was drained off by making a small opening through the latter. A small wick of gauze was left in the cavity to prevent reaccumulation of the fluid. In four weeks' time after the second and successful skin grafting the exenteration cavity was completely epidermitized.

The hearing test after complete recovery was practically the same as before operation, the integrity of the cochlea being proven by normal appreciation of the Galton whistle.

The facial paralysis began to disappear about June 15, and on July 4 it was noted that all the facial muscles were receiving their normal innervation. There has been no return of dizziness and the patient is able to walk perfectly and, in fact, do the work of a normal individual about the house. She has climbed up on a step-ladder to hang curtains and apparently is embarrassed in no way except that when walking with another person on the street she may stagger slightly once or twice in an afternoon. It would seem, therefore, that her attention is necessary to maintain perfect equilibrium at all times and that lapses occur only when her mind is diverted, as for instance while talking to a companion when out walking. The tendency to stagger as above described has materially lessened within the last month and in time may disappear if the left (normal) labyrinth is able to do the double work without the assistance of mental effort.

Medical Progress.

RECENT PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D., AND D. A. HEFFERNAN, M.D.

THE FUNCTION OF THE TONSILS.

Although our knowledge concerning the function of the tonsil has not been materially increased during the last year, the subject has attracted much attention. Goerke[1] has reviewed the whole subject since the appearance of Koelliker's paper in 1883 to the present time and shows very well how directly opposed to one another different views are upon this subject even at the present day. It was at first believed that the tonsil was nothing more than a filling-in material similar to fat tissue. This gradually gave way to other theories, such as a relationship between the tonsil and digestion, upon which most divergent views were formed. Bosworth at first considered the function of the tonsil to be a secretory one, aiding the saliva to moisten the food. Rossbach was of the opinion that a sugar ferment was eliminated by the tonsil. Still others held that it might even have power to absorb particles of food taken up by the crypts during swallowing. These theories have been for the most part, if not wholly, abandoned.

One of the oldest and best known theories of the function of the tonsil is its relation to the formation of the blood. Stöhr and others have described the so-called germinating centers in the follicle, in which an active mitosis occurs. The advocates of this theory believe that there is a continual formation of lymphocytes within the tonsil and that the lymphocytes so formed are eliminated partly at the surface of the tonsil while the rest are carried off by the efferent lymph vessels. V. Pluder came to this conclusion from histological examinations, but, as Goerke points out, it is difficult to draw any such conclusions, because with our present knowledge one cannot differentiate between afferent and efferent lymph vessels. Further, even in histological examinations of normal or hypertrophied tonsils he was unable to say that the lymph streams were swimming with lymphocytes. Only in acute inflammation, and in this condition it was probably the afferent vessels, or when the tonsil was in a state of involution, were the vessels found to be filled with lymphocytes.

A more recent hypothesis concerning the function of the tonsil is that the tonsil has an internal secretion. Masini believed the tonsil to have, through its internal secretion, a considerable influence on blood pressure. From animal experiments he noted a marked increase in blood pressure following injection of a tonsillar extract. Scheir made the same experiments and came to opposite conclusions, namely, that the tonsil exerted an effect of lowering the blood pressure. A third experimenter held that the action of the tonsil is *nil*, having absolutely no effect upon the circulation, respiratory or digestive system. More recently Rossi-Marcelli has obtained practically the same results as Masini. He used the tonsils of freshly killed cows and made a watery extract which was repeatedly passed through a Chamberlain filter. This extract when injected into the system produced marked effects upon the circulatory and respiratory centers. The blood pressure is increased, and after intravenous injection the respiration becomes quicker and deeper. The method of obtaining the extract as practiced by Rossi-Marcelli would rule out the objection which Katzenstein has raised to Scheir's experiments.

The two views concerning the function of the tonsil which are held most generally to-day are, first, that the tonsil offers some protection to the body against infection, and the other that the tonsil has no function and is a constant source of danger because of the possibility of its being the entering point for infection.

At the present time there are numerous defenders of both hypotheses, — one maintaining that the tonsil, because of its supposed defensive action, should be removed only in cases where it interferes with the respiration, the ear, or speech. Others maintain that the tonsil is only a relic and, having no real function, should be removed.

Goerke, in drawing his own conclusions after a careful review, believes that the tonsil has some part in the defensive system of the body. Bloch believed that the rapid cooling of the skin as occurs in an acute cold causes a contraction of the tonsillar blood vessels and thereby lessens the blood supply to the tonsil which inhibits the germinating follicles and favors infection. Goerke believes also that the flow of lymph is governed by a difference in pressure which rules at the surface and within the afferent lymph vessels. The pressure within the lymph vessels depends upon the blood pressure; a diminution of the latter causes a slowing of the stream in the afferent vessels, and when the blood pressure is increased the stream is accelerated. The blood pressure acts as a *vis a tergo* and is always positive. When the current is slowed down the portal of infection is opened to infectious material.

Quite opposite to the generally accepted ideas of the direction in the flow of the lymph and secretion is the conclusion reached by E. Barth. He is of the opinion that the current is outward and not inward. The bacteria which are found in the tonsil come from within and are about to be eliminated by the tonsil. Inflammation of the tonsil is probably due to infection from within, and several cases are cited by Barth which put the question of infection of these cases, at least, beyond a doubt. It is not until the tonsil has been inflamed that infection from without is liable to occur. Hypertrophy is only a manifestation to excessive functioning if the tonsil is sound. Diseased and large tonsils are to be removed, that is, if they interfere with breathing. Barth considers the tonsil to be an important aid in the elimination of bacteria from the system. Even allowing that the tonsillar ring has some function in the body, at least in childhood, it does not follow that under certain conditions it may not act as a local trap for the dissemination of infection. Experience has proved that the removal of a large part of the lymphoid tissue of the tonsillar ring does not result in any obvious damage to the body. Even if the faucial tonsils are entirely removed and as much as possible of the pharyngeal tonsil, it is impossible to remove all of the lymphoid tissue. With our present knowledge it is surely better to risk losing the function of the tonsil than to risk leaving a possible source of systemic infection.

TONSILLECTOMY.

Until recently the methods of removal of the tonsils have seldom if ever resulted in removing all tonsillar tissue. It was often considered sufficient to remove only a portion of the tonsil in order to obtain the desired results. Of late, a more complete operation, tonsillectomy, has been strongly recommended by Ballinger,[2] Jackson,[3] Pynchon,[4] Worthington [5] and others.

The technic for tonsillectomy is simple and requires but few instruments. The tonsil is seized by tonsil forceps and drawn somewhat forwards and inwards. An incision is made with a sharp pointed knife, either a straight or right angled knife, through the epithelium covering the tonsil and the plica. The incision should be started in the supratonsillar fossa and carried at first forwards and downwards along an imaginary line corresponding to the margin of the anterior pillar of the fauces. In some cases this line is well marked, and in others very poorly defined, or not at all. If too much traction is made upon the tonsil it tears readily and does not bring out the anterior fold of the pillar. A second although not absolutely necessary incision may be made corresponding to the free margin of the posterior faucial pillar. With a moderate degree of traction upon the upper part of the tonsil, the upper third will disengage itself from the supra-tonsillar fossa. For dissecting the tonsil within its capsule either a cutting or a semi-blunt instrument can be used. The dissection is started in the upper part by pushing to one side the anterior pillar. As the pillar is disengaged from the tonsil the shining white capsule will appear. The first hold of the forceps is replaced by grasping the capsule. The capsule having been once engaged, the rest of the operation is quite simple. The dissection is carried before backwards and downwards until entirely free. It is surprising how much tonsil is removed by tonsillectomy and how thoroughly it is accomplished. For submerged or partly submerged tonsils which may be acting as a focus of infection to some general or systemic disease tonsillectomy certainly has its advantages. A few and timely precautions are enumerated by Jackson.[6] Tonsillectomy is less likely to be followed by hemorrhage than is tonsillotomy; oozing after tonsillectomy is exceedingly rare. It is bleeding from a vessel concealed back of the anterior pillar that is mistaken for oozing. The use of ice to the neck and face, or locally over the wound, and other hemostatics are unsurgical and are liable to be followed by secondary hemorrhage. A gauze sponge pushed into the cavity left by the removal of the tonsil will stop slight bleeding, but it should never be used when the bleeding is from a vessel large enough to be twisted. If there is not a sufficient cavity to permit the retention of a gauze sponge the size of a walnut between the anterior and posterior pillars, the tonsil is not all out and the operation is incomplete. Hemostasis with hemostats, promptly done while the vessels are plainly visible by their bleeding immediately after they are severed, promptly arrests hemorrhage and the torsion forestalls secondary hemorrhage. Any hemorrhage not controllable by torsion can be and should be immediately stopped by rendering the whole region anemic by the ligation of the external carotid artery. An anterior pillar retractor and a few long hemostats are an absolute essential to every tonsillectomy armamentarium.

Either general or local anesthesia may be used. General anesthesia does away with the troublesome gagging, which, except in very nonsensitive throats, is most annoying.

ETIOLOGY OF ERYSIPELAS.

The frequency of erysipelas of the face has long suggested an intra-nasal origin for at least a majority of the cases. A study of this subject has been undertaken by Holmes,[7] from the general literature of the subject and from circular letters sent to many practitioners. He concludes that the streptococcus has proved to be the offending agent, but only under certain conditions of morphology and pathogenicity. It is seldom carried by the air, consequently its presence means either contact from without or inoculation from within the patient. Epidemics may be explained by the former, but the chief aim of the author is to show that in the so-called idiopathic cases it is probable that in most cases we must seek for the cause in the air passages of the patient himself. The streptococcus and the pneumococcus are practically always present in the normal nose and neighboring cavities. An increased virulence of the micro-organism or diminished resistance of the patient may bring on an attack. A large number of cases are cited in which facial erysipelas followed an operation within the nose or accessory sinuses. In most of these it is probable that the disease was due to an auto-infection. In recurrent attacks a probable source of auto-infection can often be found and by proper treatment prevented. The careful review by the author, although along lines previously followed, calls attention to the necessity, often overlooked, of careful treatment of the nose, especially in cases of recurrent erysipelas.

Similar conclusions are reached by Welty[8] from a study of sixty cases of facial erysipelas. In the great majority of cases the erysipelas starts about the nose, and in most of these cases an infection of the nose containing streptococci was present. The erysipelas is the result of the virulent character of the streptococci and the lack of immunity of the patient. He believes that the streptococci attain a more virulent form when one of the cavities is infected.

THE ANTRUM AND VASO-MOTOR RHINITIS.

There is so much that is unknown about vasomotor rhinitis and the subject is of so much practical importance that any serious theory bearing upon it is of interest. That the antrum of Highmore is the center, the disturbance of which is the exciting cause of the trouble, is argued by Schadle, who refers to Fink as having, in 1904, drawn attention to this cavity as furnishing the probable source of the disease. Schadle[9] bases his conclusions upon a series of cases, in which hay fever, asthma or other nervous disturbance was accompanied by evidence of irritation or infection in the antrum, the relief of which was followed by relief of the symptoms. In many of these cases the ostium was either abnormally patent, or there existed a supplementary ostium, which he believes fundamentally contributes to the source of irritation or infection of the sinus. The antrum is abundantly supplied with nerves. In hay fever the sensitive nerve endings present in the antral and rhinal cavities are kept in a state of excitation as a result of local irritation. The secretions arising from inflammation of the antrum are the source of vasomotor nasal disturbances, and the associated reflex symptoms, which are relatively augmented or diminished in proportion to the quantity and irritative properties of those discharges. External excitants, after reaching the nasal passages, enter the antral cavity and through their action induce hyperemia. When the communication between the nose and antrum is absolutely anatomically normal as to size and situation, disturbances of the character mentioned are not likely to take place. Fundamentally speaking, the whole theory rests on anatomical abnormalities. In many of the author's cases, the abnormally open ostium made it easy to wash out the antrum through it, and the sinus often contained a flaky-white or milk-curdle deposit, after the removal of which the symptoms often disappeared for considerable time.

CONGENITAL LARYNGEAL STRIDOR.

It is not of very uncommon occurrence that an infant makes a distinct noise in inspiration, which persists for the greater part of his waking hours. This condition is sometimes the cause of worry, not only to parents but to the attending physician; it is desirable, therefore, that it should be recognized more commonly than it has been in general medical practice. An excellent treatise on the subject has recently appeared by John Logan Turner[10] who quotes the symptoms as described by John Thompson. The infant, who appears in other respects normal, is noticed shortly after birth to have noisy breathing. The noise consists of a croaking sound occupying inspiration, which assumes the character of a high pitched crow when a more forcible inspiration is taken. Expiration may be accompanied by a short croak when the stridor is loud, but at other times it is noiseless. Emotional excitement or any physical cause of deeper breathing, such as exposure to colder air, or the act of crying, may intensify the sound. The child's power of crying and coughing is unaffected. Although the breathing is noisy, it is not accompanied by the slightest distress and there is no cyanosis. The stridor increases in loudness during the first few months and after remaining about the same for a few months more it gradually lessens and finally disappears during the course of the second year of life. The principal interest in the subject lies in the etiology. This may be said to have been guessed at by several authors, whose opinions Turner groups under four heads: adenoid vegetations, compression of trachea by enlarged thymus gland, congenital malformation of the upper aperture of the larynx and an acquired deformity of the upper aperture of the larynx, the result of a disturbance of the co-ordination of the respiratory movements. The first cause suggested, adenoids, which would often occur to the general practitioner, is dismissed by evidence showing that the symptoms proved to have been due to adenoids differ essentially from typical congenital laryngeal stridor, in which condition adenoids are rare and their removal does not influence the character of the breathing. The second cause suggested, compression of the trachea, would undoubtedly cause noisy breathing. An enlarged thymus may cause noisy breathing and operation upon the gland has relieved it. But tracheal obstruction is accompanied by dyspnea and cyanosis; laryngeal stridor is not; and the author differs from those who believe that the thymus has been proved to be enlarged in a greater proportion of cases with stridor than without. The third theory is that the noise is due to congenital malformation of the upper aperture of the larynx. Some typical cases which have died from some other affection have been examined post-mortem and a characteristic malformation varying in degree has been found. The epiglottis was curved backwards with its lateral borders almost in contact and the arytenoid cartilages and aryepiglottis fold were approximated so that the upper aperture of the larynx was represented by a slit.

The fourth theory of etiology is similar, except that it looks upon the deformity as an acquired one, the result of disturbance of the co-ordination of the respiratory movements. This is the view of Turner. His argument is based upon experiments undertaken with larynges of stillborn infants and from children up to the tenth year of life. From these he concludes that in infants in whom the respiratory conditions are normal there may be produced by a sudden and increased inspiratory effort a crowing respiration similar to that which is observed in cases of congenital laryngeal stridor. In the typical stridor cases, owing to the ill-conditioned and spasmodic character of the breathing, which forms the primary element of disturbance in these cases, there is also produced a narrowing of the upper laryngeal aperture and a consequent more or less constant condition of stridulous breathing. The sound is produced mainly at the abnormally approximated aryepiglottic folds. Paterson,[11] from an examination of infants with the laryngoscope and tube spatula, concludes that there is no malformation beyond exaggeration of natural incurving of the infantile epiglottis. He finds no evidence of abnormal breathing as suggested by Thompson and Turner. The stridor is very marked in deep anesthesia. The stridor takes place at the entrance of the larynx by the vibration of the soft structures on the posterior wall. The vocal cords take no part in its production. Variation in stridor is often due to the relative position of the tongue.

THE THYMUS GLAND.

The thymus gland because of its softness has been considered by some authors incapable of producing tracheal stenosis. That a hypertrophic thymus can cause tracheal stenosis has been definitely proven by the reports of Jackson,[12] Theodor [13] and Sato,[14] which have appeared during the last year.

The case reported by Jackson is the seventh in which a cure of thymic asthma has been reported following thymectomy and the only one in which compression by the thymus of the trachea during life with the aid of tracheoscopy could be seen. This same author states that no child should die of tracheal stenosis if a surgeon be at hand who is equipped with a very long tracheal cannula, bronchoscope or similar tube which will reach below the obstruction. All the patients who have died after tracheotomy seem from reports to have died from want of these long tracheal cannulæ. The cannulæ may be worn for an indefinite period of time, but in thymic cases it is better to perform a thymectomy, total or partial. In drawing conclusions from his observations in this case Jackson opposes the view maintained by Friedleben and others that compression of the trachea by the thymus so as to produce stenosis does not occur. Direct tracheoscopy in this case proved that stenosis can happen. Upper tracheoscopy without tracheotomy is not safe in such cases. The tracheotomy wound should be high and can be done under infiltration anesthesia. A long cannula reaching almost to the bifurcation is a great aid during the thymectomy as it lessens the danger to asphyxia. The dyspnea in this same case was expiratory and was worse in the erect position. A radiograph is a valuable aid in diagnosis. Hotz [15] reports a case in which enlargement of the thymus was diagnosed, and at autopsy, disease of the fourth cervical vertebra was found. An x-ray would in this case probably have made clear the seat of the trouble.

An almost complete thymectomy is believed by Jackson to have no effect upon the nutrition or blood. Martuscelli and Vitto-Massei [16] conclude from animal experimentation that absence or removal of the thymus produces changes similar to those of myxedema and that the thymus gland has a function very similar to the thyroid.

BRONCHOSCOPY.

During the past year Prof. Gustav Killian, whose versatile genius has contributed much to laryngology, visited this country. In several cities he demonstrated his latest methods and armamentarium and operated several times. Interest centered especially upon his passing straight tubes into the trachea and esophagus and upon his frontal sinus operation, although his technic for the submucous resection of the septum and his other numerous activities were not forgotten.

Among his latest modifications of the bronchoscope [17] he showed a device for elongating the tracheal tube by passing a smaller one through it. This can be pushed into the bronchus, so the two tubes together are of exactly the necessary length. The smaller tube is held and manipulated by a narrow flat strip of metal, of the nature of a watch spring attached to its upper rim. After cocainizing the pharynx and larynx the tube-spatula is passed into the larynx and the larger tube through this into the trachea. The spatula which is split into two parts is then withdrawn, cocaine again applied and the smaller tube passed into the bronchus. In order to avoid the necessity for a number of forceps of different lengths, he showed an ingenious contrivance for lengthening the shaft of this instrument also.

The light used is either the electric headlight of Kirstein, or a similar light attached by a hinge to the handle of the bronchoscope, which can be moved to the mouth of the tube for inspection and moved back for the introduction of instruments.

In this country, the small distal lamp of Einhorn's esophagoscope, an instrument which never enjoyed a large degree of popularity, had been applied by Chevalier Jackson to the bronchoscope, and the relative merits of the two methods, which might be called the European and the American methods of illumination, were discussed, but without either side entirely winning over the other. Incidentally Jackson,[18] finding that the distal light is not seriously diminished by distance and small caliber of tube, has continued down the esophagus into the stomach, where he is practically a pioneer in the new field of gastroscopy.

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Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

A meeting of the society was held at the Boston City Hospital, Friday evening, Nov. 15, 1907, the President, Dr. A. Coolidge, Jr., in the chair.

Discussion.

Dr. Francis P. Emerson read a paper, on

ROSENMÜLLER'S FOSSÆ AND THEIR IMPORTANCE IN RELATION TO THE MIDDLE EAR.

Dr. G. A. Leland: I am very glad to hear this paper to-night and that attention has again been called to this little cleft in the side of the nasal pharynx. Aside from the question of infection to which we will all agree, there are other reasons why this fossa has some effect on the hearing, and yet, anatomically, it is difficult to see why it should; but in some way its size seems to be of considerable importance. We see many cases where the fossa is very narrow, where there are no bands or adenoid masses in it, but where it is quite deep. These cases will be apt to have a low-toned roaring tinnitus and a normal or very excellent degree of hearing. Here the tinnitus seems to me to be due to the circulation in the enlarged vessels of this thickened mucous membrane, the sound being conducted to the ear through the dense substance of the Eustachian cartilage. But more often the fossæ are filled with adenoidal masses or bridged by synechiæ and then there is more tinnitus of the same character, but often pulsating. Even in these cases, the membrana tympani and the middle ear being intact, the hearing may remain all right till ventilation had been long enough impaired by curtailment of the movements of the mouth of the tube to bring on the insidious variety of adhesive catarrh. Now this ventilation is kept up by the action of the muscles of the tube. It has been said that the tensor palati has been wrongly named: it is not so much a tensor as a dilator, at least that part which goes from the surface of the palate up to the tip of the forward bending cartilage above the lumen of the tube and which pulls the anterior wall of the tube forward when the palate is tense; and this small band of the muscle imbedded in the anterior wall of the tube has been called the dilator tubæ of Rudinger. Now the levator palati has its origin just in front of and below the lower part of the cartilage. The action of its belly as it elevates the palate is to push up the mouth of the tube and push backwards a little the cartilage; and these are about the only motions that are present at the mouth of the tube. If this fossa is narrowed by a mass of adenoidal tissue or by thickened mucous membrane, then we do not have these motions, this pumping action, and hence the ventilation is impaired.

The paper to-night has emphasized this fossa, and I am glad of it because we see so many cases of adenoids being removed for the respiratory effect, not for the auditory. We should thoroughly remove these adenoids in the fossa. I do not believe that the first removal of these adenoids is always sufficient. Here in this fossa of Rosenmüller adhesions come in after the operation for adenoids even when it is thorough, and therefore I think we have again to scrape out these fossæ sometimes after the primary operation.

The tinnitus spoken of is almost pathognomonic. It is of a low tone, a murmur or a roar, sometimes constant but often pulsating, especially on bending over or on slight exertion, and evidently due to the increased capillary circulation in the adenoids or synechiæ when inflamed or chronically engorged. We sometimes get the pulsating tinnitus from chronic engorgement in other places as, for example, in the middle ear, but I think in a large majority of cases the pulsation tinnitus is caused by this mass of tissue in the fossæ of Rosenmüller.

Dr. Jack: I think the paper of Dr. Emerson's is certainly very timely, and we can agree with most of the points he has made. I have insisted at the Infirmary, since the beginning of adenoid operations, that freeing the fossa of Rosenmüller was quite as important from the ear point of view, as removing the adenoids. In fact, a good sized adenoid may remain with the fossa cleared out and the ear symptoms become very much relieved. I think, so far as the ear is concerned, that clearing out the fossa is more important than removing a small sized adenoid which has not, perhaps, interfered very much with breathing.

There is one point which Dr. Emerson has not emphasized as strongly as I wish he had. I heartily agree with his method of clearing the fossa, but I wish he had mentioned the various instruments which have been devised to do the work, if only to condemn them. I think any instrument used in the fossa is likely to do more harm than the original trouble. In using a curette one may lacerate the surface so much as to allow the fossa later to be drawn together by adhesions closing the Eustachian tube so tightly that one cannot inflate by catheter or by any other means. I have seen this follow an attempt with instruments, and I wish to emphasize the point that the finger only should be used in clearing the fossa. This in nearly all cases is sufficient because the adenoids about the orifice are very soft and come away very readily.

Dr. J. W. Farlow: The post-nasal space is oftentimes not so thoroughly examined as it should be, even by experts. Although Dr. Emerson speaks of the examination of these patients with the finger, in those having a very long upper jaw it is very difficult to reach and feel with accuracy. I have often seen these bands in people who had never been operated upon, so that I can hardly feel that the adenoid operation, or any cutting operation, is the cause in many of those cases where the bands are of any extent. I should think that there were a great many more where there had been no operation.

I fail to see how it is possible in all these cases to remove this firm, fibrous tissue with the finger with the patient not under an anesthetic. I have often found that there has been a good deal of bleeding and considerable relief from removing the congestion, but many of the bands in the upper part persisted.

I cannot condemn the use of instruments as Dr. Jack does. I think it is important to make a thorough diagnosis and also to make up your mind that many of these cases are not possible of adequate rupture with the finger. It has seemed to me that where the nose is sufficiently open we can make a post-nasal diagnosis, distinguish the inferior turbinate bone, particularly in the posterior part, get, oftentimes, a very good view of the fossa of Rosenmüller and see the Eustachian folds move back and forth. It is thus possible, sometimes, through the nose to remove or destroy these bands.

It seems to me that this is not a subject that we can dismiss by saying that it can be operated on by the finger easily, as with adenoids; the finger is often inadequate.

Dr. H. P. Mosher: In embryology the fossæ of Rosenmüller have a considerable prominence. They consist of the upper part of the second visceral cleft, the lower part being occupied by the supratonsillar fossa and the tonsil. In the adult they are sizable pockets, half to three quarters of an inch deep. When learning to catheterize the Eustachian tube the fossæ made their presence known by catching and holding the tip of the catheter. As our technic in catheterizing improves we forget about them. Afterwards we think of them only in connection with the adenoid operation in children. In children we feel them but do not see them. In the adult we can see them.

Recently I came across the statement that there was never any adenoid tissue in these fossæ. This is so contrary to fact that I have been unable to forget the assertion, and I have been wondering ever since how any one could come to such a conclusion. The first suggestion that I received that the fossæ had any pathological significance in the adult came from an article which I read in one of the special journals about three years ago, but it was not until this last summer, when Dr. Emerson demonstrated some cases to me, that I gave any attention to the subject. I was a bit chagrined when I found that I had been looking into the vault of the pharynx for years and never had thoroughly seen these fossæ with the mirror. In order to do this I had to alter the technic of my examination of the vault a little. After I did this I was surprised to find so many cases in which there was either evident adenoid tissue in the fossa or there were one or more bands stretching across it. For this knowledge I am indebted to Dr. Emerson as well as for the knowledge of best position of the patient for the finger tip examination of the fossa and for the removal of its contents.

The reader has pointed out clearly the importance of this fossa as a starting place for infection of the middle ear. Some of the results which he has obtained from the cleaning up of the fossæ are striking. In ear conditions any remediable pathology is very welcome.

Dr. E. A. Crockett: I am quite surprised to hear that there is so little in the literature on this subject. The recognition of the bands in the fossa of Rosenmüller must be of quite long duration, because I remember, when I was house officer in this hospital, seventeen or eighteen years ago, seeing Dr. Leland scratch out many. I have been in the habit of doing this, following his example, ever since. I do not know whether it was original with him or not, but he was certainly the first man to call my attention to it. I think the important thing to remember is that you find these masses where there is clinically no adenoid.

I agree very surely with Drs. Jack and Mosher in using the finger and no instruments in the fossa of Rosenmüller. I have three times seen the Eustachian tube removed with an instrument, I will say by men who were not especially experts, but the fact that it has been done to my knowledge a number of times makes me more eager to advocate the use of the finger.

Dr. Emerson, in closing: I have only to add a word in regard to what Dr. Farlow has said as to adhesions. I certainly agree with him that all these cases should be followed by posterior applications of iodin and glycerin, or whatever the operator may prefer, applied until the mucosa is in a normal, healthy condition and until it is certain that no adhesions can reform. I think the recognition of bands certainly must have extended over a long time, but what I wish to emphasize is that with many of these cases a large amount of adenoid tissue is not shown by the mirror, but has to be found by the finger, and any literature on that part of the subject I was not able to find.

Dr. George H. Powers, Jr., read a paper on:

REPORT OF A CASE OF CARIES OF THE MIDDLE EAR, MASTOID PROCESS AND INTERNAL EAR WITH EXTRADURAL ABSCESS, PACHYMENINGITIS AND DESTRUCTION OF THE SEMI-CIRCULAR CANALS.

Dr. E. A. Crockett: I have been asked to discuss this paper, but I really have not very much to say.

I saw the patient; she was brought into my office, sent in by the woman who employed her, just before she went to the hospital for the first operation. She was extremely dizzy at that time; when she came through the door from the waiting-room to the office, she was taken as far as the door by a woman on each side, they let go of her to come through the door and she fell against the side of the door. She frequently leaned against the wall and I thought it was due to weakness; it did not occur to me that it was vertigo. It has been my experience that it is impossible to tell that the symptom of vertigo is the onset of labyrinthine involvement. I am sure I have seen vertigo from pressure on the stapes, but I only remember two cases where the labyrinth was involved. Neither had any of the classic symptoms of labyrinthine disturbance. On the other hand you will see all those symptoms from a stapes involvement. I think, personally, I would be fooled the next time just as quickly.

I think the case was an extremely severe one, and Dr. Powers is to be congratulated upon the result.

Dr. Jack: I cannot refrain from speaking of a case already on record so apropos is it of what Dr. Crockett has said. I had some years ago a very similar case to Dr. Powers', in which the entire osseous internal ear, showing very perfectly the cochlea and semi-circular canals, was removed in one piece. This case had no symptoms whatever of labyrinth disease. There was marked facial paralysis and a complete loss of hearing.

Dr. Philip Hammond: I think we are indebted to Dr. Powers for the very carefully kept records of the case showng the symptoms of labyrinth involvement. Reading between the lines we can see that simply because there is suppurative infection of the labyrinth the patient need not necessarily die.

At the present time much interest is being excited abroad by operations for draining the labyrinth in acute suppurative involvement. As Dr. Crockett has just pointed out, the dizziness with which we are so familiar may just as well come from some pressure in the region of the stapes as from involvement of the labyrinth. In cases that I have seen, as I look back over some of the fatal cases that we had at the Infirmary, the majority of those showing marked vertigo were associated with intracranial disturbance and cerebellar abscess.

To show that one need not necessarily rush into the labyrinth surgically merely because the patient complains of deafness, I want to record a case on which I had operated two years ago. The operation had been looked upon as a successful radical exenteration and I had not seen the patient since until I was hurriedly called out of town a few days ago to see the patient.

The patient had some severe dizziness not associated with vomiting and it was thought likely that there might have been invasion of the labyrinth. On reaching the patient I found that there had been a piece of skin over the facial ridge in the region of the stapes which had been pulled off, possibly a trifle violently, and that had caused most of the symptoms.

Here, then, was a patient who had marked vertigo simply from disturbance around the stapes rather than from any suppurative infection.

Dr. Jack: There is one point in this case that Dr. Knapp perhaps could clear up. I have been thinking over and trying to account for the aphasia which was exhibited in this case. I do not understand why there was any.

Dr. P. C. Knapp: I should agree with Dr. Powers that probing might have something to do with starting up the disturbance, although I recall the case Dr. Jack showed a year ago in which he ran a director practically all over the temporal lobe and the man was talking and understanding perfectly well, but that was two or three years after the operation.

Another thing in regard to the question of the maintenance of equilibrium, as Grasse has shown in his book, the maintenance of equilibrium is not due entirely to the semi-circular canals, but it is a complex process, dependent partly on the semi-circular canals and partly on the muscular sensations. The whole idea of orientation is a complex of sensations derived from a good many different quarters, and therefore when one set of the semi-circular canals is destroyed, the work is not all done by the other set but by the sensory nerve of the ocular muscles and the nerves of the so-called muscles of the limbs.

Dr. Powers in closing: I am glad to hear so many say that it is considered a rather difficult thing to detect an acute labyrinthine involvement. When I first saw this girl she was in bed and I had no means of detecting whether she had any vertigo or not. At any rate, even when she was walking around, unable to stand up, as Dr. Crockett says, you could not absolutely point to any trouble in the labyrinth. Her aphasia interested me. It did not come on a certain day after the operation, but it was a matter of eight or nine weeks. I was very much interested to hear of her later efforts at walking. She is able to walk perfectly well when alone, but when she walks with a companion she is apt to lose herself and stumble. However, that is getting steadily better and, as Dr. Jack's case showed, it is not necessary to have both labyrinths working to have perfect equilibrium.

I think probably the aphasia might have been due to the probing. I am glad to see the matter brought up at this time. At any rate it disappeared.

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PHILADELPHIA COUNTY MEDICAL SOCIETY.

Meeting of Wednesday, March 25, 1908.

The President, Dr. A. M. Eaton, in the chair.

Symposium on Psychotherapeutics.

PSYCHOTHERAPEUTICS; ITS METHODS, SCOPE AND LIMITATIONS.

Dr. Charles K. Mills briefly discussed this subject. The story of psychotherapy, he said, was an old one, but was being retold by new *raconteurs* and with a few additions of value and with many trimmings and adornments. The terms "psychic medicine" and "mystic medicine" are not absolutely interchangeable. In a certain sense mystic medicine — the medicine of the savages, of the oracles, of Mrs. Eddy, of the shrine of whatever sort — has in it the psychic element. It appeals to the superstition or the imagination of the individual, playing upon either his normal or his abnormal suggestibility. The psychic medicine in which the doctor should be continuously interested is one in which the use of mental influence for the relief or cure of disease is resorted to on the same scientific principles as is the use of water, medicine, electricity, the surgeon's knife or the forceps of the obstetrician.

The accepted psychotherapeutic methods of to-day were considered under the heads of (1) the use of hypnotic procedures; (2) the appeal to suggestibility in the waking state and (3) the resort to educational or persuasive measures. Dr. Mills is decidedly of the opinion that suggestion in patients in the state of profound hypnosis should not be resorted to, except in a very few extreme cases of hysteria, in which it should be used on the principle of two evils choosing the lesser. The use of suggestion in the waking state was commended, with some qualifications, however, as, like suggestion under hypnosis, it occasionally might result in harm. The suggester, however serviceable he may be to his suffering patient, does not always effect a permanent cure. The truth is not, as DuBois expresses it, that one is cured as soon as he believes he is cured, but that he is cured when the conditions which have caused and which tend to reproduce his sickness have been removed. In this era of the exploitation of psychic medicine, the community and even the profession has been carried beyond the confines of reason. With regard to the admixture of religion and medicine for the purposes of healing, it should be said that in medicine, as in religion, faith is often essential. Harm is done, not alone to the community and to the medical profession by the psychotherapeutic efforts of enthusiastic but misled clergymen, but eventually to religion itself. Every neurologist of any considerable experience has had pass through his hands many cases of uncured disease in individuals of deep religious sentiments, who have called in their extremity upon Christian Science or some similar healing cult and who, failing to receive the benefit for which they have been led to hope, have lost their faith not only in the efficacy of the cult to heal, but also in its efficiency in matters purely spiritual. The strongest and wisest opponents of osteopathy and faith cures and divine healing and all similar and special non-medical therapeutic methods or organizations are those who, misled by great promises, consciously or unconsciously made, have come back to be cared for and treated by those who only claim for themselves the powers which are given to them through scientific study and experience with disease.

THE USE OF THE MENTAL ELEMENT IN THE TREATMENT OF DISEASE.

Dr. Charles W. Burr referred to the value of the personal element in therapeutics and divided psychotherapeutics into education, encouragement, waking suggestion, suggestion under the hypnotic state and those occult and mystical and, so-called, religious means of cure. He separates encouragement from suggestion because in encouragement there is simply a logical talk with the patient showing him his error in what he thinks about himself, showing him that in very truth his condition points toward cure. In waking suggestion the attempt is made to act upon the patient's "unconscious mind," causing him to create in his own mind without knowing that the physician has caused it, a feeling of well being in the future.

In nervous conditions suggestion is regarded as one of the most valuable agents, but is also considered to be capable of great harm. A case was cited of a patient who was doing well but who had been receiving suggestions from her nurse toward diseases rather than toward health. Concerning hypnotism in general it was said that there is no subject in science in which it is more difficult to attain the truth than in this study. Much has been written upon it by people who have not the slightest idea of how to weigh evidence. That the student is entirely at the mercy not only of the integrity but the intelligence of the subject of hypnotism is another difficulty in the study of the subject.

Regarding the occult means of treatment Dr. Burr believes that there is rapidly growing up in this country a superstition, intellectually as gross as there ever appeared in the world's history. The reason for this superstition is too deep a subject for present solution. While the basis of the occult means of treatment is suggestion, they differ from the suggestion used by the physician in that they claim some power outside the physician himself as being the thing that does the work, and in this in a measure approach the witchcraft of olden time. One evil of the practice of occult means is that persons who could be cured by physical means if treated promptly are rendered incapable of cure by the delay. As to the religious element in therapeutics, Dr. Burr believes it would be a very dangerous practice for a religious body to attempt the cure of sick people without constant medical advice.

AN ANALYSIS OF PSYCHOTHERAPEUTICS.

Dr. F. X. Dercum considered the methods of psychotherapy under the following heads: (1) General methods including mental rest, mental exercise and mental gymnastics; (2) special methods including normal suggestion, direct and indirect; (3) hypnotism and suggestion under hypnotism; (4) the psycho-analytic method of Breuer and Freud. The advantages of the legitimate use of the general methods and of normal suggestion were dwelt upon and commended. Treatment by hypnotic methods was discountenanced on the ground that hypnotism is simply the artificial induction of an hysterical state and that the affection from which the patient already suffers is thus compounded with hysteria. The fallacies upon which the psycho-analytic method is based were pointed out as were also its objectionable features. Freud's theory of the origin of the obsessions through passionate acts of sexual aggression during childhood was considered and its absurdities dwelt upon. The writer further pointed out that all of the functional neuroses were characterized by a more or less marked impairment of the general health, that they were more or less the expression of asthenic states and that improvement in the nervous symptoms ensued upon an improvement of the general health. He also pointed out the advantage of the employment of the general psychotherapeutic measures such as are embodied in rest, isolation and restraining, etc., while efforts to improve the general health are being carried out.

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Book Reviews.

Essentials of Modern Electro-Therapeutics. By Frederick Finch Strong, M.D. 12mo, pp. x, 112, with 98 illustrations. New York: Rebman Company. 1908.

The author's aim has been to produce a "simple, 'up-to-date,' and reliable Elementary Textbook," "not only for students in medical schools, but for the individual practitioner who wishes to learn the Theory and Practice of Electro-Therapeutics." We regret to say that the author has not hit the mark. The work is extremely superficial and quite inadequate for the beginner. In addition the author seems to have a very uncertain knowledge of the elements of electrical physics. He repeatedly uses the term "amperage" as equivalent to resistance, and fails utterly to show the difference between cells connected in series and in surface. No student could learn how to use electricity for diagnostic purposes or to judge of the results from the very brief chapter the author gives. The main part of the book is devoted to the uses of static electricity, and high frequency currents. Here, too, the directions are most inadequate both for the indications for the use and the methods of application. The student or the practitioner would need to supplement this textbook with some trustworthy manual of electro-therapeutics which employed fewer capital letters.

The Immediate Care of the Injured. By Albert S. Morrow, A.B., M.D., Attending Surgeon to the Workhouse Hospital and the New York City Home for the Aged and Infirm, etc. Fully illustrated. Philadelphia and London: W. B. Saunders Company. 1906.

We take pleasure in commending this much belated book, which should fill a genuine want admirably. The author, in his interesting preface, informs us that his writing is addressed particularly to persons uninstructed in surgical injuries, as well as to physicians and nurses.

On account of the popular nature of the book, therefore, he deals largely with simple elementary facts, — briefly, with the anatomy and physiology of the body, with bandaging and simple dressings, and finally with special accidents and their treatment. An excellent feature is his chapter on "The Transportation of the Injured." The book is abundantly illustrated in a simple and somewhat old-fashioned manner, with photographs and wood-cuts which are not unpleasing.

Having said so much we have told in rough the story of this useful publication, which abounds in suggestive information and countless practical directions. We commend it cordially to general practitioners, especially to those living far from surgical centers; to nurses; to life-saving stations; to ship masters, and to those numerous individuals and associations who, in these days, are devoting themselves to the interests of the afflicted in our crowded cities, our mines and workshops.

Confessio Medici. By the writer of "The Young People." New York: The Macmillan Co. 1908.

The anonymous author of this book writes under the general title "Confessio Medici," a series of essays, which he regards as a confession of what he has learned during his life so far as it has gone. A number of papers on such subjects as Hospital Life, Practice, Discipline of Practice, Retirement, constitute the subject matter. The book is entertainingly written, and it does not fail of suggestiveness. That it will command universal agreement is not to be expected. For example, the comments on psychology are hardly fair to a science which is coming into close relations with many practical affairs of life.

Experiments on Animals. By Stephen Paget. With an introduction by Lord Lister. Third and revised edition. New York: William Wood & Co. 1907.

We commented at length on this book when it appeared some years ago in its first edition. The present third edition has been revised, and a pamphlet by Mr. Stephen Paget, written in 1904, and entitled, "The Case against Anti-Vivisection," has been incorporated. To those desiring a broad-minded and fair presentation of a subject of much popular interest, a careful reading of this book is recommended.

A History of Nursing. The evolution of Nursing Systems from the Earliest Times to the Foundation of the First English and American Training Schools for Nurses. By M. Adelaide Nutting, R.N., Principal of Johns Hopkins Training School for Nurses, etc., and Lavinia L. Dock, R.N., Secretary of the American Federation of Nurses and of the International Council of Nurses, etc. In two volumes. Illustrated. New York and London: G. P. Putnam's Sons. 1907.

The authors of this book, which appears in two volumes of 549 and 461 pages, respectively, have admirably succeeded in giving a complete history of nursing, beginning with the pre-Christian period and coming down to our own day. It is evident that this task has not been an easy one, and as a matter of fact we are informed that many years have been passed in collecting material relating to nursing and its history and in searching libraries, both in this country and abroad, for material bearing on the general subject. The first section of the book is taken up with the pre-Christian period wherein is described the primitive nursing in the East, in Babylon and Assyria, among the Jews, and in Greece. The second part includes the period from the first to the close of the eighteenth century, and is concerned largely with the interesting development of religious nursing orders, together with its growth of nursing outside the church, chiefly on the continent of Europe and in England. Part three concerns itself with the period from the close of the eighteenth century to the development of modern nursing. Florence Nightingale naturally stands out as the chief figure in this time of the real development of our modern ideas regarding the care of the sick. A chapter is given to the Treaty of Geneva and the Red Cross, and another to the development of nursing in America. The books are extensively and very attractively illustrated, and are provided with a bibliography of sources and an index. We are glad to call particular attention to this carefully prepared work on a subject which has attained so important a place in modern life that no one should be ignorant of its history. We have no doubt the books will be widely read, not only by those within the medical profession and by the great body of nurses, but also by the laity whose dependence upon nursing has come to be one of the most striking developments of medical practice.

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ANNUAL REPORT OF HARVARD UNIVERSITY, 1906–07.

This important annual report is again belated, coming to hand in April instead of in February, as formerly. It continues to increase in size from year to year and as usual contains much interesting reading and food for suggestive thought.

In turning primarily to the pages devoted to the Medical School, it is gratifying to see the statement that the question regarding which, the previous year, there was doubt as to whether the school could live suitably in its new buildings without incurring an annual deficit, has apparently been satisfactorily answered in the affirmative. The accounts of the year showed that the estimate of the cost of living in those buildings, made in 1901, before their construction was begun, were reasonably accurate and that the total expense for the year 1906–07 did not equal the estimated annual cost. The construction account has not yet been absolutely closed, but it may be safely inferred that $3,000,000 will cover the total cost of the buildings with grading, terracing, tunneling, etc., and of the land; of which amount the land represents $300,000. The Corporation has found itself in a position to set aside certain unrestricted funds for endowment and the President is able to make the following statement:

"The Medical School has issued from its serious undertaking in possession of admirable buildings thoroughly adapted to their uses, and with permanent endowment which will enable it to live comfortably in the buildings, to restore salaries which had to be reduced from 1902 in consequence of the unexpectedly heavy reduction in the number of the students and to increase its activities in both its lines of work,— instruction and research."

Moreover, in addition to this, the Medical School has considered itself, since the printing of this report, to be in a position to advance to the Dental School a very considerable sum of money.

The maximum number of students in the school was 605 in 1901, the last year of entrance without a degree in Arts or Science. From that year the number continuously declined until 1905-06 when it reached 287, from which minimum it has again increased until the present year, when there are 343. The anticipation is entertained that there will be a slow return to the average number before 1901, namely, 565.

In announcing the satisfactory endowment during the year under review of two existing professorships in the Medical School, President Eliot emphasizes once again the attractions which such endowments offer to those disposed to make gifts. In his opinion, " there is no more desirable gift to a University than a fund to endow a professorship; and there is no more desirable memorial in all the world. From the point of view of the university, it ensures the teaching of some important subject so long as the University stands. A named professorship is always an object of desire among university teachers; because in the course of centuries each holder of a named professorship is associated with a long list of worthy men who have been faithful and honored in their day. . . . Again, from the point of view of the family or friends who erect such a memorial, the endowed professorship is a source of unfailing satisfaction, because the memorial serves the generation of students with unbroken continuity and an intellectual inspiration to which the variety in successive generations of teachers only adds force."

In accordance with the purpose of the Medical Faculty and the Governing Boards to rebuild the Chemical Department of the school on a somewhat new plan an associate professorship of biological chemistry has been established and filled. Much that was formerly included under the chemical department has gone over to the laboratories for clinical medicine, maintained in the hospitals and at the school, while toxicology, formerly included in this department, has been dropped. This new department will be closely affiliated with that of physiology on the one hand and with that of pathology on the other.

During the winter of last year a course of thirty-six free public lectures was given at the Medical School, on Saturday evenings and Sunday afternoons, by various instructors connected with the Medical and Dental schools, with the object of instructing the public in a practical way regarding a wide range of subjects. The average attendance at the evening lectures was 127 and at the afternoon lectures 259. The result was so satisfactory that the experiment has been repeated this year with every indication of increasing appreciation by those whom it was intended to reach. In fact, the attendance has frequently been too great for the accommodation.

The choice of elective work by the students of the fourth year continues to show a strong preference for the more practical and traditional subjects of instruction and a wholesome disinclination to specialize at that early stage of the medical career. The tables in the Dean's report show that in anatomy, clinical medicine, surgery, obstetrics and children's diseases the number of choices varies from 42 to 113, whereas the number of choices in no other subject rises above 19. Again, in the summer courses the number of laboratory courses taken has steadily decreased during the last four years and the number of clinical courses taken has rapidly increased.

The Dental School shows again a diminished attendance attributed to the advanced entrance requirements. The Dean considers, however, that the effects of this influence have now exhausted themselves and that a new era for this meritorious school is about to open, especially if a much needed new building can be secured.

The Stillman Infirmary, President Eliot states, continues to be very useful, particularly for the treatment of the somewhat numerous surgical cases to which the rough athletic sports give rise and for the isolation of contagious diseases.

During the year 1906-07 there was no serious epidemic among the students, and in a total of 467 medical and surgical cases at the Infirmary there was but one death — that being from a case of cerebrospinal meningitis. During the present year an outbreak of a comparatively mild form of scarlet fever, said to be due to milk served at Memorial Hall, gives another opportunity for testing the effectiveness of the Infirmary. Its service to the University, the President again says, " it would be hard to overestimate. It has relieved the administrative officers from constant anxiety about sick or injured students, and from no little labor in securing proper care for them; for a small annual fee it ensures to every student in Cambridge the best possible care in case he is sick or injured; and it gives parents who live at a distance the assurance that if their sons fall ill or are injured they will immediately receive, under the most favorable conditions, the best treatment that medical or surgical skill can give."

The Regulation of Athletic Sports, notwithstanding the acceptance last spring by the governing boards of the report of their joint committee, seems to have made but little real progress. The President continues his attack upon football in particular and upon all violent sports in general. An objection adduced against all the violent sports is "that they cannot be played after the college period; a sport which will be useful to any healthy man until he is sixty is a much more valuable college sport than one which he cannot play after he is twenty-three." In his estimation, the means of repressing the prevailing exaggeration of athletic sports are obvious: the number of intercollegiate contests should be reduced to two in each sport during any one season, the rest of the competition in each sport being exclusively home competition. This is obviously a policy which one college cannot pursue alone.

Another serious difficulty presents itself, as stated in the report of the chairman of the Committee on the Regulation of Athletic Sports, in the development of the minor sports — such as basket ball, hockey, lacrosse — to such an extent that the athletic season has become continuous throughout the entire year, and the tested athletes of the major sports are more and more drafted off for use in the winter sports. To meet this tendency the committee passed in 1904 a rule limiting individual participation in intercollegiate athletics to two periods of sport in any one academic year. Although apparently a very reasonable restriction, no rule of this committee has been so severely and generally attacked by the undergraduate body as this.

If the undergraduate body is unable to grasp the wisdom of this restriction what would be its attitude towards a rule limiting intercollegiate contests to two in each sport? The committee is impressed with the difficulty of regulating conduct by rule.

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THE PREVALENCE OF RABIES.

THE medical profession has come to expect a considerable degree of co-operation on the part of the laity in combating various infectious diseases and unhygienic conditions. It is, therefore, the more noteworthy that in a matter of so great concern to the welfare of the people as the existence and spread of rabies a curious antagonism has arisen which shows small signs of abatement. The reasons for this are somewhat difficult to see, but we take it that they are based largely on sentiment. The high place which the dog, who is recognized as the chief carrier of rabies, occupies as a companion of man doubtless plays a large part in the false protection which he enjoys at the hands of the people. In an admirable article Dr. E. C. Schroeder, of the Bureau of Animal Industry, United States Department of Agriculture, puts the matter as follows: "Many lovers of the dog who regard him as man's best friend among animals seem to believe that it is an unjust charge against his admirable character to acknowledge that he may suffer with rabies." Extraordinary as such an attitude may be, we have no doubt it plays an important part in the failure to recognize the menace which a rabid dog may be.

It is no longer possible to doubt the existence of the disease, rabies. It stands on the same basis of exact demonstration as do many other affections of a contagious character, and unquestionably should, therefore, be treated as a danger to the community in the same sense that other infectious diseases are so treated. The horror aroused by the bite of a dog has led to the development of what may be called the imagination theory. Quite apart from the possibility that imagination could produce a series of similar phenomena leading to death in a great number of differently constituted persons, such a theory must absolutely fall when it is considered that rabies occurs among children and animals as well as among adults. In this connection Dr. Schroeder describes two cases in horses which occurred at the Experiment Station. One of these cases, a small mare, was known to have been bitten by a dog affected with rabies. About two weeks after being bitten, she began to show characteristic symptoms, — restlessness, nervousness, loss of appetite, frothing at the mouth. She made frequent attempts to bite, kicked viciously; finally, after repeatedly biting herself, and with many symptoms of general nervous irritation, she died in much agony. In this and in another case observed in a horse, there can be no question whatever that the disease was hydrophobia. Such evidence as this must be conclusive to any who are not hopelessly prejudiced against seeing the facts as they are.

Investigation has shown that, although dogs are the principal source of its spread, the disease is by no means limited to them, but that the infection is somewhat widely spread throughout the animal kingdom. The reason that the disease is regarded as a peculiar attribute of the dog is no doubt due to the fact of the relation in which the dog stands to man. He has perfect liberty, lives on terms of closest intimacy with human beings, and is essentially a sociable animal. No other domestic animal comes in the same degree into these relations. Hence the frequency with which hydrophobia is spread through the dog, which few people fear and which is regarded as a natural denizen of the home.

A very significant advance has been made within the last few years in the demonstration of the existence of rabies by means of the microscope. In 1903 Negri discovered certain small bodies in the protoplasm of nerve cells of rabid animals, which he regarded as pathognomonic of rabies. This supposition has been justified by later researches, so that now there is a quick and presumably sure method of determining the existence of the disease in suspected animals. The microscopic technic is such that an absolute diagnosis of rabies may be made within a few hours.

The frequency and wide distribution of the disease is not to be questioned. A very large number of persons are each year bitten by rabid dogs, of whom up to recent times a considerable proportion died. Fortunately, along with our increasing knowledge of the pathological anatomy of the condition, a successful method of dealing with the disease has been found in the Pasteur treatment. According to Dr. C. J. Bartlett, who reports a typical case in the *Yale Medical Journal* for April, 1908, the former mortality of 80% in untreated bites in head or face has been reduced to 1.25%; the mortality of 60% in those bitten in the hands is reduced to .75%; the mortality of 30% of those bitten in the arm and trunk, and the 15% of those bitten in the leg is reduced to .25%. The total mortality has been reduced to the extraordinary figure of .05%. The success of treatment, however, should not prevent most active measures for the suppression of the disease. The question of muzzling, careful observation of dogs, a knowledge of the first symptoms of the disease, are all essential. Dr. Schroeder thinks that if the following laws could be enforced, rabies would be exterminated:

1. The proper licensing of dogs, and the extermination of those that are not licensed.
2. The proper muzzling of all dogs when they are in public places or on public highways.
3. To hold dog owners responsible for the damage traceable to their dogs.

Whether or not it is possible to pass and enforce such laws is perhaps open to question. In the meantime it is the manifest duty of the people at large to recognize the existence of rabies and to guard against the danger of its spread by every possible means.

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CHELSEA FIRE: PHYSICIANS' RELIEF COMMITTEE.

In the disastrous fire which swept through so large a part of the city of Chelsea, Mass., on Sunday, April 12, a large number of physicians, twenty-three or twenty-four, were burned out, losing, in general, their homes, their offices, their books and their instruments. Of this number at least twenty urgently need assistance. At the call of the President of the Massachusetts Medical Society a meeting of physicians was held in Boston, Thursday, April 16, a Physicians' Relief Committee was organized and an appeal for contributions of funds was issued to the medical profession of Massachusetts. This appeal has been published in the daily papers of Boston and of other cities and has been circulated to some extent through the mails.

There has already been a prompt and generous response to this appeal, but more contributions are very much needed. The receipts will be carefully disbursed to the best advantage in coöperation with the relief committee of Chelsea physicians.

On another page may be found a communication from the treasurer giving a copy of the original appeal, the names of the committee who signed it, a statement of the contributions received and further information of interest to those desiring to help.

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MEDICAL NOTES.

THE HERTER LECTURES. — It is announced that the fourth course of Herter lectures will be given by Prof. Edward A. Schäfer, professor of physiology in the University of Edinburgh. The general subject will be "The Pituitary Body," divided into four lectures as follows: Monday, April 27, "The Ductless Glands and the Doctrine of Internal Secretion"; Tuesday, April 28, "The Structure and Development of the Pituitary Body"; Wednesday, April 29, "The Physiology of the Pituitary Body"; Thursday, April 30, "The Pituitary Body in Disease: Its Relations to Diabetes and Acromegaly." The lectures are given under the auspices of the Johns Hopkins Medical School. Previous lecturers under the foundation have been: Prof. Paul von Ehrlich, Prof. Hans Horst Meyer and Sir Almroth E. Wright.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 22, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 62, typhoid fever 130, measles 316, tuberculosis 59, smallpox 0.

The death-rate of the reported deaths for the week ending April 22, 1908, was 18.99.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, April 18, 1908, was 241, against 216 the corresponding week of last year, showing an increase of 25 deaths and making the death-rate for the week 20.62. Of this number 126 were males and 115 were females; 236 were white and 5 colored; 162 were born in the United States, 77 in foreign countries and 2 unknown; 60 were of American parentage, 147 of foreign parentage and 34 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 46 cases and 4 deaths; scarlatina, 59 cases and 4 deaths; typhoid fever, 206 cases and 18 deaths; measles, 306 cases and 2 deaths; tuberculosis, 50 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 35, whooping-cough 0, heart disease 29, bronchitis 4, and marasmus 5. There were 14 deaths from violent causes. The number of children who died under one year was 40; the number under five years 64. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 81.

There were 3 cases and 0 deaths reported from cerebrospinal meningitis during the week.

Free Bed at the Massachusetts General Hospital. — It is stated that the Nurses' Alumnæ Association of the Massachusetts General Hospital has succeeded in raising a fund sufficient for the support of a free bed for its members at that hospital.

Scarlet Fever in Cambridge, Mass., Traced to Milk. — It is stated as the belief of the authorities that the recent cases of scarlet fever among Harvard students was due to contaminated milk. During two weeks 53 cases were reported to the Board of Health, nearly all of whom ate at one place.

"The Marathon Race." — Out of a field of one hundred and twenty starters, the so-called Marathon race of twenty-five miles, held annually in Boston, was this year won by T. T. Morrissey, of the Mercury Athletic Club, of Yonkers, N. Y., in the time of two hours and twenty-five minutes and forty-three and one-fifth seconds, which was one minute and eighteen seconds behind the record time made in the race last year. The second contestant was less than a minute behind the winner, and the third, thirty-eight seconds behind him. The weather conditions for the race were considered good.

NEW YORK.

Memorial Service for Rev. Jacob Chamberlain, M.D. — On April 13 a service was held at the Marble Collegiate Church, Fifth Avenue, New York, in memory of the Rev. Jacob Chamberlain, D.D., for forty-nine years a medical missionary, who died in India on March 2.

Purpura Hemorrhagica. — An infant eleven months old died in the Harlem Hospital on April 17 from that rare form of purpura known as the morbus maculosus of Werlhoff. It was admitted six days previously, when the parents, becoming alarmed since they feared the child was turning black, first sought medical advice.

Bequests. — By the will of Miss Clemence L. Stephens, of New York, who died on April 1, a large number of bequests are left to charitable objects. Among them, one of $10,000 to the Home for Incurables, $5,000 to St. Thomas P. E. Church for the endowment of a bed in St. Luke's Hospital, $5,000 to the New York Circulating Library for the Blind, $3,000 to St. Luke's Home, $2,500 to the Society for Crippled Children, $2,000 each to St. Luke's Hospital, the New York Ophthalmic Hospital, the Presbyterian Hospital, the House of Rest for Consumptives and the New York Home for Convalescents, and $1,000 to the Manhattan Eye and Ear Hospital.

A Centenarian. — Mrs. Betsy Marvin Gage, of Brooklyn, died on April 15 at the age of one hundred years and five and a half months. She was called the most fortunate investor in life insurance that this country has ever known, as a total investment of $3,300 brought her in $12,000. In 1880, when seventy-two years old and when it was figured that she might have seven or eight years more of life, she purchased an annuity for $2,000, and six years later another annuity for $1,300. Mrs. Gage was born in Connecticut, and it is stated that both of her parents died when comparatively young.

Addition to the Sanitary Code Regarding Oysters. — The New York City Board of Health at its last meeting adopted an addition to the Sanitary Code, to the effect that no oysters shall be kept or offered for sale anywhere in the city without a permit from the Health Department. This new ordinance, President Darlington has explained, is not due to any increase in typhoid fever (the cases of which are fewer than last year), but as the result of investigations as to the cultivation and sale of oysters which have been in progress since 1904. Its aim is to prevent the sale of fattened oysters, taken from beds polluted by sewage. The permit of any dealer detected in selling such fattened oysters will be revoked, and if he then persists in defying the rules of the department he will be prosecuted in the same manner as all other offenders against the Sanitary Code. On the same day as that of the meeting of the City Board of Health, the legislature passed a revision of the forest, fish and game laws, one section of which specifies that hereafter no oysters may be sold in the state which are not "certified to have come from sanitary localities, unaffected with sewage or other pollutions."

Causes of Disability among Public School Teachers. — Nervous breakdown appears to be the most common cause of disability among the public school teachers of New York. In the fourth annual report of the Board of Retirement of the Board of Education, just issued, it is stated that out of 345 applicants on the plea of service for the benefits of the retirement fund since the board came into existence about three years ago, "neurasthenia" was given as the reason for retirement in no less than 124 instances. Next in frequency the following causes were assigned: heart disease, 31; rheumatism, 30; indigestion, 15; deafness, 13. In most of the cases the term of service was considerably over thirty years; in many instances it was more than forty years, and in several, more than fifty years. For the last two years the teachers have contributed more than half the retirement fund, and on Dec. 31 last this amounted to $1,196,992. The aggregate annuity of the 969 teachers now on the roll is $729,917.88, an average of $754.30.

A Large Bequest to St. Luke's Hospital. — By the will of the late William Wheeler Smith, of New York, his entire estate, amounting to nearly $3,000,000, is left to St. Luke's Hospital. During her lifetime his widow is to have the family residence and an income of $8,400 a year, and on her death the whole of the property reverts to the hospital. Had she so desired, Mrs. Smith might have received an income exceeding $200,000, but, after a consultation with her husband, she generously relinquished her claim to the estate, with the exception of the small part mentioned, in order that the philanthropic plans which the couple had in view might be carried out at once. Mr. Smith was a distinguished architect, who amassed this large fortune by his own exertions, and among the buildings which he designed were those of the College of Physicians and Surgeons and of the Sloane Maternity hospitals. It is specified in the will that the bulk of the estate shall be devoted to the care and relief of needy convalescent patients, without regard to their religious belief or nationality. In talks with the trustees of St. Luke's before his death, Mr. Smith had suggested that a sanitarium for convalescents should be established in the country, not far from New York City, but he left the practical working out of his ideas entirely to the discretion of the trustees. Already it is announced that the latter have received the offer, as a gift, of a plot of land which it is believed would be suitable as a site for the proposed institution.

Current Literature.

Medical Record.
March 14, 1908.

1. Bangs, L. B. *Some Observations on the Effects of Tobacco in Surgical Practice.*
2. Peabody, G. L. *Preliminary Report of a Case of Cerebrospinal Meningitis of Streptococcus Origin, Apparently Cured by Subdural Injection of Anti-Streptococcus Serum.*
3. Newcomb, J. E. *Septal Hematoma and Abscess.*
4. Erdmann, J. F. *Renal and Ureteral Calculi Complicating or Simulating Appendicitis.*
5. Kivlin, C. F. *Retro-deviation of the Uterus and Treatment by Shortening the Round and Sacro-uterine Ligaments.*
6. Watkins, V. E. *Traumatic Rupture of the Spleen with Report of a Case.*
7. Goldfarb, S. J. *Relapsing Fever with Report of Two Cases.*

New York Medical Journal.
March 28, 1908.

1. Smith, H. *The Accessory Sinuses of the Nose from an Operative Standpoint.*
2. Tousey, S. *Radiographic Topography of the Frontal Sinus and Other Pneumatic Sinuses of the Face.*
3. Conklin, E. L. *The Relation of Mental Attitude to Bodily Function.*
4. Shoemaker, H. *Bacterial Vaccines of Staphylococci Strains. A Technic for their Preparation.*
5. Sweeny, G. B. *The Influence of Animal Therapy upon the Opsonic Index in Tuberculosis.*
6. Bierhoff, F. *The Newer Methods of Examining the Bladder.*

7. Michaelis, L. M. *Some Remarks on Occipito-posterior Positions.*
8. Drennan, J. G. *The Blood Conservatism of Neurotic Individuals.*

The Journal of the American Medical Association.
March 21, 1908.

1. *Smith, T. *Some Neglected Facts in the Biology of the Tetanus Bacillus.*
2. Brown, O. H. *The Home Treatment of Pulmonary Tuberculosis.*
3. Peters, W. H. *Management of the Sexual Factor in Tuberculosis, and its Relation to the Home Treatment.*
4. King, J. J. *Traumatic Pneumonia.*
5. Allen, A. R. *Injuries of the Spinal Cord, with the Study of Nine Cases with Necropsy.*
6. Tynes, A. L. *The Endemic Occurrence of Cancer in Fishersville, Va., and Vicinity.*
7. Matthews, S. A. *"Cactin" and "Cactina"; an Examination into Their Physiologic Actions.*
8. Roberts, J. B. *A Breach of Trust; the Physician's Use of Secret Remedies.*

1. Smith refers to the groups of cases of tetanus which have been associated with inoculations of vaccine, antitoxic, and bactericidal sera, bacterial vaccines and gelatin. He finds that tetanus spores may resist boiling for one hour. It is obvious, then, that temperatures above 100° C. in the autoclave are the only safeguard for culture media. He considers that the usual disinfection by boiling is entirely adequate for ordinary use, but that any substances which have come in contact with fecal matter or material undergoing putrefaction should be autoclaved at 110° to 115° C. He believes that in the preparation of various sera and vaccines there are so many safeguards thrown about them, that only gross negligence or some hitherto unforeseen occurrence could lead to the production of tetanus. [R. I. L.]

Journal of Infectious Diseases.
Jan. 30, 1908.

1. Clark, C. P., and Simonds, J. P. *A Study of Typhoid Opsonins.*
2. Tunnicliff, R. *Opsonic Index in Diphtheria.*
3. *Simonds, J. P. *Splenomegaly and Banti's Disease.*
4. *Swingle, L. D. *The Similarity between Blood Platelets and Certain Hematozoa.*
5. Manwaring, H. W. *Qualitative Changes in the Third Serum Component.*
6. Manwaring, H. W. *Factors in Hemolysis.*
7. *Pennington, M. E., and Roberts, E. L. *Significance of Leucocytes and Streptococci in the Production of High Grade Milk.*
8. *Rosenau, M. J., and Anderson, J. F. *Review of Anaphylaxis with Especial Reference to Immunity.*

3. The author attempts to describe the differences between splenomegaly and Banti's Disease. While there may be some just question whether or not the cases here collected are properly classified, there can be no doubt that there are two distinct conditions associated with an idiopathic anemia and enlarged spleen. One begins usually in patients over twenty years of age; is characterized clinically by chloranemia, leucopenia, enlargement of the spleen, and frequently by gastro-intestinal hemorrhages, ascites, pigmentation of the skin, rarely by jaundice; and anatomically shows fibrous hyperplasia of the spleen, frequently with cirrhosis of the liver, and varicose veins in the lower esophagus and cardia. The other occurs most often in young people and shows a family tendency; manifests itself clinically by an anemia with low index, absence of leucocytosis, enlargement of the spleen, a prolonged course, hemorrhages from the nose or gums, or under the skin and mucous membranes, and, less frequently, by jaundice and brownish pigmentation of the skin; and is characterized anatomically by diffuse proliferation of endothelium in the spleen, and sometimes in the liver and retroperitoneal lymph glands.

4. Swingle shows that blood platelets in various culture media and in the stomach of ticks may develop flagella, and move about, and resemble hematozoa so closely that great care must be taken to differentiate these flagellated platelets from the parasites. He believes that some authors have been misled in this way in interpreting their observations.

7. Pennington and Roberts have examined many samples of milk, and present a summary of their work, which is as follows: a correlation of the finding of streptococci or of many leucocytes in milk, with the physical condition of the cows in the herd maintained for the production of a very clean milk, would seem to show that in many cases there is a connection between such findings and the condition of the cow, both in relation to specific udder and to systemic affections. Such parallelism seems to obtain for the end of the lactation period, for the beginning of an udder inflammation, for an attack of cow pox, and, possibly, for chemotactic conditions due to high feeding of animals constitutionally unable to transform the increased feed into increased milk.

8. Rosenau and Anderson review the work which has been done on anaphylaxis up to the present time. They believe that the phenomenon of hypersusceptibility has a practical significance in the prevention and cure of certain infectious processes. It gives a possible explanation of the period of incubation of some of the communicable diseases. In certain of the infectious diseases with short periods of incubation, such as pneumonia, the crisis, which commonly appears about the tenth day, may find a somewhat similar explanation. It is evident that diseases produced by soluble toxins, such as diphtheria and tetanus, do not belong to the group now under consideration. The phenomena of hypersusceptibility have been produced in the guinea pig by extracts obtained from colon bacillus, yeast, hay bacillus, anthrax, tubercle bacillus and typhoid bacillus. The hypersusceptibility produced by the colon and typhoid was followed by a definite immunity to the corresponding infection. In the case of anthrax, however, immunity does not follow hypersusceptibility to the anthrax proteid. We are, therefore, not dealing with a general law applicable to all infections, but with certain limitations, as in the case of antitoxic immunity. [W. B. R.]

Surgery, Gynecology and Obstetrics.
April, 1908.

1. *Clark, J. G. *Surgical Phases of Enteroptosis.*
2. *Waiss, G. C. *Dermoids of the Inguinal Canal, with Report of a Case.*
3. *Slocum, R. B. *Arteriosclerosis of the Uterus, with Report of a Case.*
4. Stowe, H. M. *The Death of the Mature Fetus in Labor.*
5. Barrett, C. W. *Fallacies of Intra-Abdominal and Atmospheric Pressure as Supports of the Uterus and Abdominal Organs.*
6. Senn, N. *The Period of Awakening of Military Surgery.*
7. *Russ, R. *Surgical Aspect of Varix of the Lower Limbs.*
8. *Stanton, E. MacD. *The Sequence of the Pathological Changes in Appendiceal Peritonitis.*
9. *De Normandie, R. L. *Breech Presentations: An Analysis of Two Hundred and Fifty Cases Occurring at the Boston Lying-in Hospital.*
10. Summers, J. E. *The Use of Harrington's Solution in the Treatment of Suppurative Inflammations of the Knee-Joint.*
11. Lord, J. P. *Arthrodesis and Tendon Transference in Paralytic Club Feet.*
12. Hall, R. B. *Cyst of the Pancreas, with Report of an Operation and Exhibition of the Specimen.*
13. Morris, R. T. *A Case of Fatty Degeneration of the Kidney.*
14. Collins, C. W. *Abdominal Incision.*
15. Donaldson, H. J. *Report of a Case of Rupture of the Uterus and Prolapse of the Bowel.*
16. *Sandwith, F. M. *Traumatic Case of Diaphragmatic Hernia.*

1. Acknowledging that all cases of enteroptosis should be treated first by medical and mechanical means, Clark believes that, when these fail, surgery may often relieve or cure the condition. He describes three operations for this purpose: Webster's resection of the abdominal wall and suture of the diastatic recti; Coffey's suspension of the transverse colon by omento-ventral suture; and Beyea's

shortening of the gastric ligaments. These may be supplemented by gastro-enterostomy and suspension or resection of the sigmoid. He regards x-ray, after the administration of bismuth, as essential to proper diagnosis of the kind and degree of ptosis.

2. Waiss records an apparently true dermoid cyst attached to the pubic bone and lying in the male inguinal canal, an exceedingly rare tumor in this site.

3. Slocum's report recalls the possibility of sclerosis of the uterine vessels as an occasional cause of post-climacteric metrorrhagia.

7. An elaborate research by Russ seems to add little to our knowledge of the causes and treatment of varicose veins of the leg.

8. Stanton describes admirably the sequence of the pathologic process in acute appendicitis, as observed in a series of operations at different stages of the disease; and employs his findings in defense of Ochsner's method of treatment, and in support of his belief that the diffusion of appendiceal peritonitis is largely due to mechanical causes, and may be generally prevented by absolute quiet of the body and of the alimentary tract.

9. Tabulation of 250 cases of breech presentation shows 57% to have occurred in primiparæ, with a fetal mortality of 13%, and 43% in multiparæ, with a fetal mortality of 7½%. In both series the mortality was much higher when the membranes ruptured early in labor. Hence, De Normandie believes such premature rupture, with or without prolapse of the cord, an indication for manual extraction, which must be done in one half of all cases under any conditions, and is more successful soon after rupture of the membranes than when the child is exhausted by direct uterine compression.

16. After briefly summarizing the literature of diaphragmatic hernia, Sandwith reports a traumatic case in which death followed twenty-nine hours after injury, from strangulation of the stomach and omentum protruded into the thoracic cavity. [R. M. G.]

Annals of Surgery.

April, 1908.

1. *Moynihan, G. A. *The Direction of the Jejunum in the Operation of Gastro-Enterostomy..*
2. *Ottenberg, R. *Transfusion and Arterial Anastomosis.*
3. *Gwyer, F. *On the Thymus Gland Treatment of Cancer.*
4. *Geis, N. P. *The Parathyroid Glands.*
5. *Laffer, W. B. *Acute Dilatation of the Stomach and Arterio-Mesenteric Ileus.*
6. Connel, F. G. *The Removal of Gallstones from the Second and Third Portions of the Common Bile Duct.*
7. *Corner, E. M., and Howitt, A. B. *The Reduction en Masse of Strangulated and Non-Strangulated Herniæ.*
8. Thomas, B. A. *Diagnosis of Renal Disease and Sufficiency.*
9. Babcock, W. W. *Multiple and Consecutive Operations on the Kidneys for Calculi.*

1. In posterior gastro-enterosomy, Moynihan prefers to apply the jejunum to the stomach in such a way that the long axis of the anastomotic opening shall be as nearly vertical as possible. He believes it still more important, however, to make the intestinal incision exactly opposite the mesentery, in order to avoid the longitudinal torsion of the bowel which he regards as the chief cause of persistent vomiting after such operation.

2. Ottenberg describes experiments, on the cadaver and on animals, on the technic of arterial anastomosis by means of a silver ring, over which one vessel is cuffed and then invaginated into the other, both being secured by silver wire. The points of greatest importance he believes are avoidance of infection and of trauma to the vessels, and absolute quiet after operation. He further reports the application of this method in two cases of secondary anemia, and briefly reviews the history of transfusion.

3. Gwyer reports a series of 16 cases of inoperable carcinoma treated with powdered thymus glands of calf by mouth, ʒii t. i. d., nearly all with some temporary improvement in amount of pain, size of growth, and general condition; none with ultimate curative result. Nevertheless he regards the thymus as of definite therapeutic value, especially after operation, as a prophylactic against recurrence. [Its case, like that of trypsin, still remains to be proved.]

4. After a careful description of the parathyroid glands, illustrated by admirable plates, Geis gives the steps of an operation for complete thyroidectomy without injury to these glands or their blood-supply. His technic seems ingenious and valuable, and has the additional advantage of guarding the recurrent laryngeal nerves from section.

5. Continuing his study of arterio-mesenteric ileus, Laffer analyzes all the cases (217) hitherto reported in the literature. He finds a total mortality of 63½%; maximum incidence between the ages of twenty and thirty and after laparotomy, especially operations on the biliary tract. It may also occur from trauma, during serious disease, convalescence, or puerperium, and after error in diet, or emotional shock. The diagnostic signs are violent, repeated vomiting, distention, gastric succussion, normal temperature, anuria and collapse, passing into coma. The best treatment is starvation, frequent passage of the stomach tube, rectal seepage, and Trendelenburg posture to take the strain off the sagging mesentery. There is a copious bibliography.

7. Review of a series of cases of "reduction *en masse*" convinces the authors that this accident occurs even more frequently in subacute and chronic adherent than in acute strangulated herniæ. They emphasize the much greater mortality of such reduction in femoral (72%) than in inguinal (48%) hernia, and the preferability of early operation to the risk of overmuch manipulation and taxis in any strangulation. [R. M. G.]

Edinburgh Medical Journal.

February, 1908.

1. Bruce, L. C. *The Symptoms and Etiology of Mania.*
2. Thomson, A. *Deaths from Gastric and Duodenal Ulcer after Operation for Other Conditions.*
3. Darling, J. M. *The Value of Leucocyte Examination in Suppurative Conditions Arising from Middle-Ear Infection.*
4. Miles, A. *Plastic Operation on the Renal Pelvis for Intermittent Hydronephrosis.*
5. Struthers, J. W. *The Value of Novocoin as a Local Anesthetic for Subcutaneous Use.*
6. Graham, J. M. *Cancer Originating from Bartholin's Gland.*

The Quarterly Journal of Medicine. Vol. I, No. 2.

January, 1908.

1. *Forbes, J. G. *The Pathology of the Cerebrospinal Fluid Derived from Lumbar Puncture.*
2. *Rolleston, C. *A Study of Certain Reflexes in Scarlet Fever.*
3. *Mackenzie, J. *The Extra-Systole: A Contribution to the Functional Pathology of the Primitive Cardiac Tissue.*
4. *Forsyth, D. *The Parathyroid Glands; Part I. Their Function in Relation to the Thyroid Gland.*
5. Gibson, A. G. *A Contribution to the Knowledge of the Action of Digitalis on the Human Heart.*
6. Gibson, A. G. *The Heart in a Case of Stokes-Adams Disease.*
7. *Jones, H. L. *Cervical Ribs and Their Relation to Atrophy of the Intrinsic Muscles of the Hand.*
8. Drysdale, J. H., and Herringham, W. P. *An Undescribed Form of Dwarfism Associated with a Spatulate Condition of the Hands.*
9. *Reid, E., Osler, W., and Garrod, A. E. *On Ochronosis.*

1. This article by Forbes, on the pathology of the cerebrospinal fluid obtained by lumbar puncture, reveals nothing essentially new, but presents several interesting features. In tuberculous meningitis, while the majority of cases showed lymphocytosis, in several there was an excess of polynuclear cells, and in a few others no cells could be found. Tubercle bacilli were found by examination of the clot which formed on standing in 80% of the cases. In meningitis due to the meningococcus, the chronic cases showed an excess of lymphocytes and no bacteria, the acute cases being always accompanied by an excess of

polynuclear leucocytes. In two cases of pneumococcus meningitis the findings were unusual, for the cerebrospinal fluid was clear, and showed no cells or organisms, although the autopsy revealed a well-marked meningitis. The other cases of pneumococcus meningitis showed a cellular exudate, with polynuclears predominating.

2. Rolleston's study of the reflexes in scarlatina, which was conducted on children averaging about seven years of age, showed that the plantar reflex was abnormal in some way in the majority of the cases. This was more likely to be the case, the younger the patient and the more severe the disease. The Babinski reflex was present in 70% of the severe cases, in none of which were there signs of organic disease of the nervous system. The abdominal skin reflexes were also frequently lost. The cremasteric reflex and the knee jerk were usually unaffected. These observations fit in with the well-known fact that the reflexes are unstable in young children, and render it probable that the Babinski reflex, which is normal in children under two years of age, might be found more or less frequently in children with acute infections, who do not have organic disease of the central nervous system.

3. This excellent article by Mackenzie consists of a description of the various forms of extra-systole and an attempt to explain the mode of their production. He recognizes the two forms previously described, the ventricular and the auricular, and adds to them a third new form, which he calls "nodal." These different forms can only be differentiated by means of simultaneous tracings of the venous and arterial pulses and of the apex beat. In the ventricular form of extra-systole the auricular rhythm, as shown by tracings from the veins in the neck, is unaltered, and the extra beat is due to an interpolated ventricular contraction without a corresponding beat of the auricle. In the auricular form, there is a premature contraction of the auricle which is followed by a ventricular beat. In the nodal type of extra-systole, the auricles and ventricles contract simultaneously and prematurely. Mackenzie attributes the ventricular type to an abnormal stimulation, arising in the auriculo-ventricular bundle (bundle of His), the auricular type to such a stimulation arising at some place as yet undetermined in the auricle, and the nodal type to an abnormal stimulus in the auriculo-ventricular (a—v) node. His reasons for these hypotheses cannot be given in a short abstract. Numerous tracings illustrate the article.

4. Forsyth has made an elaborate comparative study of the parathyroid glands in various animals and birds. He comes to the conclusion that the parathyroid may develop into thyroid tissue, and that it has no function of its own, but secretes colloid, just as does the thyroid. That he is wrong in this belief has been abundantly shown by the recent experimental work on the subject, to which he does not allude. The work of MacCallum and others has shown that removal of the parathyroids from man and from various animals produces tetany, which may be controlled to a certain extent by the administration of parathyroid extract. Moreover, it has been shown not only that removal of the thyroid produces myxedema, but that in spontaneous myxedema, although the thyroid gland is practically wholly destroyed or absent, the parathyroid glands are preserved. The functions of the thyroid and the parathyroid are therefore entirely distinct from one another.

7. This interesting paper by Jones describes a type of atrophy of the intrinsic muscles of the hand, which is due to pressure on the lower cord of the brachial plexus by cervical ribs. This type occurs usually in young females, and shows wasting of the muscles of the hands, usually bilateral, and preceded as a rule by tingling and pain. Ten out of fourteen such cases showed on x-ray examination the presence of cervical ribs; in those cases which presented unilateral symptoms, the cervical rib was present only on the corresponding side. Operative removal of the offending ribs is not always successful, because the rib may grow again or the brachial plexus may be injured during the operation. It is, nevertheless, important to recognize this type of disease and to distinguish it from progressive muscular atrophy, which begins in much the same way. The prognosis without operation is relatively good, because the wasting does not entirely incapacitate the patient for work, and never spreads beyond the hand.

9. Reid reports a case of chronic carbolic acid poisoning which showed the typical appearances of ochronosis. The scleræ showed blue-black patches and the ears a bluish discoloration. The urine was black at times, but the color was due to carboluria and not to the presence of alkapton. The patient had used a strong solution of carbolic acid as a local application to ulcers of the leg for a period of thirty years. The abnormal pigmentation diminished to some extent after the cessation of the use of carbolic acid. This case report is followed by an excellent clinical description of the disease by Osler, and a consideration of the urinary findings by Garrod. The condition is apparently a disorder of metabolism and does not shorten life or produce other symptoms than the blackening of the urine and the pigmentation of the cartilages and fibrous tissues, sometimes of the skin. With regard to the urine, three groups may be distinguished: (1) those in which alkaptonuria was present and the urine turned black on standing, owing to the presence of a strong reducing agent, probably homogentesinic acid in most cases; (2) cases of ochronosis without alkaptonuria; and (3) cases associated with chronic carbolic acid poisoning.

[W. T.]

Deutsche Medizinische Wochenschrift. No. 8.
Feb. 20, 1908.

1. *Redlich, E. *A Peculiar Pupil Sign; Hysterical Immobility of the Pupils.*
2. Plehn, A. *The Ocular Reaction in Tuberculosis.*
3. Citron, J. *The Practical Importance of the Ophthalmo-Tuberculin Reaction.*
4. Becker. *Treatment of Acute Attacks of Gout.*
5. *Rosenheim, T. *Severe Chronic Inflammation of the Colon.* (Concluded.)
6. *Braun, W. *Treatment of Acute Threatening Hemorrhage in Gastric Ulcer.*
7. Riese. *Spleen Surgery.*
8. Schumburg. *Alcohol for Disinfection for the Hands.*
9. Oppenheim, H. *Treatment of Phthiriasis.*

1. Redlich has observed that in some cases of hysteria and epilepsy the pupils became much dilated during convulsions or when the patient was doing hard muscular work. During this dilatation the pupils became insensible to light, while the convergence was unimpaired. He suggests that this phenomenon may be due to stimulation of the sympathetic nerve, and thinks it throws light on the immobility of the pupils in certain cases of hysteria, and also that certain voluntary dilatations of the pupil may be due to the same mechanism.

5. Rosenheim reports four cases of severe chronic inflammation of the colon. All were comparatively young, and the manifestations of severe colitis alternated with perfect health followed by return of the debility, persisting symptoms on the part of the intestines, fever and complicating affections, such as swelling of the joints and rectal fistulæ. Bacteriological findings excluded dysentery and the process was evidently due to endogenic auto-intoxication or intoxication from the secondary bacterial proliferation. Treatment of the gastritis proved useful in the first case, restriction to milk and carbohydrates in another and Plehn's calomel cure in a third. Operative treatment to the fistulas relieved the other two cases but did not cure. The calomel cure, which Plehn has recommended for dysentery, consists in giving 0.02 gm. (4 gr.) ten or twelve times a day for three days.

6. Braun describes a new operation for controlling the hemorrhage in acute bleeding gastric ulcers. From experiments on animals he found that, after exposure of the stomach, ligating the afferent vessels in the vicinity of the ulcer and thus shutting off the blood supply to the part was not followed by necrosis even when quite extensive areas were included. Applying these findings to man in cases of severe bleeding and collapse and combining with jejunostomy he thinks the best results can be obtained, particularly with ulcers of the lesser curvature, with or without opening the stomach. The simplicity of the procedure makes it useful in emergency cases. In acute and chronic forms of recurring gastric hemorrhage gastroenterostomy should be the routine treatment.

[L. G. M.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 8.
FEB. 25, 1908.

1. RÖSSLE, R. *Hypertrophy as Showing the Correlation of the Organs.*
2. RIEDER, H., AND KÄSTLE, C. *Further Developments in X-ray Diagnosis.*
3. MUCH, H. *Bactericidin Found in Milk Treated with* H_2O_2.
4. BRAUS, H. *Analysis of the Development of Hyperdactylia.*
5. ESAU, P. *The Tuberculous "Rheumatism of Poncet."*
6. HÜBNER, H. *A New Ward for Prostitutes in the Skin Clinic in Frankfurt a. M.*
7. JACOBY, M. *Breech Presentation, in Bicornate Uterus.*
8. HARTLEIB. *Stab Wounds of the Belly.*
9. BETZ, O. *A New Zinc Paste Bandage.*
10. PFLUGRADE, R. *A New Wall Bracket for X-ray Tubes.*
11. REUSCHEL, F. *Comparative Values of the Different Tuberculin Tests in Childhood.* (Concluded.)
12. ZUNTZ, N. *Josef v. Mering, Obituary Notice.*

[R. D.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 8.
FEB. 24, 1908.

1. *WOHLGEMUTH, J. *The Treatment of Pancreatic Fistulæ by Diet, etc.*
2. *ADLER, M. *The Extractive Content of Dark and Light Meats.*
3. *BÖNNIGER, M. *The Diagnosis of Gastric Ulcer.*
4. MORELLI, G. *On Arterionecrosis.*
5. TSUDA, K. *The Hemolytic Action of Bovine Serum whose Salt Content has been Decreased.*
6. MOT, A. *Modes of Infection in Tuberculosis.*
7. KROMAYER. *A New Method of Mercury Inhalation for Use in Syphilis.*
8. PELTESSOHN, S. *"Automobile-Fracture" of the Scaphoid Bone.*
9. SALGE, B. *The Choice of Children for the Vacation Colonies.*

1. In 1907, Wohlgemuth found, in a case with pancreatic fistula following operation, that increase in carbohydrate diet increased the flow of pancreatic secretion, whereas a diet of proteid and fat caused lessening or absolute cessation of the flow. It was also found that doses of HCl increased the amount of juice secreted by the pancreas, and that sodium bicarbonate in dram doses decreased the amount. The patient was put on a strict diabetic diet, with the result that the pancreatic fistula, which had resisted other methods of treatment, promptly healed. Since that time, four other cases of pancreatic fistula treated in this manner have been reported, resulting in healing of extremely persistent fistulæ. The method employed is to give a diet with only the smallest possible amount of carbohydrate, consisting almost wholly of proteid and fat. A dram of sodium bicarbonate is given three times a day, before meals. In all cases of uncomplicated pancreatic fistula this treatment should be tried with the expectation of good results. The article contains further an analysis of the theories of the action of this treatment.

2. From the results of numerous chemical analyses, Adler concludes that properly cooked meats (beef and veal) show a sufficient difference in extractive content to warrant a division into light and dark meats; that boiling favors the withdrawal of extractives from white meat, more than does roasting; that according to analyses there is ground for regarding dark meat more injurious than white meat, in certain conditions (gout, nephritis, etc.).

3. Bönniger lays great stress on pain as a diagnostic point in gastric ulcer. In many cases, especially those which have no vomiting of blood, it is the only sign of real value. In suspected cases, a sudden increase in the acid fluid in the stomach coming in contact with the ulcerated surface causes increase in the pain, whereas no pain would be felt in a stomach without ulceration. The author, in suspected cases of gastric ulcer, examines the fasting stomach, first by washing out the stomach with 100 ccm. of water, which is then examined for residue, then 100 ccm. of $\frac{1}{10}$ normal HCl are poured into the stomach through the tube. If ulceration is present, a sudden appearance or increase of pain is at once noticed. This pain may be at once controlled, by pouring an equal amount of milk though the tube into the stomach. This method is of great diagnostic value, may be also used as an indicator in convalescing gastric ulcer, as to the progress of healing. When this pain reaction has disappeared, it is fair to suppose that the ulcer has healed over. [R. D.]

Correspondence.

CHELSEA FIRE. PHYSICIANS' RELIEF COMMITTEE.

BOSTON, APRIL 22, 1908.

Mr. Editor: I enclose for publication a statement in regard to the Physicians' Relief Committee in connection with the Chelsea fire. This statement gives a copy of the appeal as originally issued, the names of the committee signing it, the contributions received up to Tuesday, April 21, and some details as to the methods to be adopted for affording relief.

APPEAL.

To the Medical Profession of Massachusetts:

The destitute condition of the physicians who have lost their homes and professional equipment by the Chelsea fire has been brought to the attention of their colleagues in Massachusetts. The loss is especially severe upon these physicians because the fire has destroyed so much of the property of their patients that their services must be practically gratuitous.

All the physicians of Chelsea have responded nobly to the calls for volunteer service during this period of disaster.

An appeal is therefore made to the medical profession of Massachusetts for contributions of funds to be spent in providing the Chelsea physicians with such books, instruments, office rent and furniture and other necessities as will tide them over this emergency and allow them to continue their much needed services to the stricken community.

Checks may be made payable and sent to Dr. R. B. Greenough, treasurer, 377 Beacon Street, Boston, Mass.

A prompt and generous reply is earnestly solicited.

Physicians' Relief Committee: George W. Gay, M.D., chairman; David W. Cheever, M.D.; John G. Blake, M.D.; George B. Shattuck, M.D.; James J. Minot, M.D.; Herbert L. Burrell, M.D.; Herman F. Vickery, M.D.; C. E. Miles, M.D.; Nathaniel R. Perkins, M.D., R. B. Greenough, M.D., treasurer, 377 Beacon Street, Boston, Mass.

The following contributions have been received:

Previously acknowledged in the Boston *Transcript* of Thursday, April 16, and Saturday, April 18: $875.00.

Drs. Nathaniel R. Perkins, $5; John Perrins, $5; J. G. Mumford, $25; A. W. Dudley, $5; Massachusetts Medical Benevolent Society, $500; Mrs. Mary G. Pickering, $250; Dr. and Mrs. E. G. Cutler, $30; Drs. I. W. Brewer, $10, S. G. Underhill, $10, J. A. Denkinger, $2; L. C. L., $100; R. B. Osgood, $20; South Boston Medical Society, $50; George G. Sears, $25; "Senex," $5; H. M. Jernegan, $20; Homer Gage, $25; Miss Peabody, $5; C. M. Green, $25; Mrs. David Cheever, $20; Beverly physicians, $100; Drs. Henry Jackson, $25, Charles H. Williams, $15, K. B. E., $10, J. H. McCollom, $25, F. B. Lund, $25, James C. White, $25. Total, $2,237.00.

1. That this committee is working in co-operation with the relief committee of the Chelsea physicians, of which Dr. Charles Leeds, 1 Crescent Avenue, Chelsea, is chairman.

2. That contributions of books, instruments, etc., may be sent to Dr. Leeds.

3. That certain physicians' supply firms have volunteered to provide instruments and apparatus at cost prices to the Chelsea physicians who suffered by the fire, when properly identified with a letter from Dr. Leeds. The firms who make this offer are: F. H. Thomas Co., 727 Boylston Street; Sampson-Soch Co., 731 Boylston Street; J. Frank Gear, 19 Temple Place; Codman & Shurtleff, 120 Boylston Street.

Very truly yours,
ROBERT B. GREENOUGH, M.D.,
Treasurer, Physicians' Relief Committee.

RECORD OF MORTALITY

For the Week ending Saturday, April 11, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	—	—
Chicago	600	187	Waltham	7	—
Philadelphia	—	—	Pittsfield	13	1
St. Louis	—	—	Gloucester	5	1
Baltimore	235	65	Brookline	10	2
Cleveland	—	—	North Adams	3	2
Buffalo	—	—	Chicopee	8	4
Pittsburg	—	—	Northampton	8	1
Cincinnati	—	—	Medford	5	2
Milwaukee	—	—	Beverly	4	—
Washington	—	—	Leominster	1	—
Providence	70	21	Hyde Park	2	—
Boston	219	66	Melrose	—	—
Worcester	51	17	Newburyport	—	—
Fall River	40	19	Woburn	7	1
Cambridge	23	3	Westfield	3	1
Lowell	53	19	Marlboro	9	1
Lynn	22	5	Revere	7	4
New Bedford	41	17	Attleboro	3	1
Springfield	21	6	Peabody	—	—
Lawrence	18	4	Adams	2	1
Somerville	13	3	Clinton	4	1
Brockton	13	6	Gardner	6	4
Holyoke	6	3	Milford	5	1
Malden	8	5	Watertown	1	0
Chelsea	—	—	Plymouth	—	—
Newton	6	1	Weymouth	3	1
Salem	20	6	Framingham	6	1
Haverhill	11	3	Southbridge	—	—
Fitchburg	10	3	Wakefield	—	—
Everett	10	3	Webster	—	—
Taunton	10	4	Arlington	—	—

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 18, 1908.

W. Chambers, assistant surgeon. Ordered to the Naval Hospital, Philadelphia.

J. S. Woodward, passed assistant surgeon. Detached from duty at the Naval Hospital, New York, N. Y., and ordered to the "Birmingham" when commissioned.

A. D. McLean, passed assistant surgeon. Detached from the Navy Yard, Portsmouth, N. H., and ordered to the "Chester" when commissioned.

C. F. Sterne, assistant surgeon. Ordered to the Naval Hospital, New York, N. Y.

S. H. Dickson, medical inspector. Detached from the Navy Yard, Norfolk, Va., and ordered to the Marine Barracks, Washington, D. C.

I. W. Kite, surgeon. Detached from the "Franklin," and ordered to the Navy Yard, Norfolk, Va.

C. D. Langhorne, surgeon. Detached from the Marine Barracks, Washington, D. C., and ordered to the Naval Station, Honolulu, H. T., sailing from San Francisco, Cal., about May 5.

C. G. Smith, passed assistant surgeon. Detached from the Naval Station, Honolulu, H. T., and ordered home to await orders.

H. C. Shiffert, passed assistant surgeon. Detached from duty with Marine at Camp Elliott, Isthmian Canal Zone, and ordered home to await orders.

H. L. Brown, passed assistant surgeon. Detached from the Naval Recruiting Station, Oklahoma City, Okla., and ordered to the Naval Station, Cavite, P. I., sailing from San Francisco, Cal., about May 5.

P. Leach, surgeon. Ordered to the "Hancock."

W. M. Wheeler, surgeon. Detached from the "Cleveland," and ordered home to await orders.

C. M. Ely, passed assistant surgeon. Detached from the Naval Recruiting Station, Buffalo, N. Y., and ordered to the "Hartford" when commissioned.

W. N. McDonell, passed assistant surgeon. Detached from the "Hancock," and ordered to the Naval Recruiting Station, Buffalo, N. Y.

B. F. Haines, acting assistant surgeon. Resignation accepted to take effect April 15, 1908.

APPOINTMENTS.

The following appointments have been made at the Harvard Medical School: William Lucas, M.D., assistant in Pediatrics for the second half of the current academic year. Ernest Thompson Fraser Richards, M.D., C.M., assistant in Neuropathology, for one year from Sept. 1, 1907.

SOCIETY NOTICES.

The New Hampshire Medical Society. — The one hundred and seventeenth annual meeting of the New Hampshire Medical Society will be held at Concord, May 14 and 15, 1908.

The Fourth International Congress on Electrology and Radiology.—The Fourth International Congress on Electrology and Radiology will be held at Amsterdam from Sept. 1 to 5, 1908. In conjunction with the Congress, an exhibition will be arranged of new or modified apparatus used in clinical and laboratorial work, and also a collection of important radiographs. The Congress and the exhibition will be held in the University.

The Executive Committee:
Prof. Dr. J. K. A. Wertheim Salomonson, *President.*
Dr. J. G. Godl, *General Secretary and Treasurer.*
Dr. F. S. Meijers, *General Secretary and Treasurer.*
Vondestrad 53, Amsterdam.

The Suffolk District Medical Society. — The annual meeting will be held at the Medical Library, 8, The Fenway, Saturday, April 25, 1908, at 8.15 p.m. Papers will be contributed in regard to Typhoid Fever, Business, Reports of Librarian and Treasurer, Election of Officers. 9 p.m., supper, after the meeting.

Chas. P. Putnam, *President.*
L. R. G. Crandon, *Secretary.*

RECENT DEATHS.

Dr. Alexander B. McDowell, of New York, while suffering from melancholia, committed suicide on April 15. He was a son of Gen. Irwin McDowell, who commanded the Union forces at the first battle of Bull Run, and was graduated from the Columbian Medical College, Washington, D. C., in 1891. He had practiced in New York for about three years, and at the time of his death was a clinical assistant at the West Side German Dispensary.

Dr. James King Crook, a well-known practitioner of New York, died on April 15, after a short illness. He was fifty years of age, and was graduated from the medical department of the University of the City of New York, in 1880. For a number of years he was a lecturer on general medicine at the New York Post-Graduate Medical School and Hospital.

BOOKS AND PAMPHLETS RECEIVED.

An Index of Treatment. By Various Writers. Edited by Robert Hutchison, M.D., F.R.C.P., and H. Sansfield Collier, F.R.C.S. Revised to conform with American usage by Warren Coleman, M.D. New York: William Wood & Co. 1908.

Hygiene and Public Health. By Louis C. Parkes, M.D., D.P.H. Univ. of Lond., and Henry R. Kenwood, M. B. Edin., D.P.H. Lond. Third edition. Illustrated. Philadelphia: P. Blakiston's Son & Co. 1907.

Oxford Medical Publications. Diet in Tuberculosis, Principles and Economics. By Noel Dean Bardswell, M.D., M.R.C.P., F.R.S. (Edin.), and John Ellis Chapman, M.R.C.S., L.R.C.P. London: Henry Frowde; Hodder & Stoughton. 1908.

The Differentiation of Black Pigment Found in the Liver, Spleen and Kidneys from Coal Dust or Other Foreign Deposits. By Frederick Gaertner, A.M., M.D., LL.D. Reprint.

The Bacteriology of Diphtheria. By F. Loeffler, M.D., LL.D. and Others. Edited by H. F. Nuttall, M.D., Ph.D., Sc.D., F.S.S., and G. S. Graham-Smith, M.A., M.D. Illustrated. Cambridge University Press. 1908.

Bier's Hyperemic Treatment in Surgery, Medicine and the Specialties. A Manual of Its Practical Application. By Willy Meyer, M.D., and Prof. Dr. Victor Schmieden. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

Transactions of the American Climatological Association for the Year 1907. Vol. XIII. Philadelphia. 1907.

Twentieth Annual Report of the State Board of Charities of Massachusetts. Boston. 1908.

Original Articles.

SOME URINARY INFECTIONS WITH A VARIETY OF THE STAPHYLOCOCCUS ALBUS.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

Four cases of staphylococcus urinary infection that have come under my observation within the past two years have presented so much in common and yet have differed so materially from other staphylococcus infections, that I think they may be fairly considered as constituting a type by themselves.

Though reference has been made to infections of this type by several writers, I believe they are not very generally recognized and are, when chronic, quite likely to be mistaken for another condition. This last fact is my particular reason for calling attention to them.

These cases have presented certain characteristics in common. In the first place the urine has been alkaline but *not* ammoniacal. The sediment has always shown great masses of amorphous phosphates and sometimes even crystals of the ammonio-magnesium phosphate at the time it was passed. There has been relatively little pus, so little that I was inclined at first to believe that the pus was the result of the mechanical irritation caused by the phosphates. Stained specimens of the urine of all these cases have shown large numbers of organisms having the general morphology of a staphylococcus, and in two instances what was said to be the staphylococcus albus was found on culture. The cases have been rebellious to treatment. The picture has been that of an infection with an organism of low virulence or pyogenic power but showing great tenacity when it came to eradication. The chronic cases have simulated to a considerable degree the phosphaturias of digestive origin, that one so often sees.

Case I. A man of forty-three, who came under treatment in June, 1905, because of frequent urination and a turbid urine. He had a history of several attacks of urethritis, the last ten years or more before. Both his urines were turbid and contained shreds. After prostatic massage there was a considerable amount of detritus containing pus and organisms. His urethra took a 26 F. sound easily. After some months, during which his urethra was dilated and irrigated, the shreds practically disappeared from his urine and massage gave nothing abnormal from his prostate. His urine, however, remained persistently turbid and alkaline and microscopically showed amorphous phosphates and, at times, ammonio-magnesium crystals in freshly passed specimens. I supposed that he had a phosphaturia of digestive origin and put him first upon dilute hydrochloric acid and later upon urotropin, but without effect. It was then noticed that his freshly passed urine would not entirely clear on the addition of acids but that it remained slightly opalescent. Aseptically drawn specimens were sedimentized immediately after they were gotten and found to contain great numbers of a staphylococcus which, upon cultivation, was reported to be the albus. Beside the bacteria and phosphates his urine contained an occasional leucocyte.

Bladder irrigations of nitrate of silver and instillations of argyrol had no effect. It was found that he did not quite empty his bladder but had a residual that varied from a half ounce to an ounce and a half. Cystoscopically there was a slight jutting of the prostate into the bladder and a beginning trabeculation; there were, however, no signs of a cystitis. His bladder was irrigated with boracic solution followed by corrosive sublimate (1–20,000) and a little of the latter allowed to remain. It was found after a few washings that by this means his urine could be made acid and brilliantly crystalline, but that if treatment was stopped the alkalinity and turbidity returned. At one time he went for nine days without treatment and with a perfectly clear urine, only to have turbidity recur at the end of that time. In the summer of 1906, I had him wash his bladder with a solution of oxycyanide of mercury, 1–8,000, a little of which he left in his bladder. When done twice a week this would keep his urine clear, but if for any reason he neglected treatment the turbidity recurred.

In spite of his general health being exceptionally good it seemed impossible to rid his bladder of staphylococci. In January, 1907, I began using an autogenous staphylococcus vaccine, in conjunction with his irrigations, though his opsonic index was practically normal. The use of this vaccine gave no result as regards the turbidity, nor did it materially change his opsonic index. As his turbidity can be entirely cleared temporarily by bladder irrigations, it seems fair to suppose that the infection is limited to his bladder, but that enough organisms remain after each irrigation to allow the development of new colonies. These organisms apparently have a urea-splitting action that renders the urine alkaline and causes the phosphates to be precipitated. He has been urged to have an operation that will make it possible for him to completely empty his bladder with each micturition. With this accomplished it seems probable that his infection, which it has been possible to so nearly stamp out, could be gotten rid of.

Case II. A man of forty, whom I first saw at the Boston Dispensary in June, 1906. He had suffered from a urethritis twenty years or more before. Since the death of his wife five years previously he had led an absolutely continent life. Three years before he had an "inflammation of the urethra" which came on without apparent cause and from which he recovered in a month's time. He had remained well until a month before I saw him, when his trouble had recurred. He complained of burning and frequent micturition and a turbid urine. His frequency was three or four times at night and sometimes as often as every half hour during the day. There was no urethral discharge but his urine was very turbid and the last portion of it seemed to be almost wholly pus. Examination of the sediment, however, showed that it was made up of phosphates instead of pus and that it contained a very little blood; only a comparatively few pus cells were found. The urine would not wholly clear with acids and the residue was found to be made up of great masses of cocci with a relatively few pus and epithelial cells. Tubes that were inoculated from aseptically drawn urine were reported to contain a pure culture of the staphylococcus albus. Tubercle bacilli could not be demonstrated in the sediment and a guinea pig that was inoculated at this time proved to be negative. His urethra was of good caliber and his bladder would hold six ounces of fluid. The bladder was very hard to wash clean and was everywhere red, swollen and light-absorbing, with places near both ureters where there had been a loss of the superficial epithelium and to which masses of phosphatic material were clinging. Though this man's acute symptoms improved rapidly under bladder irrigations of boric acid and nitrate of silver, his urine remained persistently alkaline and turbid and would deposit a thick layer of phosphates that would be one sixth to one fourth the height of the column of urine. As the bladder became less swollen the right ureter could be seen slightly patulous and emitting turbid fluid. A catheter passed to the right kidney pelvis gave a turbid urine that contained a few pus and mononuclear round cells as well as large numbers of staphylococci, amorphous phosphates and ammonio-magnesium phosphate crystals. The kidney pelvis was irrigated with oxycyanide of mercury and the bladder with corrosive sublimate, beginning with 1–32,000 and increasing to 1–20,000. Under this treatment the phosphaturia diminished steadily. By the latter part of August his urine was faintly acid and clear the greater part of the time. The kidney pelvis, evidently the fountain head of the infection, was irrigated but a few times, while the bladder was washed several times a week. He was forced to go to France early in September and has not been heard from. At the time of his departure he had no symptoms other than an occasional slight turbidity of his urine. His bladder was practically normal and the infection was apparently dying out.

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* Read before the American Urological Association at Atlantic City, June 3, 1907.

In both of these men the periods of acidity and transparent urine followed the use of antiseptic irrigations and were attended with a great diminution in the number of staphylococci.

CASE III. A man of thirty-two, first seen in September, 1905. He had the history of a stubborn urethritis eight years before. Again, two years before, he had another urethritis that was probably non-gonorrheal in origin. After his urethral discharge ceased he continued to have smarting on urination and would pass white material at the end of micturition. This material was granular and gritty at times. Occasionally some would remain in the meatus and drying there would give him annoyance at the next micturition. He had been treated with sounds and local applications but without relief. Both his urines were turbid and alkaline and there were shreds in the first. His prostate showed some changes on rectal palpation and the urine voided after massage showed an increased turbidity. No stone could be felt in his bladder.

I supposed that his turbid urine and the passage of gritty material at the end of micturition were due to a pronounced phosphaturia of digestive origin, and gave him at first mineral acids and later urotropin, but without benefit. His shreds and prostatic condition cleared up under the use of sounds, massage and instillations of nitrate of silver, but his urine remained turbid and he continued to have times when he passed "gritty" material. A more careful examination showed that his urine did not become brilliantly transparent on the addition of acids, though it cleared very materially. The sediment showed practically no pus but great quantities of amorphous phosphates. When stained, freshly drawn specimens of urine were found to be loaded with a coccus having the general morphology of a staphylococcus. The urine was found to remain persistently alkaline under the administration of mineral acids, benzoate of soda, urotropin, boric acid, salol and beta-napthol. Small amounts of rather strong corrosive sublimate, a dram of a 1-8,000 solution, were used in his bladder at intervals. He was seen irregularly over a period of about six months when, though he was perhaps somewhat relieved, he was by no means well. He was unwilling to allow a cystoscopic examination and I am therefore unable to say that the process was confined to his bladder, though it is my belief that it was. There was never any renal tenderness or a mass in either loin.

A year after he was first seen he reported with his urine in much the same condition as it had been at first. He could not return for treatment at frequent intervals and he was advised to irrigate his bladder twice a week with a 1–12,000 solution of oxycyanide of mercury. I do not know whether or not this treatment had any effect as I have not seen this man for six months and have been unable to get into communication with him.

CASE IV. The following case is an example, I believe, of an infection of similar type to those reported above. His infection was quiescent and probably confined to his bladder the first time he was seen. On the second occasion he was suffering from an acute invasion of his left kidney pelvis.

The patient, a man of twenty-eight, was first seen in June, 1905. He had suffered from repeated attacks of gonorrhea over a period of seven years. The year before he had noted for the first time the appearance of white material at the end of micturition. His urines were both turbid, though they cleared largely on the addition of acids. There was at this time beside the deposit of phosphates a moderate amount of pus and some mucus due to a chronic urethritis and a post-gonorrheal involvement of his prostate and vesicles. He was advised to have massage of his prostate and vesicles together with irrigation of his urethra and to take acids for his phosphaturia, the significance of which escaped me at that time.

A year later I was again asked to see this man. At this time he had been running a temperature for about a week, with pain in his left loin and some spasm of the abdominal muscles on that side. The pain was colicky. His urine was alkaline and contained a little pus and mucus, some microscopic blood, a large amount of amorphous phosphates and what appeared to be staphylococci. His temperature at the time of my visit was 101°, his pulse 80. There was a vague fullness in his left loin with tenderness on pressure. His bladder which held eight ounces easily showed a slight grade of cystitis and was everywhere covered with little masses of phosphate that gave the appearance of a miniature snow flurry when stirred up. The left ureter was red and pouting and turbid urine could be seen issuing from it. The right ureter looked normal. The process seemed to me to be an infection with the same organism that I had previously encountered in the other three cases and therefore probably of low pyogenic power. As he was anxious to avoid an operation at that time if possible, I advised watching him for a few days. He left the hospital with a normal temperature in less than a week. The process appeared to me to be pyelitis due to this same urea-splitting staphylococcus. His colic depended upon the passage along the ureter of masses of phosphatic material and mucus. Further than that he has had no repetition of the trouble, I have not heard.

All these cases presented an alkaline but not ammoniacal urine, that contained constantly at the time it was voided a large amount of phosphates; always the amorphous and occasionally the ammonio-magnesium phosphate. The urines, aseptically drawn, showed the presence in large numbers of a staphylococcus, which in two instances was said to be the staphylococcus pyogenes albus and was undetermined in the other two cases. The alkalinity of the urine could not be influenced by the internal administration of such drugs as ordinarily render a non-infected alkaline urine acid. The urine could, however, be made acid and the phosphate to disappear by the use of antiseptic irrigations. The periods of acidity corresponded with a marked diminution in the numbers of organisms present.

In one instance the infection seemed limited to the bladder, in another it was undetermined, while in the other two it was demonstrated that the infection had reached the kidney pelvis and that the urea-splitting action took place there. The last case is an example of an infection that was for some time limited to the bladder but that later invaded the renal pelvis. This shows the advisability, as a prophylactic measure, of making patient attempts to eliminate the infection in those cases in which we find it limited to the bladder, even though it is not giving particularly annoying symptoms.

The bacteriological aspect of these cases has not been followed up as I should have liked, and though morphologically the organism has appeared like the staphylococcus pyogenes albus and had similar cultural characteristics in two instances, I doubt if it was this organism. The clinical picture has certainly differed from other infections with the staphylococcus albus that I have seen.

Brown, in his work on the bacterial flora of cystitis and pyelitis in women, has taken up the subject of these infections and spoken of this organism as being a staphylococcus with a very slight ability to liquify gelatin. He has also called attention to the very considerable number of names that different writers have applied to an organism having a similar action. Whether these organisms are identical or not I cannot say, nor does it materially affect the point that I wish to bring forward, which is, that we have urinary infections or instances of bacteriuria which, when not acute, simulate very closely a phosphaturia of digestive origin. A careful examination, however, will show that the turbidity of the urine in these cases due to staphylococcus infection will not wholly clear up on the addition of acids, though it may seem to on casual examination. These urines will, when freshly drawn, be found to contain great numbers of a staphylococcus which resembles the staphylococcus albus. Infection with this type of staphylococcus are not characterized by any considerable pyogenic action even when acute, as illustrated by the last case, but by a urea-splitting action that alkalinizes the urine and brings about a very marked precipitation of the phosphates. As the alkalinity of the urine is bacterial in origin in these cases it is not influenced by the usual treatment for phosphaturia. I believe it is infections of this sort, in which the phosphaturia and not the infection is the striking feature, that have led to the idea I have sometimes heard advanced, that severe phosphaturias may occasionally, through the mechanical irritation they produce, give rise to pus production and that when of long standing they may predispose or even lead to actual infection. I think that the explanation of many of the more rebellious and long-standing phosphaturias is to be found in infections of this sort.

Though the pyogenic power of these organisms seems low, two of the cases showing practically a bacteriuria, the tenacity that the infection shows is very considerable. Escat has reported two cases of this sort that had existed for fifteen and twenty years respectively at the time they were seen by him and which he was unable to influence to any marked degree by treatment.

In my experience the mercury compounds have seemed more efficacious in the treatment of these infections than the silver compounds. The various drugs that are commonly used to render the urine acid as well as the various urinary antiseptics seem to have little effect.

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THE TREATMENT OF ABNORMAL RIGIDITY OF THE CERVIX UTERI BY DEEP INCISIONS. A REPORT OF TWO CASES.*

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I DESIRE to express my deep obligation to Prof. Charles M. Green, the Chief of Staff of the Gynecological Department at the Boston City Hospital, for the opportunity of operating on the two cases here reported.

CASE I. The first case was a primigravida, sixteen and one-half years old and six months pregnant, who entered the Boston City Hospital, Oct. 4, 1907, with a characteristic history and the physical signs of eclampsia. Her general condition was extremely poor. Pulse 120, irregular and feeble. Temperature 103°. Respirations 40. A vaginal examination showed an undilated os and a rigid cervix with the supravaginal portion taken up, but with the infravaginal portion remaining.

The patient was anesthetized and for twenty minutes it was attempted to dilate the os by means of the branched steel dilator and the finger, but with no result. The pulse rose to 180 and was barely perceptible at the wrist. It was apparent that the patient could not stand either a long etherization or a prolonged dilatation and all efforts directed towards this method of delivery were abandoned. An attempt was now made to drag the cervix down to the introitus by means of a double hook with the idea of performing a vaginal Cesarian section, but because of the height of the cervix in the vaginal vault, it was found impossible to bring it near the outlet. Accordingly, it was decided to perform multiple deep incisions of the cervix to effect delivery. Exerting as much traction as seemed to be safe to employ, by means of a double hook grasping the posterior cervical lip, three deep incisions were made with a knife through the infravaginal cervix extending from the border of the external os to the utero-vaginal junction, the first to the left, the second to the right and the third anteriorly. The hemorrhage caused by this procedure was striking and it seemed as though the patient must bleed to death at once. The hand was immediately introduced into the uterus without difficulty and a version rapidly performed, extracting a living six months' fetus which weighed about two pounds and lived for twenty-five minutes. The delivery caused no tearing of the cervical incisions. The profuse hemorrhage continued until the fetus was extracted but the effect upon it of emptying the uterus was instantaneous, as it ceased immediately. The placenta was extracted at once and the uterus shut down promptly. Three catgut sutures were now taken in each one of the cervical wounds, bringing the incised tissues into apposition. A small wick of sterile gauze was inserted into the cervical canal and the vagina was packed with sterile gauze. On removal from the operating table, the patient's pulse was barely perceptible at the wrist, varying in rate between 180 and 200. Three hours later, she had a pulse of somewhat improved quality with a rate of 160. The temperature was 105.2° and the respiration 60. The pulse continued to improve in quality, and in forty-eight hours had fallen below 100. She continued to make slow but steady improvement, both in her general and her eclamptic condition, up to the thirteenth day, when she had two rectal hemorrhages, each one consisting of about a pint of bright red blood. These produced a state of profound collapse. The patient rallied, however, and showed a progressive improvement, recovering gradually from her shock. The urine showed the usual changes found in eclampsia.

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* Read by invitation before the Obstetrical Society of Boston, Jan. 28, 1908.

The pelvic condition was apparently satisfactory up to the twenty-fifth day, when a purulent vaginal discharge appeared and the temperature rose to 101.8°. It was found on vaginal examination that the anterior and right cervical incisions were well healed, but the entire length of the left incision was open and discharging pus. The uterus was in anterior position, movable and not enlarged or tender. There was moderate general pelvic tenderness. On the twenty-eighth day, the patient insisted upon going home and accordingly left the hospital. At this time the pulse was above 130, of fair quality, and the temperature above 101°. Her general condition was still grave, but was showing a gradual improvement. Three days after reaching home, she got up and did some housework, and from then on remained up and about. I saw her at home seven weeks after delivery, at which time she presented the appearance of perfect health and seemed to be in excellent general condition. I saw her at home again on Jan. 24, 1908, four months after delivery; and found her in good general condition. A vaginal examination showed the right and anterior cervical incisions to be well healed and there was also a partial healing of the left one. The uterus was in the first degree of retroversion, but movable and not enlarged or tender. No scar tissue could be made out, either in the vagina or cervix. There was nothing abnormal to be felt in the pelvis.

Case II. The second patient was a multigravida, twenty-eight years old and nearly five months pregnant, who entered the Boston City Hospital, Jan. 5, 1908, with the history of having had several vaginal hemorrhages during the past two months. Her general condition was fair. Pulse 98, of poor quality. Temperature 98.6°. Vaginal examination showed a multiparous undilated os with a rigid cervix which was not taken up. In view of the history, a diagnosis of placenta previa or detached placenta seemed probable, and it was deemed advisable to deliver the patient.

Under ether, about fifteen minutes were spent in an attempt at instrumental and manual dilatation and at the end of this time only the finger could be passed through the external os, although considerable dilatation of the internal os had been secured. A complete placenta previa was felt and a profuse hemorrhage resulted from the attempt at dilatation. The pulse rose to 148, of poor quality and became irregular. In view of the serious condition of the patient and of the slight progress made by the method employed, it was decided to resort to the deep cervical incisions for delivery. A long clamp was applied to each side of the cervix placed just above the lateral angle, the tip extending to the vaginal vault. An incision was then made posteriorly with two strokes of a straight scissors through the infravaginal cervix extending from the border of the external os to the utero-vaginal junction. Similar incisions were then made on the left side of the cervix, next on the right side and lastly anteriorly. The clamps were left *in situ* for about two minutes and then removed. There was practically no bleeding either at the time of making the incisions or following the removal of the clamps. Three fingers were now easily introduced into the uterus and the fetus and placenta removed. The incisions were repaired in the order in which they were made, three catgut sutures being used to each cut.

The convalescence of the patient was satisfactory and without complications and she was discharged from the hospital in good general condition on the fifteenth day. A vaginal examination at the time of discharge showed the cervical incisions to be well healed except for a superficial separation of the left one. There was a slight bloody discharge from the os. The uterus was in the first degree of retroversion, but easily replaceable and not enlarged or tender. The vaginal vault was normal.

Definition. — Deep incisions of the cervix uteri, as first proposed by Skutsch and first performed by Dührssen, are frequently confounded with vaginal Cesarian section, but the two procedures are entirely different. Dührssen defines his deep cervical incisions as simply the section of the vaginal part of the cervix, the portio vaginalis after complete dilatation of the supravaginal portion. In vaginal Cesarian section on the other hand, not only is the cervix entirely divided, but the lower uterine segment is also incised. The anterior and posterior vaginal vaults are opened and the bladder, as well as the anterior and posterior peritoneal pouches, are pushed up.

Indications for making the incisions. — Delivery by the aid of this method is indicated, when it is imperative to empty the pregnant uterus in the shortest possible time by the vaginal route, and the patient has a rigid cervix which is not dilated. The prime indication is in a primiparous eclamptic.

Abnormal rigidity of the cervix most often occurs in elderly primiparæ and in multiparæ, when several years have elapsed since the birth of the last child. There is generally in these cases a lack of elastic tissue of the cervix, or atrophy of the elastic fibers has begun.

Necessary conditions for making the incisions. — Dührssen insists that the deep cervical incisions as carried out by him are only to be made when the entire supravaginal part of the cervix is completely taken up and incomplete dilatation is restricted to the vaginal portion. The condition exists when the presenting part of the fetus is separated from the vagina simply by the thick septum of the infravaginal cervix. The vaginal portion presents under these circumstances the broad edge of the external os (Fig. I. O. E.)

which takes its origin from the vaginal wall at A. Oftentimes this edge presents a slight projection (Fig. 2, O. E.), the part of the vaginal portion which has not yet disappeared. This kind of dilatation appears ordinarily in primiparæ, for in multiparæ generally, in an incompletely dilated cervix, the narrowest point lies above the vaginal attachment (Fig. 3, O. I.)

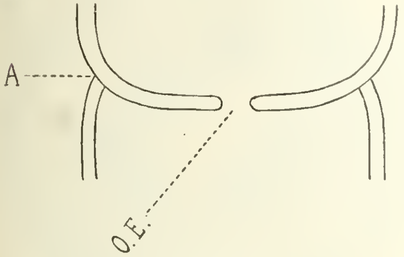

Fig. 1. After Dührssen.

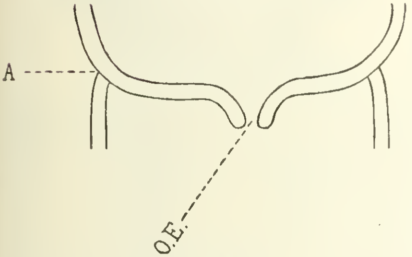

Fig. 2. After Dührssen.

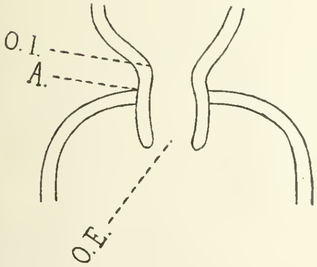

Fig. 3. After Duhrssen.

In case the fetus is at a viable age, Dührssen states the following conditions which are requisite for obtaining a living child:

"1. The pelvis must be of normal size, or at least not markedly contracted.

"2. The child must not be excessively large.

"3. The child must not have any abnormal presentation or position, or if it does, it must be possible to correct the abnormality by means of version or external pressure.

"4. The lower third of the vagina must be sufficiently dilatable to allow the entire hand to pass. When this is not possible, the necessary dilatation must be secured by means of a vagino-perineal incision."

Technic of making the incisions. — The making of four incisions, two lateral, an anterior and a posterior one, is essential in order to effect delivery and it is sometimes necessary to make six. (Fig. 4.) Two lateral cuts are not sufficient, for by this method, two flabby lips are formed, which on extraction of the fetus act as a firm band in front of the presenting part and prevent its descent. The posterior incision should be made first, then the two lateral ones and the anterior last. The cervix should be steadied at the place where the incision is to be made between the index and middle fingers of the left hand, or seized by two pairs of double hooks and the incision carried between them by means of two strokes of a straight scissors extending from the border of the external os to the utero-vaginal junction. In making the anterior and posterior incisions, the palmar surface of the supporting fingers are directed toward the left, and in making the left incision, they are directed anteriorly. The incision on the right is most difficult to make, and it is most easily performed by standing to the right side of the patient and passing the two fingers of the left hand into the vagina, with the thumb down. While the palmar surface of the fingers steadying the cervix are now pointing anteriorly and slightly to the right, the incision is made to the right and generally from necessity somewhat posteriorly. When the cervix is of firm consistency, the fingers suffice to steady it satisfactorily, but if it is soft and flabby, then it is necessary to apply the double hooks in order to obtain proper fixation and carry the incisions to the vaginal vault. Zweifel recommends the passing of two clamps under the guidance of the index and middle fingers of the left hand to the junction of the edge of the infravaginal cervix with the vagina and locking them on the cervical wall. While an assistant makes traction on the

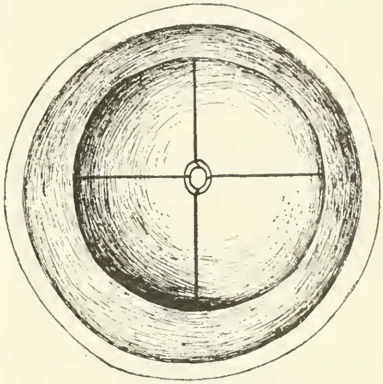

Fig. 4. After Edgar.

handles of the clamps, it is an easy procedure under the guidance of the fingers to divide the infravaginal cervix with scissors, the tip of the clamp serving as a mark for the end of the incision. By this method practically a bloodless operation is obtained. If there is but little room, particularly on the sides, then it is well to apply but one clamp, which will furnish sufficient fixation.

Although Dührssen insists that multiple deep incisions of the cervix should not be employed unless the supravaginal cervix has disappeared, it is possible to make use of this procedure when no taking up of the cervix has occurred as mentioned by Edgar, and as was done in my second case. In this method the cervix is mechanically dilated until the internal os has disappeared, when the dilatation is at once completed by means of the incisions.

It is important to carry out the incisions in the order mentioned, for if the first one is made off to one side, then in many cases the posterior lip will retract so much that it cannot be drawn down properly for dividing and the posterior incision will either have to be abandoned or made too short. This is exactly what happened in my first case. I made the lateral and anterior incisions and finding that it was impossible to bring the posterior lip down satisfactorily, I was obliged to give up the posterior one. It is also disadvantageous to have the anterior incision follow the posterior one, because by reason of these two incisions, the flaps on either side are made lax and, as a result, their division is rendered much more difficult.

Edgar points out that care should be taken not to include a fold of vagina in the incision, for this in case of the posterior incision might enter into the pouch of Douglas, or in case of the anterior incision, into the utero-vesicle pouch or bladder. In the case of a lateral incision, this mistake might result in severing a ureter.

Question of the incisions tearing. — The opponents of this procedure say that it should never be employed, because in the delivery of the fetus the incisions are liable to be prolonged by extensive tears into the vaginal vault, and the lower segment of the uterus. Dührssen asserts that this never occurs when the incisions have been properly made, that is, when they have been carried to the vaginal vault, because under these circumstances they allow plenty of room for the extraction of the fetus without increased tension being brought to bear on their terminations. (Fig. 5.) When only two lateral incisions are made, lacerations are apt to occur, by a tearing from the ends of the incisions off into the vaginal vaults, and up into the lower segment of the uterus, for the anterior and posterior lips of the cervix are drawn tight and constitute an obstacle to delivery. The incisions did not tear in either of my two cases, but they were not at full term.

Hemorrhage from the incisions. — This can be prevented by the application of clamps, as previously described, prior to making the incisions. By allowing the clamps to remain in place for a few minutes after the incisions are made, all bleeding can be prevented. The uterine artery cannot be injured, because it lies much higher than the incisions extend. Even the small vaginal arteries are uninjured, because no trauma is done to the vagina. The profuse hemorrhages reported formerly, after carrying out incisions of the cervix, occurred because only superficial incisions of the cervix were made and then these tore further beyond the attachment of the vagina at the time of delivery.

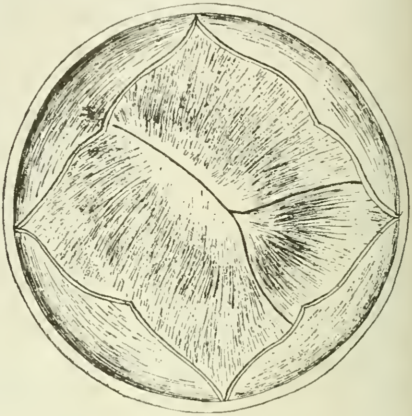

Fig. 5. After Edgar.

Suturing of the incisions. — Dührssen does not consider a suturing of the incisions necessary for the purpose of stopping bleeding. He also considers it unnecessary to repair the cervix, and states that no better healing takes place if an immediate suturing is performed because an exact apposition of the cut surfaces is practically impossible. Suturing was carried out in both of my cases, and there was no difficulty in obtaining excellent opposition of the incised tissues.

Infection. — With the usual aseptic precautions, there is no reason why the chance of infection should be increased because of the deep cervical incisions.

Scars resulting from the incisions. — Another important reason for making the posterior incision the first one is because of the subsequent scar formation in the vagina. The retraction of the tissues following the cuts is greatest after the first one, so if the posterior incision is made first, it becomes the longest of the four. At a subsequent vaginal examination, whether the infravaginal cervix has healed or not, superficial scars can frequently be found in the vaginal vault. When the posterior scar is the longest one, it tends to produce an anteversion of the uterus, but if the anterior or lateral scar is longest, then a retroversion or a lateral version may result.

These scars in the vaginal vault do not arise because the incisions have been carried too far, but depend upon a retraction of the upper end of the cut in the infravaginal cervix off into the vagina. Dührssen has shown by his researches that the muscular tissue of the cervix is composed of two strata, of which the outer one is much richer than the inner in elastic fibers. These elastic fibers pass directly from the infravaginal cervix into the vagina as is illustrated in the schematic diagram. (Fig. 6.) Accordingly, if an incision is carried through the infravaginal cervix to $A\ A^1$, then it is evident that the point A as a result of the muscular pull upwards will be distorted to a point A^3 and the point A^1, as the result of the elastic pull downwards, to A^2. So on account of this double retraction, the upper end of the incision lies in the uterus and the lower end in the vaginal vault. Dührssen proved this change of position of the incisions not only by means of post-partum vaginal examinations, but also by means of the post-mortem findings in two cases. The retraction and subsequent scar formation in the vagina depend upon the rigidity of the cervix, for the more rigid the cervix, the fewer elastic fibers are present and consequently the less scar formation.

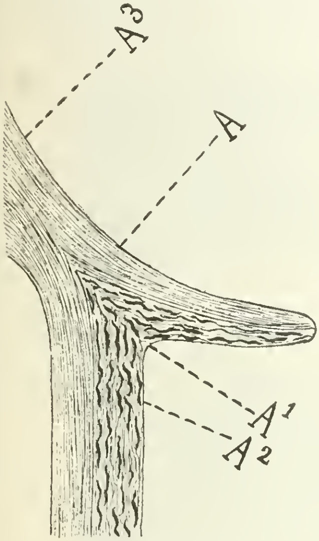

Fig. 6. After Dührssen.

Subsequent pregnancies and labors. — In a series of 31 cases treated by deep incisions of the cervix, Dührssen was able to obtain their subsequent history in eighteen instances, and he reports that fifteen of them, on the average of one and one-half years after delivery, became pregnant again and that no one of them had any disturbance of pregnancy which could be attributed to the former incisions. He was also able to learn of the successful termination of the labor in 10 cases, but he fails to state whether or not interference was necessary.

Mortality. —There should be no mortality from the operation. In a series of 27 cases, Dührssen reports the loss of one patient, not attributable to the method of delivery.

CONCLUSIONS.

1. That where immediate delivery is demanded in the presence of an undilated and rigid cervix, multiple deep incisions from the border of the external os to the utero-vaginal junction furnish the most rapid and safest method of emptying the uterus.
2. That there is no danger of the incisions tearing in cases under full term, or in cases at full term, where the pelvis is normal and the fetus is of moderate size.
3. That there is no risk of hemorrhage when clamps are employed before making the incisions.
4. That the chance of septic infection is no greater than after the lacerations occurring at the time of normal delivery.
5. That the scars in the cervix and vaginal vault cause no trouble in the course of subsequent pregnancies and labors.

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MATTAPAN DAY CAMP FOR CONSUMPTIVES, BOSTON, MASS.*

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AND
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In July, 1905, the Boston Association for the Relief and Control of Tuberculosis opened a Day Camp for Consumptives, which, we believe, was the pioneer one of the kind in this country. This camp was modelled on those in use in Germany (Walderholungstätten), particularly in Berlin. The patients were treated during the day only; they came to the Camp in the morning and went home at night. (For report of the first season's work see Boston Medical and Surgical Journal, Jan. 18, 1906.) A similar camp was operated by the association in the summer of 1906. This year the camp was established on the city property for the new Consumptives' Hospital, and this spot was made available through the courtesy of the trustees of this hospital. The camp was opened June 5, 1907, and closed Feb. 1, 1908, a period of eight months, or thirty-four weeks, three days.

The equipment consisted of a lean-to kitchen, in which was the pantry, on one end the laundry, where the towels used by the patients and staff were washed, and on the other end, a storage place for wood and coal; a dining tent, 20 x 50 ft., connected with the kitchen by a raised walk; 5 tents, each 10 x 12 ft., one for the caretaker, one for the storage of reclining chairs used by the patients, one for a dressing room for the women, and the other two for rest tents for the sicker patients (there were two cots in each of the latter); and a shack 10 x 18 ft., containing the medical quarters and those of the matron. This served the purpose of an administration building.

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* Complete report of the season's work. June, 1907, to February, 1908.

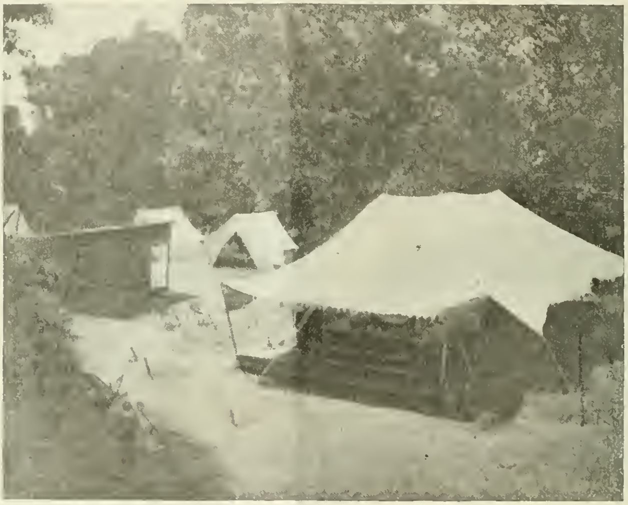
In the medical quarters of the shack was done the examining, weighing and laboratory work. The laboratory consisted of a table 1½ x 4 ft., with a shelf over it. On the shelf was an ordinary paper pail which was fitted with a rubber tube 6 feet long. This contained the water supply of the laboratory. For a sink we used an ordinary cast iron pail; for a lamp an ordinary spirit lamp. In addition there were two sanitaries, one for men and one for women, also benches with basins where the patients washed. A sputum incinerator was made very simply of a cast iron ash barrel, with draft holes at the bottom.

There were as few rules as possible, the chief one being that under no consideration should a patient expectorate upon the ground; disregard of this meant reprimand; persistence, dismissal. Everything was done to make the patients comfortable and to relieve them from all worry and anxiety. Each patient was given individual attention and a careful study of his habits and idiosyncrasy was made. In this way we were enabled to know just what each patient required, when he needed to be encouraged, when to be restrained, and when to be corrected.

The staff of this camp consisted of a physician-in-charge, two assistants, one of whom, at least, was constantly on duty each day, a throat specialist, who visited the camp twice a week, a matron, who was a graduate nurse, and an assistant nurse. In addition there were a cook, two helpers and two care-takers (both tuberculous patients). All except the two assistants and one of the care-takers received a salary.

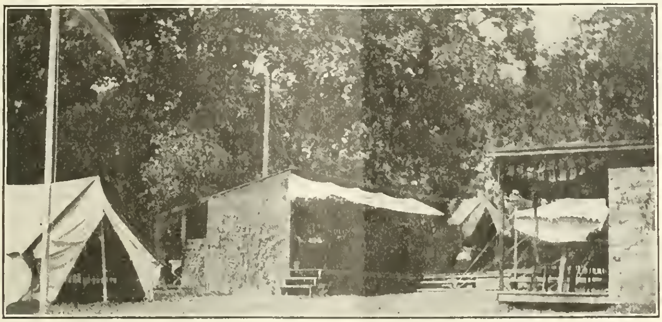
The routine of the camp was as follows:

All patients were required to be at the camp by 9.30 A.M., at the latest, unless especially excused. On arriving, each patient was given a paper bag and pieces of crêpe paper napkins for his sputum (these were burned in the incinerator at night, a fresh supply being issued for use at home). Each patient had his own soap which was kept in a pasteboard box; at first towels were used but later crêpe napkins were used instead. The patients spent the day in reclining chairs, at rest, or in moderate amusement. For amusement there were books, magazines, quiet games, and daily papers,—all donated. Smoking was permitted in moderation, except in cases with severe throat lesions. Those who were able were allowed and encouraged to do light work about the camp. In the late afternoon they returned to their homes. Patients with a temperature of 100° or above, or a pulse of 120 or above, were placed in one of the rest tents to ensure absolute rest and quiet. Each patient was weighed once a week (this meant body weight, the women were weighed with a sheet which weighed 1⅜ lb.); examined once a month and oftener if the occasion required. The pulse and temperature were taken morning and evening, and the sputum was examined once a month, as far as practicable, for the presence of tubercle bacilli. The throat physician, Dr. Sullivan, examined all new cases entered, and treated all old cases who needed treatment. All these findings were recorded on the record sheet. At 9.30 A.M. a lunch of milk, bread and butter was



The office and examining room, rest tents, and dining tent.

served; at noon there was a dinner of meat, fish or fowl, potato, another vegetable, a wholesome dessert (preferably made of milk and eggs) and milk. At 4.00 P.M. there was another lunch of milk, bread and butter. In the cooler days cocoa or broth was substituted for milk at the lunches. When needed, eggs were served in addition to the lunches. Each patient was encouraged to drink all the milk possible. No medicine was used except symptomatically. Heroin was used to control obstinate cough. The wet jacket was used in cases of pleurisy, as well as strapping, or a swathe firmly applied, and a cloth wrung out in cold water wrapped about the throat at night in some of the laryngeal cases. The results were most gratifying. On the cooler days blankets and hot water bottles were furnished the patients. The hot water bottles were ordinary clay seltzer bottles, which were donated. Each patient was visited in his home by the nurse of the association and the home conditions regulated.



Kitchen, rest tents, and administration shack.

"Taking the cure."

The chief aim of the camp was educational, and much emphasis was laid on this side of the work. During the season addresses were given by various men on tuberculosis, hygiene, care of teeth, etc. The camp was for men, women and children, and the type of cases admitted were those who, for one reason or another, could not enter the State Sanatorium, and all others up to the far advanced case for which there are hospitals, i. e., the type of case for which, at present, there is little or no provision.

The capacity of the camp was 75 per day.

A. From June 5, 1907, to Feb. 1, 1908, 252 cases were admitted. During this period 15,169 days of treatment were given as follows:

June,	934
July,	2,126
August,	2,268
September,	2,026
October,	2,237
November,	2,022
December,	1,801
January,	1,755
Total,	15,169

In addition there were given in this period fully 150 days of treatment to cases which came as visitors, until other arrangements could be made for them, or who came for examination. (See later.)

B. The average daily attendance per month was as follows:

June,	26 days	35$\frac{12}{13}$
July,	31 ,,	68$\frac{1}{2}$+
August,	31 ,,	73$\frac{1}{6}$—
September,	31 ,,	67$\frac{1}{2}$+
October,	31 ,,	72$\frac{1}{6}$—
November,	30 ,,	67$\frac{2}{5}$
December,	30 ,,	60+
January,	31 ,,	56$\frac{1}{3}$—
Average for season,		63$\frac{1}{2}$+

(No record of attendance was kept on Christmas Day, hence 30 days in December are reckoned instead of 31.)

The weekly attendance was as follows:

1,	158	5,	162	9,	463
2,	224	6,	475	10,	526
3,	292	7,	199	11,	517
4,	387	8,	490	12,	521

13,	518	21,	499	29,	431
14,	460	22,	499	30,	326
15,	506	23,	484	31,	431
16,	472	24,	468	32,	377
17,	460	25,	453	33,	414
18,	450	26,	456	34,	375
19,	543	27,	448	3 days,	158
20,	529	28,	400		

The period of stay of the cases was as follows:

Less than 1 week,	25 cases	18 weeks,	2 cases
1 week,	33 ,,	19 ,,	3 ,,
2 weeks,	20 ,,	20 ,,	5 ,,
3 ,,	11 ,,	21 ,,	3 ,,
4 ,,	12 ,,	22 ,,	2 ,,
5 ,,	10 ,,	23 ,,	4 ,,
6 ,,	8 ,,	24 ,,	2 ,,
7 ,,	7 ,,	25 ,,	4 ,,
8 ,,	7 ,,	26 ,,	1 ,,
9 ,,	13 ,,	27 ,,	3 ,,
10 ,,	4 ,,	28 ,,	2 ,,
11 ,,	7 ,,	29 ,,	4 ,,
12 ,,	12 ,,	30 ,,	1 ,,
13 ,,	6 ,,	31 ,,	3 ,,
14 ,,	9 ,,	32 ,,	5 ,,
15 ,,	3 ,,	33 ,,	2 ,,
16 ,,	4 ,,	34 ,,	9 ,,
17 ,,	3 ,,		

C. Predisposing causes.

a. Occupation.

One fifth of the cases treated was housewives, the next largest number was school children, the next largest number was factory employees, the next was distributed among various other occupations. (See later.)

b. Earnings.

Less than $10 per week,	58 cases
$10 to $15 ,,	42 ,,
$15 ,, $20 ,,	26 ,,
$20 ,, $25 ,,	2 ,,
$25 ,, $30 ,,	3 ,,
Housewives and school children,	62 ,,
No record of wage,	59 ,,

c. The majority of the cases lived in tenements, or lodged; an insignificant number owned their own homes.

d. There was a previous history of:

Pneumonia	in	35 cases.
Typhoid fever	,,	25 ,,
Pleurisy	,,	15 ,,
Bronchitis	,,	38 ,,
Hemorrhage	,,	77 ,,
(Two cases had hemorrhage at camp.)		
Clubbed fingers,		45 cases

e. Twenty-two cases gave a previous history of alcohol to excess and one of morphine.

D. Probable source of contagion.

a. Definite history of houses which had previously been seats of tuberculosis,	46 cases
b. Other members of the household group afflicted with tuberculosis,	56 ,,
c. Fellow workmen,	5 ,,
d. No history of previous sources,	137 ,,
e. Unknown,	8 ,,

E. The contributing causes of the disease in most of our cases seemed to be improper methods of living, including food and quarters, occupation, racial susceptibility, and in some cases previous disease.

F. Throat conditions.

Normal throats,	154 cases
Evidence of tuberculosis,	61 ,,
Not examined, (Remained too short a time.)	37 ,,

G. — A. Disturbances of Sympathetic Nervous System.

a. Those who had a temperature of 100° or over (on entrance),	22
Under 100°,	229
No record,	1
b. Those who had a respiration of 30 or over (on entrance),	39
Under 30,	212
No record,	1
c. Those who had a pulse of 100 or over (on entrance),	79
Under 100,	172
No record,	1
d. Those who had no shortness of breath (on entrance),	61
On exertion,	89
On slight exertion,	6
Without exercise,	91
Marked,	3
No record,	2
e. Previous history of chills,	68
No previous history of chills,	184
(15 cases had chills while at the camp)	
f. Previous history of night sweats,	99
No previous history of night sweats,	153

B. Diseases of Circulatory System.

a. Mitral regurgitation,	4	out of 252 cases
Mitral stenosis,	1	
Functional or hemic murmurs,	2	
Irregular rhythm,	3	
Arteriosclerosis (all except 3 of these were over fifty years of age),	13	

b. Aortic, second accentuated,	28 cases
Pulmonic, ,, ,,	165 ,,
Both,	35 ,,
Normal, ,,	20 ,,
No record,	4 ,,
	252 cases

c. Apex beat in normal position,	241 cases
Apex beat not in normal position,	8 ,,
No record,	3 ,,
	252 cases

H. Complications.

Out of 252 cases:

Hernia,	2
Fistula in ano,	5
Syphilis (not active),	8
Asthma,	2
Bronchiectasis,	2
Ischio rectal abscess,	1
Epilepsy,	1
Pleurisy with effusion,	4
Tuberculous olecranon bursitis,	22
Tuberculous jaw (lower),	2
Pott's disease, spine (old),	2
Tuberculous sternum and ribs,	2
Tuberculous salpingitis,	1
Tuberculous kidney,	1
Tuberculous enteritis,	3 positive (bacilli present) 8 clinically.
Tumor albus,	1
Tuberculous wrist and elbow,	1
Tuberculous hip (old),	1

Nativity.

Native born males,	54
,, ,, females,	57
Foreign born males,	83
,, ,, females,	58
Total, males,	137
females,	115
	252

There were 16 countries represented as follows:

Ireland,	44	United States,	116
Canada,	30	Russia,	30
England,	8	Italy,	6
Sweden,	7	Poland,	2
Denmark,	1	Hungary,	1
Scotland,	1	Germany,	1
Portugal,	1	Austria,	1
Roumania,	2	Japan,	1

Personal nativity.

America (including Canada),	146
Ireland,	44
Russia,	30
Others,	32
Total,	252

Residence.

Boston,	222
Others,	30
Total,	252

Unsuitable.

a. Hospital cases,	29
b. Regular sanatorium cases (accepted before entrance),	6
c. Unmanageable,	7

During the season only 6 cases broke the rules; 3 of these broke the no-spitting rule.

Housing and household conditions.

a. Who lived in tenement houses,	164	
Boarded or lodged,	79	
In own house,	9	
		252
b. Roomed or slept alone,	209	
Roomed or slept with some one else,	38	
No record,	5	
		252

No record was made of the height of each patient.

Age.

1 to 10 years,	5 cases	Under 14 years,	16
10 ,, 20 ,,	51 ,,	14 to 45 years,	216
20 ,, 40 ,,	153 ,,	Over 45 years,	20
40 ,, 60 ,,	40 ,,		
Over 60 ,,	3 ,,		252
	252		

The occupations were as follows:

Housewife,	47	Peddler,	3
School,	18	Laundress,	4
Factory,	22	Barber,	3
Tailor,	12	Domestic,	4
Machinist,	10	Packer,	2
Clerk,	13	Telephone operator,	2
Painter,	8	Farmer,	2
Salesgirl,	7	Waitress,	2
Waiter,	8	Stonecutter,	3
Laborer,	7	Sailor,	2
Printer,	4	Freight-handler,	2
Teamster,	5	Motorman,	2
Student,	9		

One each:

Machine operator
Auto-washer
Coachman
Office-cleaner
Car cleaner
Elevator boy
Butcher
Teacher
Tailoress
Butler
Office-boy
Salesman
Cabinet maker
Interpreter
Stable boy
Deck hand
Silver plater
Reporter
Attendant
Letter-carrier
Engineer
Electrician
Freight brakeman
Switchman
Carpenter
Electrotyper
Foreman
Marine Foreman
Janitor
Tinsmith
Lunch counter attendant
Plumber
Draughtsman
Stenographer
Cigarmaker

No occupation, 13.

a. Physical appearance on entrance.

Well developed and nourished,	71 cases
Fairly well developed and nourished,	103 ,,
Poorly developed and nourished,	78 ,,
	252 ,,

b. Physical condition on entrance.

Stage I,†	53
Stage II,	86
Stage III,	107
Non-tuberculous,	3
Not examined,	3
Classification according to Turban,	252

c. There were 135 cases with light eyes, 117 cases with dark eyes.

It was difficult to exactly determine the duration of the disease in each case, and it varied with different individuals, due to the vitality of each patient and his mode of living. Some advanced more rapidly than others and some improved more rapidly than others.

The cases may be divided roughly into three classes:

1. Those who wanted to get well.
2. Those who did not care.
3. Those who did not want to get well.

Class I improved, as a rule, the most rapidly and required less individual attention.

Class II improved less rapidly and required more individual attention, while

Class III almost never improved and required the greatest of care and individual attention.

The sputum examination showed the following results:

Tubercle bacilli in sputum,	138 cases
No tubercle bacilli in sputum,	40 ,,
Did not raise,	45 ,,
Not examined,	29 ,,
	252 ,,
Tubercle bacilli in feces,	3 cases

The number of cases never treated by sanatorium methods, i. e., new to this form of treatment,	90 cases
Previously treated in sanatoriums, classes or hospitals,	162 ,,
	252 ,,

Number of ex-state sanatorium cases at camp,	45 cases
Number of cases sent to state sanatorium,	16 ,,

(Two other cases were accepted but as they were non-citizens they were obliged to await a vacancy; one of these improved so much he went back to work.)

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† This includes children, cases awaiting admission to state sanatorium, non-citizen cases, ex-state sanatorium cases' completing cure and a few others who for some reason or other could not go to the state sanatorium, and accounts for the apparently large number of Stage I cases at the camp.

Left against advice,	65 cases
Discharged to hospitals,	20 ,,
Died at home or at institutions: 28 from tuberculosis, 1 as a result of an accident,	29 ,,
Re-admitted (old camp cases),	11 ,,
Remaining at camp (at close),	66 ,,
	252 ,,

Physical condition on discharge.

Arrested,	30 cases
Improved, (30 of these were able to return to work although not arrested.)	96 ,,
Stationary (this includes cases in which there was only one examination, i. e., did not remain a month, and 3 not examined),	57 ,,
Advanced,	40 ,,
Died,	29 ,,
	252 ,,

Weights.

Gained in weight,	145
Lost ,, ,,	50
Weighed only once or same as last weight,	51
Not weighed,	6
	252

The cost of the camp was 51 cents per patient per day.

There was a noticeable improvement in eating and sleeping and diminution in night sweats from the start. In the majority of cases the decrease in coughing, expectoration, and the improvement in the general condition, pulse and temperature was marked after a few days at the camp.

Olive or cotton seed oil was not used at the camp because we felt that the patients were receiving a sufficiently varied and nourishing diet and in sufficient quantities to make this unnecessary.

It was not deemed advisable, after careful consideration, to use serum treatment, as the cases were not of the type which would be benefited from such a course of treatment.

Calmette's eye reaction, however, was tried with the following results. The preparation used was a tablet of dried tuberculin prepared by Parke, Davis & Co. This tablet was dissolved in 1 ccm. of sterile water, each drop contained a 1% solution of tuberculin. A fresh solution was prepared each day. Drop doses were administered, the right eye being used in the majority of cases.

		REACTION.			
		Slight.	Moderate.	Strong.	No reaction.
1. Tuberculous cases (clinically), (35 of these cases showed tubercle bacilli in sputum),	47	32	8	5	2
2. Arrested cases,	4				4
3. Suspicious tuberculous cases	2				2
4. Chronic bronchitis (both children),	2				2
5. Normal individuals,	5				5

In 39 cases the onset of the reaction took place in 6–14 hours.
In 6 cases the onset of the reaction took place in 14–36 hours.
In 18 cases the reaction lasted 24 hours or less.
In 27 cases the reaction lasted 24 hours to 5 days.
In no case was there any serious complications.
Only 2 of the positive cases in which the reaction was tried failed to react.

We have had very satisfactory results with the use of this simple test; but we are unable, as yet, to draw any definite conclusions, on account of the limited number of cases in which it was employed and to the fact that only one preparation of tuberculin was used.

In addition to the routine examination of each patient a complete record of his home conditions was filed with the record. This was furnished by the nurse who visited in the homes. An examination of the other members of the family was made at the camp and the results recorded.

Other cases have been referred to the camp for opinion by various societies, charity organizations, private physicians, etc.

The results follow: Children, 109; adults 57; total 166.

A. Children.

Tuberculosis,	8
Suspicious tuberculosis,	4
Bronchitis,‡	11
Asthma,	1
Tonsils and adenoids,	14
Anemia,	2
Spinal curvature,	4
Normal,	65
Total,	109

B. Adults.

Tuberculosis,	16
Suspicious tuberculosis,	4
Chronic bronchitis,	4
Naso-pharyngeal catarrh,	1
Anemia,	1
Normal,	31
	57

At the close of the camp, each case was provided for as far as possible. They were referred to various out-patient departments, tuberculosis classes, charities, and the various institutions for these cases.

Experience has taught us that such a camp as the above, when properly conducted, is of value on educational lines. And is also of value as it removes, for a time, the sources of infection from the community and the homes; as it enables some cases to obtain admission to a sanatorium who could not otherwise go; as it obviates in some cases this necessity; as it enables cases who for some reason or other could not go to a sanatorium, although suitable, to obtain proper care; and as it helps to complete the cure in some cases who have been discharged from a sanatorium.

In conclusion we desire to express our gratitude to Dr. R. D. Schmidt, and to Dr. J. T. Sullivan, the visiting throat specialist, to our matron, Miss S. F. Robbins, and nurse, Miss M. A. Gallagher, and also to our friendly visitors, Miss A. B. Tileston and Mrs. Carver for their valuable assistance. We also desire to thank the Boston Dispensary for so willingly furnishing the necessary medicines to our patients at a small cost, or free if they could not afford to pay for them.

The consulting staff of the camp was Dr E. O. Otis, Dr. V. Y. Bowditch, Dr. A. K. Stone, Dr. J. J. Minot and Dr. H. C. Clapp.

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‡ One case in addition to bronchitis had a Pott's disease of the spine.

THE PLASTER-OF-PARIS BAR OR ROPE.

BY ROBERT SOUTTER, M.D., BOSTON,
Assistant Surgeon, Children's Hospital, Boston; Member of American Orthopedic Association.

Plaster-of-Paris bandages have been strengthened by strips of wood, steel, iron, cardboard, wood pulp, etc., and by laying the plaster gauze longitudinally instead of in a circular manner. The latter is not as rapid a manner of applying reinforcement as by means of the "plaster bar" or rope.

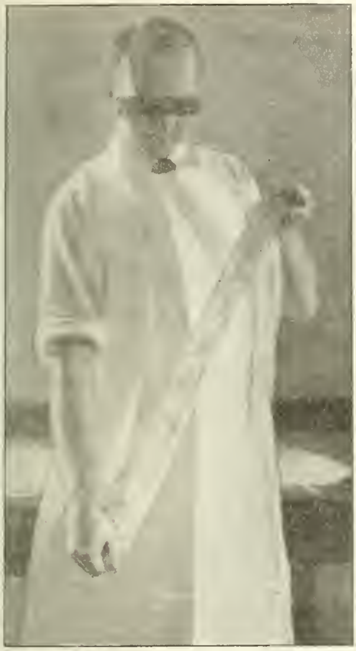

Fig. 1. Method of unrolling plaster-of-Paris bandage making a plaster bar or rope.

To make a "plaster bar," a very wet plaster-of-Paris bandage is rapidly unwound back and forth (see Fig. 1), to the desired length. No attempt is made to rub it or to apply it to the partially applied dressing. When the roll is entirely unwound it is held at one end by one hand, while the other is grasped around it and slid down to the other end, moulding it into a bar. (See Fig. 2.) It is then slapped into place and rubbed three or four times. This method of reinforcement is more rapid than the time it takes to describe it.

By means of the "plaster rope" the bandage may be made very light. Sometimes it is not necessary to have lightness, but large windows are needed as in cases of pussy dressings, and yet position is sometimes most important in this class of cases. The plaster is put on in the usual

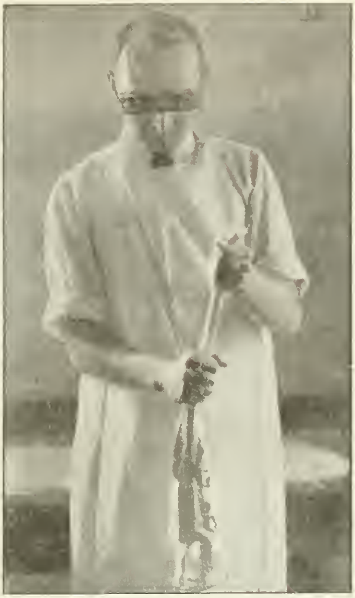

Fig. 2. Showing a rapid method of moulding a whole plaster bandage into one bar or rope.

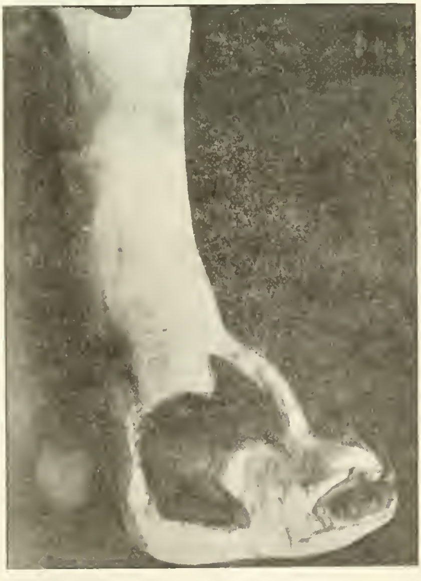

Fig. 3. Plaster bandage applied, showing possibility of maintaining position with extremely large windows by means of the plaster bar.

way, but not finished; then a lump of sheet wadding is applied at the point where the "plaster bar" is to be laid. Then the plaster is completed. When the window is cut the sheet wadding roll is removed and the bar forms an arch (see Fig. 3) which is as solid as stone, permitting large windows with good margins around the wounds and plenty of room for extensive dressings. (See Fig. 4.)

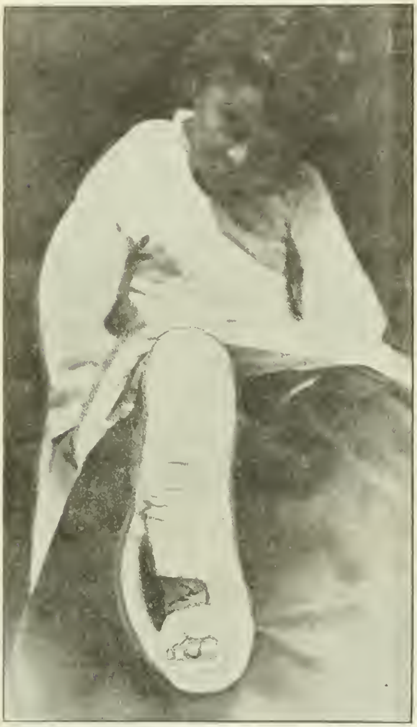

Fig. 4. Retentive plaster applied after operation on leg, showing large window and accessibility for dressing.

In cases of torticollis operated upon by the writer, the chest plaster is applied, then a few turns of plaster-of-Paris from the occiput to the forehead and chin. Next the head is held in position and the head and chest bandages are connected by three plaster bars. It is not only more rapid and simpler than the plaster helmet, but it makes a cooler plaster for summer. (See Fig. 5.) The patient is easily inspected, chafing prevented and any point of discomfort can be padded without removing the plaster.

"Plaster bars" may be used in front and behind on a plaster-of-Paris spica at the weak points, or to strengthen a plaster jacket. In jackets for forcible correction in cases of curvature of the spine or bad round shoulders, it is often important to apply the jacket very rapidly. By means of two or four ropes a strong, light and retentive apparatus can be finished in a very short time.

When very large windows or gaps are necessary in a plaster two or three bridges of wire are necessary to bridge over the gap. The wire must be bent beforehand; it does not incorporate itself so readily in the plaster and it is slow to apply. The "plaster bar," on the other hand, can be easily moulded at the moment of application. One is sufficient to bridge over a very large space. It is also a rapid and strong way of reinforcing plaster-of-Paris dressings.

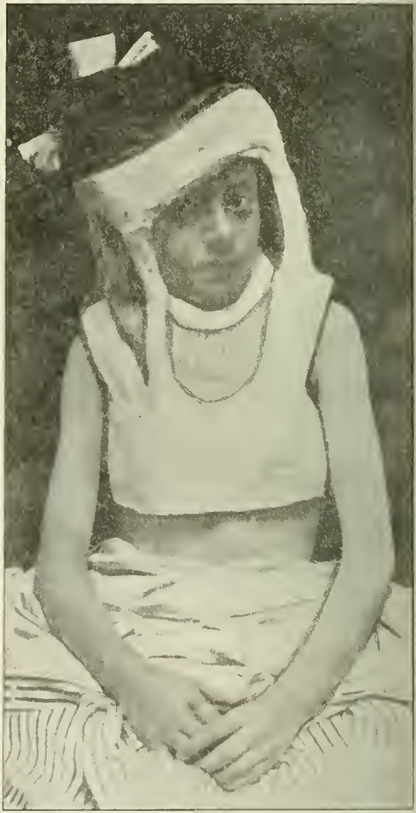

Fig. 5. Retentive plaster applied after operation for torticollis. Notice accessibility and coolness.

◆

A final agreement has been reached in the matter of affiliation of Cooper Medical College with Stanford University. The only stipulation insisted on by the authorities of the college was that the study of medicine shall be forever pursued in San Francisco and that all trusts left by Dr. Levi C. Lane are to be fulfilled.—*Jour. Am. Med. Asso.*

SOME OBSERVATIONS ON A "FIGURE OF EIGHT" PLASTER JACKET.

BY JOHN D. ADAMS, M.D., BOSTON.

In spite of the superiority of plaster over any other material for splints, like any other well established device in the hands of the inexperienced, it is often abused.

The applicator should make the cast as light as is consistent with firmness and durability. Through observation, the inexperienced worker thinks the technic of putting on a jacket very simple. He begins his work dominated by this idea and mechanically wraps the limb or part in plaster, sacrificing lightness and cohesiveness to the cast, irrespective of the number of bandages and uniformity of thickness.

There is a fascination in working with plaster, but the man working from observation and not from skilled instruction soon makes of it mere drudgery. This is due chiefly to the fact of his relegating plaster work as an unimportant feature in the treatment of any condition. Now wherever plaster is called for it plays a very important rôle and its application should not be treated slightingly.

No matter which of the many methods we have at hand for applying plaster jackets, the same principles of mechanics are used as a basis, viz., fulcrum, lever and power. The most efficient apparatus is the one by which the operator may most easily and effectively produce lordosis sufficient to relieve the pressure from the diseased vertebræ.

Another important feature, the neglect of which has led the laity to look upon the mere suggestion of plaster jacket with dread and horror, is the consideration of the comfort of the patient to the point of getting an effective apparatus. So many of our clinic cases, especially children, are so apt to drop into the routine treatment of jackets when the growth and development of the trunk muscles are sacrificed to the already ankylosed spine by putting on a heavy plaster jacket where a light brace or lighter ventilated jacket would be just as efficient.

The abdomen to the average child is an important part of his anatomy, the undue restriction of which makes him complaining and unhappy. Now it is next to impossible to apply a complete plaster jacket to a child with a pendulous abdomen in such a way as to properly hold the corrected position of lordosis without bringing such pressure on the abdomen as not only to produce discomfort but at times gastro-intestinal symptoms of headache, nausea and dizziness. Also, the incorporating of the abdomen, a constantly changeable resistance, does not in any way contribute to the jacket mechanically. If a jacket is applied incorporating the abdomen, which is afterwards relieved by cutting out the jacket, the operator does not get the close-fitting efficient jacket that he does by avoiding the abdomen with a figure of eight bandage, because when pressure is applied over the abdomen, even if padded, he feels the lack of resistance and his feelings will not allow him to put the same amount of pressure he puts on the resistant pelvis or chest.

The writer does not mean to criticise the present methods, nor has he anything new in principle to offer, but the accompanying cuts represent a small portable machine incorporating the principles of the Goldthwaite irons. It has been used on a number of cases in children with success.

In attempting to get lordosis, or extension of the spine (for we must in the early cases do something more than simply fix the spine), the operator in supporting the spine during the application of the jacket is apt to get a general curve or a distribution of lordosis rather than a localized curve at the point of disease. This curve can only be obtained by placing the point of greatest resistance to the weight of the body at that point, as illustrated in the Brackett fork. In other words, we have our fulcrum at the point of disease, the power the weight of the body and the lever the length of the body one or the other side of the fulcrum. Now to increase our power we simply raise our fulcrum.

The mechanics of the apparatus is simple and crude, but its simplicity renders it portable and also enables the operator to keep the floor and his clothes free from plaster.

The accompanying cut, Fig. 1, shows an apparatus 24 in. by 14 in. bolted together at the corners. The side pieces are perforated with ¼ in. holes 1 in. apart to take adjustable uprights 5 in. high. These uprights carry 3 spring cross-pieces 20 in. long, bolted at one end and adjusted at the other end by a set screw in a slot allowing 6 inches of adjustment. The apparatus is placed on an ordinary table covered with a sheet which catches all the drip. It may be readily taken apart and packed in a bag.

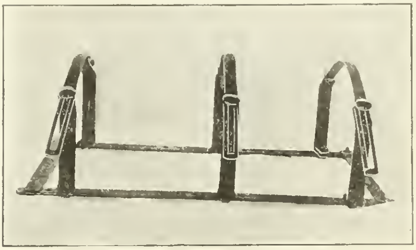

Fig. 1.

The apparatus was tried on a series of 25 cases in an effort, if possible, to reduce the weight of the average plaster jacket as well as to give the child a certain amount of comfort by ventilating the apparatus and relieving the abdomen of any pressure. In our persistent declaration for hygienic measures in the treatment of Pott's disease, the abdomen of the child is a variable quantity and must be given its freedom of motion.

In the early stages of Pott's disease, where deformity was slight and correction possible, the child was placed on the apparatus face up, as shown in Fig. 3, at right angles to the crosspieces. The middle crossbar was adjusted to the middle of the point of disease, felt pads having first been adjusted. The upper crossbar then comes under the shoulders and the lower one under the hips, the head resting on pillows and the feet on the table. Now if more lordosis is needed, the adjustable end of the middle crossbar is pushed up to the point of toleration and fastened with set screw.

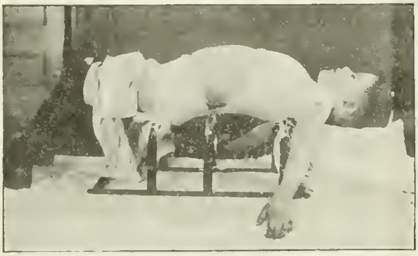

FIG. 3.

The first turns of bandage are applied firmly around the pelvis for an anchor and then passed diagonally across the kyphos to opposite chest, across the front to lower end of sternum, crossing each other over kyphos, and thus the jacket is completed following out those lines. It was found that 8 or 9 ordinary plaster bandages made a jacket strong enough to hold the corrected position for four months.

Careful tracings were taken in all cases before application of jacket and also on removal after wear. In five cases the jacket was limited to top of sternum, and although the tracings showed no real increase in deformity the results obtained were not satisfactory with reference to posture as in the cases where the shoulders were incorporated. In other words, the results corroborated absolutely the work of Taylor, Calot and others, viz., that it is essential to incorporate the shoulders in all cases of Pott's where there is any hope for correction.

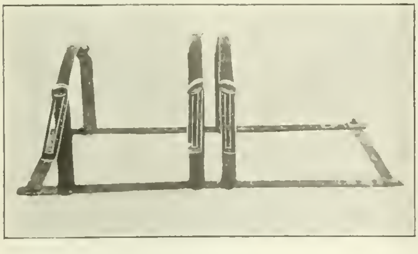

FIG. 2.

The natural tendency for children with any affection of the spine to the point of producing deformity is to assume a relaxed posture of shoulders. This is increased if we take away what muscular support there is by supporting the spine with a jacket, therefore it is essential that we overcome this by throwing the shoulders back and holding them in the normal line of gravity consistent with our corrected spine.

In the convalescent cases with considerable deformity present the apparatus was set up to simulate the Goldthwaite irons, as in Fig. 2. and used in the same manner. The irons in both instances are unfastened and withdrawn in the usual way, after the jacket has set.

The conclusions to be drawn from the statement that the figure of eight jacket with exposed abdomen is an efficient apparatus are:

1. The exposed abdomen adds greatly to the comfort and pleasure of the child (as corroborated by parents).
2. The failure to incorporate abdomen in no way affects the mechanical efficiency of the jacket, as evidenced by lack of increase of deformity in tracing.
3. It is absolutely essential to incorporate the shoulders in all cases of Pott's disease where there is any motion in the diseased area.

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Medical Progress.

PROGRESS IN SURGERY.

BY J. G. MUMFORD, M.D.

THE PARATHYROIDS.

IN February, 1907, David Forsyth, of London, published a preliminary communication entitled, "Observations on the Parathyroids and Accessory Thyroids in Man." This communication is apparently convincing and has been followed by other writings from the same author, who continues to elaborate his points, and these points briefly are as follows: The number of the parathyroids in man is not two on each side but varies greatly. Forsyth found one parathyroid on one side of the neck in less than half the cases, 2 in one quarter of the cases, 3 in a few cases, rarely 4, 5 or 6 on one side of the neck. Occasionally he found no parathyroids at all.

As to their position, Forsyth found no regularity in arrangement, though more than a third of all the parathyroids lay behind the thyroid gland, at the junction of its middle and lower thirds. The remaining parathyroids were scattered variously behind the thyroid gland, some of them in the substance of the gland and a few on its tracheal surface.

Forsyth asserts further that a parathyroid cannot be identified except through the microscope, as it resembles closely a nodule of fat often, though in certain cases it is brown or even black; while its size varies from little more than a pinpoint up to nearly 2.5 cm.

Age has an important bearing on the persistence of parathyroids. They are most common in the first year of life and from that period to old age occur less and less frequently. During the first year there may be as many as 4, 5 or 6, after that up to the tenth year there may be as many as 4; after the tenth year no more than 2; and after the twentieth year there may be none at all. Such were the preliminary findings of Forsyth, findings based on an examination of some 60 human bodies; and he thinks his conclusions are inevitable, that tetany is probably uninfluenced by the presence or absence of the parathyroid glands. Such views correspond with those of sundry other writers, notably Hürthle, Zielinska, Vincent and Jolly, whom Forsyth quotes with approval. In other words these views, if substantiated, would overthrow an extremely vital and important development in generally accepted studies of certain systemic affections.

For the sake of the general medical reader it is interesting, therefore, to review in some detail the opinions and written experiences of conviction published during the last year by careful and reliable surgeons.

In July, 1907, W. S. Halsted published in the *American Journal of the Medical Sciences* an extremely informing article entitled, "Hypoparathyreosis, Status Parathyreoprivus and Transplantation of the Parathyroid Glands," and he followed this, three months later, by an article in the *Annals of Surgery*, compiled with the assistance of H. M. Evans, and entitled "The Parathyroid Glandules; Their Blood Supply and Their Preservation in Operations upon the Thyroid Gland." That first article of Halsted's expresses the conviction of an experienced clinical observer that the loss of parathyroid tissue, even though the loss be not total, results in tetany, or in a state short of acute tetany, but characterized by certain distressing symptoms for which Halsted suggests the name subtetanic hypoparathyreosis.

Tetany is no new thing and has been described occasionally since the writing of Steinheim in 1830. Many years then passed before surgeons associated the condition tetany with the thyroid or parathyroid glands. Billroth in the eighties, however, and von Eiselsberg in 1890 observed a number of chronic cases of operative tetany developing upon removal of the thyroid; while for some years thereafter it was observed generally that a far greater number of cases of tetany resulted from total extirpation of the thyroid than from partial extirpation. Every surgeon of experience will remember how, within comparatively recent years, we had come to believe that a portion of the thyroid gland always should be left if tetany is to be avoided, but we recognized also that the leaving of the posterior portion of the gland seemed to be most effective for the prevention of tetany. Taking up the story at this point Halsted relates an interesting case of his own, upon which he operated twice, first in 1899 and finally in 1906. He was solicitous on each occasion to save the parathyroids, but owing to the exigencies of the dissection all the parathyroids were destroyed in the two operations. Halsted describes the convalescence from the second operation, after the last parathyroids had been removed, as quite different from the convalescence after the first operation: "She was unnaturally flushed for two or three days; was restless and slept badly. She believed herself to be improving until the seventh day, when queer feelings developed, so emphasized at times that she designated them as *attacks*, although she was uncomfortable between the attacks." On the eighth day she had several attacks, "indescribably awful." This alarming condition was combated by dosing the patient with dried parathyroids of beeves and the effect was "almost instantaneous and most marvelous."

As the case developed it was found that dried parathyroids were not well borne by the patient's stomach, when fresh glands were substituted and were continued for many months. Later, Halsted secured from Beebe the nucleoproteids of the parathyroid glands of beeves and was able to report, late in 1907, that the patient was being rapidly restored to health through their administration.

Halsted quotes at some length also his experiments with the transplantation of parathyroid glands into the spleen and makes note of Payr's successful transplantations, describing the elaboration and the difficulties of a technic which he himself has developed.

He makes the following statement regarding the physiology of the parathyroids: "Tetany, inexplicable so recently as eighteen years ago, has been made comprehensible by one of the greatest and most impressive physiological discoveries of modern times. Four or more tiny bodies, so small as to have attracted no serious attention until, in 1880, Sandstrom classified them, quickly assumed, upon the epoch-making discovery of Gley in 1891, an importance hardly to be overestimated. Their situation, so deep in the neck, so carefully tucked away under the jaw and behind the thyroid lobes; their nutrition, each gland with a blood supply independent of the other and in no danger of cut-off except by the surgeon's knife; and their number generally four or more, might be viewed to indicate their preciousness. Their blood supply is a rich one and may well be subject on occasion to great and sudden increase, as in the active thyroid hypertrophies and hyperemias. Their vascular supply is so intimately related to and dependent upon that of the thyroid that they could hardly escape, it would seem, promptly and altogether, the effect of a sudden turgescence of the thyroid lobes, although controlled undoubtedly by regulating vital processes. The possibility of an interdependence, to a certain degree, of function between the thyroid and parathyroid glands has suggested itself to several investigators."

In connection with the blood supply of the human parathyroids, Halsted's student, Evans, makes certain important observations: "One of the first facts which appears after a satisfactory injection is that a special tiny parathyroid artery supplies this gland in every case; and whatever its origin (it is always derived from some branch of the inferior thyroid) it can be seen definitely to supply the parathyroid gland and it alone. In nearly every case the lower parathyroid artery comes from a prominent branch of the inferior thyroid artery. The upper parathyroid gland invariably has a short artery of supply which may arise from one of the main branches of the inferior thyroid or from an anastomosing ramus joining the superior and inferior thyroid arteries. Few, if any, direct vascular connections exist between the parathyroid glands and the connective tissue envelope of the thyroid."

With our understanding that loss of the parathyroids marks the most serious feature in the after-history of patients operated upon for goiter, we are faced with the problem of the preservation of these minute structures. It is doubtless true that the symptoms of deprivation of both thyroids and parathyroids may be mitigated or entirely negatived by the administration in some form of the nucleoproteids or whatever substances are lacking; nevertheless, one fain would leave his patient properly supplied with these important parathyroid gland tissues and free from the necessity of taking medicine for the rest of his life.

Inasmuch as we have seen that the blood supply of the parathyroids is terminal and comes from the inferior thyroid artery, it is obvious that we must not tie all of the thyroid arteries when extirpating both lobes of the thyroid gland. We must seek the parathyroids and spare them when doing total extirpation of a thyroid, and we can find those minute bodies by tracing their proper arteries from the inferior thyroid artery. Thus when we find the parathyroids we can distinguish them from fat or aberrant thyroid tissue.

Since, in removing goiters, we must not tie off the main thyroid vessels Halsted employs " ultraligation," which operation he claims to be quite simple if properly performed, but difficult if not. By ultraligation he means ligature of the thyroid vessel beyond the origin of the parathyroid arteries. After exposing the goiter and dividing the overlying muscles Halsted raises the thyroid lobe from its bed on a spatula-like knife handle, carefully insinuated between the delicate blood vessels just coming into view. He does not at once deliver the gland, for fear of soiling it, but seizes the superior pole and pulls it forward and over towards the middle line far enough to make easy ultraligation of the superior thyroid vessels. After this is done the surgeon may proceed with considerable roughness even, without fear of hemorrhage, to dislocate the superior pole. As Halsted says, this grasp of the upper portion of the lobe, putting on the stretch the superior thyroid vessels, must not be relinquished until after the ultradivision of the finest branches in the vicinity of the superior pole. The upper end of the thyroid is thus liberated and the delivery of the entire lobe is continued, but without tearing the blood vessels. Throughout this delivery the lobe must be held firmly towards the median line until the last vessel has been divided.

By this method also the recurrent laryngeal nerve is usually seen and is not endangered. Halsted remarks optimistically that little if any time is lost by practicing the clean, bloodless method of operating for goiter. " For the removal of a thyroid lobe in a moderately difficult case of exophthalmic goiter, ten minutes is ample time if the experienced, skillful operator is well assisted." He employs general anesthesia in the hands of an expert.

Says Halsted: " I am inclined to feel that the procedure of stripping the posterior capsule, so beautifully executed by C. H. Mayo, does not guarantee the safety of the parathyroid bodies."

Says C. H. Mayo, regarding this point and several others which we have been discussing, " We know that tetany is caused by the loss of, or injury to, the parathyroids."

" These bodies can usually be recognized, small, pinkish or yellow-fat in color, flattened ovoid bodies, ranging in size from minute structures to 1.5 cm. in length." Mayo's technic for saving the parathyroids depends upon what he calls the " treatment of the posterior thyroid capsule." " The whole lobe is finally elevated with the fingers slipped behind it from the sides. The capsule is opened along the side of the gland and brushed back with gauze into the wound, as the gland is lifted and rolled over toward the mid-line. All vessels are caught at once by forceps, taking care in applying forceps to grasp the tissues in line with the long axis of the body. In this manner the surgeon is less likely accidentally to include nerves which run in the same direction."

" All small bodies of a gland-like appearance seen about the thyroid are carefully preserved; especially is this done on the posterior surface where there are a few glands other than parathyroids."

In other words, Mayo agrees with Halsted regarding the significance of the parathyroids as responsible for tetany, and urges their preservation, though his well-known treatment of the posterior capsule differs from that of Halsted.

Crile, who has had a large experience with these operations, preserves the parathyroids by an effective method. After controlling the blood supply, distal to the arteries of the parathyroids, he slices off a thin section of the gland, posteriorly, leaving in its stump, parathyroids, posterior capsule and a considerable portion of gland tissue. Both Mayo and Crile insist upon thorough posterior drainage.

Albert Kocher says: " Animal experiments have shown that the removal of all four (*sic*) parathyroid glands produces a fatal tetany, which has previously been attributed to removal of the thyroid gland. Clinical observations appear to confirm the truth of this phenomenon in man. It appears therefore that the parathyroid glands possess an antitoxic function, that they attract toxic products of metabolism and prepare them for rapid excretion through the kidneys. The function is preserved if the two lower parathyroids remain intact."

S. P. Beebe writes " that as a result of the experimental work of the past ten years we may state that the thyroid apparatus is complex and has two well differentiated histological structures, thyroid and parathyroid, and we have good reasons for believing that the different histological structure corresponds to a different function. Removal of the thyroid alone is followed in most cases by a cachexia, which may in large part be relieved by the administration of thyroid substance. Removal of parathyroids, if complete, is followed by an acute fatal tetany; . . . the acute tetany has been induced by operative removal of the parathyroid glands. While the animal was in severe convulsion a hypodermic injection of beef parathyroid nucleoproteid has been given with the result that in from thirty minutes to two hours nearly all the animals have temporarily recovered a normal condition."

The reader will see that the subject of the parathyroids, their physiology, their anatomy and their surgical significance are not yet clear. The physiologists especially are still in debate; but it is reasonably certain, so far as we have gone, that total removal of the parathyroids must be avoided. Sound clinical evidence points to their value as preservers of life after thyroid operations, while reliable surgeons have demonstrated that they may be preserved in more ways than one without serious impairment of their presumed remarkable function.

New Instrument.

A NEW CONE FOR ADMINISTRATION OF ETHER BY THE DROP METHOD.

BY O. PEARCE PENHALLOW, M.D., BOSTON,
Surgical House Officer, Boston City Hospital,

The accompanying illustrations show a new cone which I devised for etherizing by the "drop method." The other cones I found to be rather inconvenient as they had to be constantly held in place and they did not fit the face and so allowed of too free an access of air.

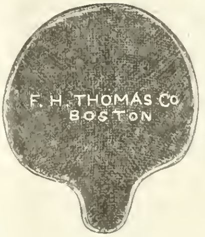
This cone is made of wire gauze, strong enough to retain its shape easily and is so constructed that it conforms to the shape of the face and leaves but a shallow air space between the face and the cone. The edge is made of heavy wire which makes a smooth surface and also adds strength. A stockinet cover, with a bound edge and a draw string, is fitted over the surface and the ether is given drop by drop.

An elastic tape, with a clip at either end, may also be used to retain the cone on the face; and this tape may be either passed around the neck of the patient, or one end may be fastened to the cone and the other end to the sheet or pillow.

Various sizes of cones are made to fit different sized faces of adults or children, and after they have been used both the cone and the cover are cleansed by boiling.

The advantages are that the cone is very light, fits the face well and is not objectionable to the patient. It keeps itself in place, thereby doing away with the necessity of constantly holding it, and it does not cover the face so fully but what the color of the patient may easily be seen at all times. It also is pervious to air, and, as a consequence, the patient is constantly breathing in a mixture of fresh air and fresh ether.

I have used the cone on all sorts of cases and have found it to be very satisfactory for the administration of "drop ether." It also has the advantage of being very inexpensive, as a comparatively small amount of ether is needed, both to anesthetize the patient and to keep him in a state of "surgical anesthesia" throughout prolonged operations. Patients also recover quickly and with a minimum or entire absence of nausea or vomiting.



Wire gauze with rim of heavy wire.

Stockinet cover.

Reports of Societies.

BOSTON SOCIETY OF MEDICAL SCIENCES.

A special meeting of the society was held on April 7. The evening was devoted entirely to the presentation of current investigations in the Department of Comparative Anatomy at the Harvard Medical School. Brief papers were presented as follows:

Dr. E. B. Meigs described the histological differences between relaxed and contracted smooth muscle fibers.* Uncontracted fibers stain less darkly, show a more marked appearance of fibrillation and lie much closer together than those which are contracted. It is believed that the contraction is accompanied by a passage of fluid from the cells to the interstitial spaces.

Dr. L. W. Williams demonstrated with lantern slides the subdivision of the continuous notochord of early mammalian embryos into the intervertebral masses known as the *nuclei pulposi*. These are not degenerative structures but continue to grow after birth, and they are presumably a functional part of the intervertebral joints. It was shown that the notochord normally follows a sinuous course through the base of the skull, and that chordoma usually arises at the fixed points where the notochord comes nearest to the surface of the bone.

Dr. V. E. Emmel presented some results of experimental studies of regeneration. According to Conklin's hypothesis, inverse symmetry in molluscs and perhaps *situs inversus* in man are due to an inverse organization of the egg, corresponding with fertilization at opposite poles. It is not in accordance with this theory that the large "crusher" claw of the lobster may be made to develop on the right or left side of the animal at the will of the experimenter. This is possible until the lobster has moulted four times, after which experimental control of the asymmetry is lost. The histological changes which occur at that time are being studied.

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* Dr Meigs, Instructor in Physiology, has used the laboratory of Comparative Anatomy for the histological part of his studies of muscular contraction. His work will be published from the Department of Physiology.

Mr. R. E. Scammon discussed the accessory chromosome as a determinant of sex. He showed original preparations of the sexual cells of insects, similar to those which first led McClung to regard the accessory chromosome as a sex-determinant. Depending upon its presence or absence the spermatozoa are of two sorts, and this difference, it is believed, can be correlated only with male producing and female producing capacity. Wilson has studied a series of insects in which the striking difference observed in the grasshopper's germ-cells becomes less apparent and which suggest that sex may be determined by the chromatin arrangement in mammalian sexual cells, in which the dimorphism has not yet been observed.

Dr. F. W. Thyng described several models of the pancreas in embryos of the cat, rabbit, pig and man. Attention was called to the marked differences between the human pancreas and that of the other animals studied. The pancreas of the rabbit and pig usually encircles the portal vein; frequently it does so in the cat, but apparently no such occurrence has been recorded in man. The probable manner of development of the rare human anomaly in which the pancreas surrounds the intestine was explained.

Dr. F. T. Lewis, in describing intestinal diverticula, referred to Osler's tribute in 1881 to the works of Meckel upon this subject (1812): "No detail has escaped him, and I doubt if any new point in structure or mode of development has since been determined." Until recently, however, the regular occurrence of epithelial pockets along the small intestine of embryos has been overlooked. Some of these may give rise to mesenteric cysts and other anomalies. A description of the diverticula of embryos will be found in the current number of the *American Journal of Anatomy* (vol. 7).

Dr. J. L. Bremer described aberrant roots and branches of the abducent and hypoglossal nerves in human embryos. In the interval between these two nerves and in line with them, bundles of nerve fibers leave the brain, sometimes extending forward to join the abducent, sometimes passing backward to the hypoglossal and sometimes remaining independent of either. Through these variable roots the abducent and hypoglossal nerves are sometimes brought into very close relation.

Numerous preparations illustrating the papers presented were shown and the laboratories were open for inspection. At the close of the meeting serial sections of the eggs of the Mexican axolotl were exhibited, showing all the important stages of maturation and fertilization; eighty of these series have recently been added to the embryological collection.

Prof. C. S. Minot, in conclusion, spoke of the relations of the new Department of Comparative Anatomy to the general work of the school. The department was organized through the interest of President Eliot, with the intention of broadening the scope of the scientific work in the new buildings and of co-operating with investigators in anatomy, physiology and pathology. It is expected that it will contribute an essential part to the advanced teaching and research for which the new laboratories are specially designed and endowed. The old Department of Histology and Embryology has been merged with Comparative Anatomy, to the financial advantage of the school. The chief energy of the new department is devoted to the first-year teaching. The instruction is designed, not to produce specialists in anatomy, but to meet the needs of practitioners in medicine and to prepare students for their later work in the school. In the fourth year there are courses for specialists both in clinical subjects and in anatomy.

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Book Reviews.

The Efficient Life. By Luther H. Gulick, M.D., Director of Physical Training in the New York City Schools. New York: Doubleday, Page & Co. 1907.

Dr. Gulick, as director of physical training in the New York schools, and as a man who devotes his best energies to the study of the physical side of life, naturally writes with authority. This volume on "The Efficient Life" is a plain and straightforward statement, chiefly of physical means, whereby life may be rendered more efficient and bad habits eliminated. Such a sane presentation from an authoritative source relating to matters of personal hygiene should have wide recognition and reach many readers. The book admirably represents the growing spirit of rationality which is destined more and more to underlie the best medical treatment.

A Text-Book of Diseases of Women. By J. Clarence Webster, B.A., M.D. (Edin.), F.R.C.P.E., F.R.S.E., Professor of Obstetrics and Gynecology in Rush Medical College, in affiliation with the University of Chicago; Gynecologist to the Presbyterian Hospital and Central Free Dispensary; Consulting Gynecologist to the Passavant and St. Anthony's Hospitals, Chicago. Three hundred and seventy-two illustrations and ten colored plates. Philadelphia and London: W. B. Saunders Company. 1907.

This is a large octavo of 712 pages printed and bound in Saunders' usual excellent manner. It is particularly strong in the departments of anatomy, histology, embryology, pathology and bacteriology as applied to the diseases of women, the author having embodied much of his well-known research work in this volume. The illustrations, when placed in comparison with the work of first-class illustrators, leave a good deal to be desired, not so much in the drawing as in the values. In a few places one notes a lack of familiarity with recent literature; as in the sections on atresia of the vagina and chronic inversion of the uterus. We are glad to see carefully figured and described Webster's useful operation of shortening the round ligaments by stitching them to the posterior wall of the uterus. Throughout the book the tendency is toward the discussion of varied theories and methods rather than dogmatism about one or two, therefore the work is suited more for the practitioner and the advanced student than for the tyro in gynecology. It is of value as showing the practice of an active and skilled worker in the field of gynecology in a metropolitan center.

The Production and Handling of Clean Milk. By Kenelm Winslow, M.D., M.D.V., B.A.S. (Harv.), Chairman of the Committee on Milk of the Washington State Medical Association. Pp. 207. New York: William R. Jenkins Company. 1907.

The training of the author in agricultural science, in veterinary and human medicine and as a laboratory worker makes him peculiarly competent to handle his subject, and the book is worthy of his training. In his preface he strikes the keynote of the whole problem of satisfactory public milk supplies,— the inability or reluctance of the consumer to recognize the fact that a good product is worth a good price, and that the producer cannot be expected to conduct his business at a loss. Although his aim is to provide a working guide for the producer, the author goes far beyond in that he presents to the consumer in a convincing manner an exposition of the dangers of unclean milk and the difficulties and cost of marketing a wholesome product. The bacteriology of milk, the importance of strict cleanliness and cold as the essential factors in conserving proper taste, odor and keeping qualities, and in preventing the formation of those toxic substances which produce such disastrous results in the feeding of infants and young children; the accidental contamination of milk with the exciting causes of the common non-bovine communicable diseases; the composition of milk and milk products; the feeding, housing and care of the herd; the care of dairy utensils and apparatus; the cost of production and distribution and various other topics are treated in a masterly manner in the nine chapters which make up the body of the book. In an appendix are given plans of barns and milk rooms, facts concerning pasteurization, milking machines, stable ventilation and other matters, and a general outline of a scheme for the control and inspection of a city milk supply. The work is plentifully illustrated with cuts and half-tone reproductions of photographs and is provided with an excellent index. It is a most valuable contribution to the literature of milk hygiene, and deserves, as it doubtless will have, a wide circulation.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., M.A., F.R.S. (Edin.). Philadelphia and London: W. B. Saunders Company. 1906.

The importance of metabolism studies for an insight not only into normal, but also into abnormal, bodily processes is on all sides becoming more clearly recognized. Already for many years laboratory methods have been used in German hospitals to test the metabolism of the sick. Professor Lusk, who is a recognized authority on this subject, has rendered a signal service in placing in this volume the literature of this complex body of fact in compact and understandable form. The subjects treated in the volume include the feces, starvation, regulation of temperature, the influence of the different food-stuffs and their dynamic action, a discussion of the normal diet during growth and for the adult in various activities, and metabolism in such a variety of diseases as anemia, myxedema, exophthalmic goiter and diabetes. The bodily changes in fever are specially considered. The book ends with an account of purin metabolism in relation to gout, and with a discussion of the theories of metabolism.

The book will serve both for general reading and for reference. The reliance at every step on the original sources makes the volume certain to be of more than temporary value.

Saunders' Medical Hand Atlases. Dentistry. By Gustav Preiswerk, M.D., Ph.D., of the University of Basel. Edited by George W. Warren, A.M., D.D.S. Philadelphia and London: W. B. Saunders Company. 1906.

It is obvious that within the limits of a book of this size only a brief survey can be given of the leading topics coming under the head of Dentistry. The author has been forced to condense many chapters to such an extent that but scant justice has been done to the subjects covered, but the excellent colored plates, of which there are forty-four, illustrate clearly the text and explain much that would otherwise be obscure. Beside the colored plates there are a very large number of well-chosen illustrations in black and white which are of great value to the reader.

The chapters on the Anatomy of the Oral Cavity and the Face, and the chapter on the Comparative Anatomy of the Teeth are particularly interesting and clear. It would be difficult to treat the subject more satisfactorily without great elaboration.

The chapters on Histology present the subject clearly, and perhaps in a work intended to be only an Atlas one should not look for great detail. The student desiring to thoroughly study the histology of the teeth will be somewhat disappointed and will be obliged to turn to other works for his complete information.

Readers who are committed to the acid theory of dental caries will receive a shock when they read in the chapter on Bacteriology that "Arkövy has even demonstrated that the bacillus pulpæ pyogenes is capable in alkaline media of destroying the tooth substance." In the same chapter the author says, "Hence it is demonstrated bacteriologically that micro-organisms may occasionally be found in perfectly healthy teeth." This refers to the tooth pulp, and seemingly careful experiments are cited to prove the truth of the author's statement. This knowledge will probably serve to throw light on certain pathological processes that take place in the tooth pulp and which have hitherto baffled explanation.

The consideration of the diseases of the mouth is too brief to be satisfactory to any but the most superficial student. The treatment of defects in the teeth and technic of filling teeth is not complete, but that which is written on these subjects is for the most part accurate and well considered.

On the whole the book has much that commends it. It was evidently not intended to be a treatise covering fully the various departments of dentistry, but for hasty reference it will prove valuable to the practitioner of dentistry and of medicine, for its knowledge is accessible and accurate and well illustrated.

The book represents the trend of modern dental thought in Germany and is a fair representation of dental practice in that country and, as such, is entitled to careful consideration.

A Manual of Hygiene and Sanitation. By Seneca Egbert, A.M., M.D., Professor of Hygiene and Dean of the Medico-Chirurgical College of Philadelphia. Fourth edition, enlarged and thoroughly revised. Pp. 498. Illustrated with 93 engravings. Philadelphia and New York: Lea Brothers & Co. 1907.

This work, previous editions of which have received favorable mention in our columns, shows throughout its pages that careful revision which requires wide reading of the periodical literature of the whole field of hygiene. In spite of considerable new matter, there is no very material increase in the size of the volume, which the author desires to continue to serve the purpose of a simple "manual." This edition is certainly deserving of the most cordial welcome.

Anatomy of the Brain and Spinal Cord, with Special Reference to Mechanism and Function. By Harris E. Santee, M.D., Ph.D. Fourth edition, revised and enlarged. 8vo, pp. xxxv, 453, with 128 illustrations, 33 of which are printed in colors. Philadelphia: P. Blakiston's Son & Co. 1907.

The first edition of this work had the grave defect of an almost complete lack of illustrations. That defect has been fully remedied in the present edition, which is profusely illustrated, not only by a judicious selection from other works, but of fifty-six illustrations of decided merit. The text has also been completely re-written since its original publication, brought more fully up to date, the results of recent research have been incorporated, and the errors of former editions have been corrected. As a result the book is a very useful manual for the student of the anatomy of the central nervous system, clear, trustworthy and well-arranged. One feature of special merit, noted already in the first edition, deserves particular mention, and that is the attempt made throughout the book to correlate structure and function.

Bier's Hyperemic Treatment, in Surgery, Medicine and the Specialties. A Manual of its Practical Application. By Willy Meyer, M.D., Professor of Surgery at the New York Post-Graduate Medical School and Hospital; Attending Surgeon to the German Hospital, etc., and Prof. Dr. Victor Schmieden, Assistant to Professor Bier, University of Berlin, Germany. Illustrated. Philadelphia and London: W. B. Saunders Company. 1908.

It is time that this admirable book is offered to the profession in America, and no better authorities than Willy Meyer and Victor Schmieden could have undertaken the task. The former has for many years practiced and taught Bier's methods, while the latter, through his intimate association with Bier, is exceptionally qualified to discourse upon this interesting subject.

The authors explain the principles and purposes of Bier's treatment in their excellent preface and then proceed, in a book of 200 pages, to illustrate in detail the therapeutic advantages of induced hyperemia. If the reader is not already familiar with Bier's treatment, he will be surprised and interested to learn of the numerous lesions to which it can be applied, and he will learn this almost at a glance through the admirable construction of the book before us. The authors wisely have furnished copious marginal headings to the paragraphs and have accentuated the important points in the text by judiciously inserted italics, which are particularly striking, for example: "*The blood must continue to circulate, there must never be a stasis of the blood*"; "*The degree of obstructive hyperemia is a correct one, if the patient is not in the least annoyed by the bandage applied*"; "*All dressings ought to be removed while the compressing elastic is in place*"; "*Every obstructive hyperemia that is continued for several hours produces edema*"; "*Also under hyperemia treatment every abscess has to be opened.*" The authors explain that we have no English equivalent for the German "Stauungs-hyperemie," but they suggest and employ for convenience the English term "obstructive hyperemia." They discuss in addition the advantages of an artificially induced active hyperemia, — an arterial hyperemia as contrasted with the obstructive hyperemia, which is venous.

The writers divide their subject into two parts, — General and Special. Perhaps the special part is that which will most attract and interest the well-informed physician. Here are a few of the lesions which he may treat by Bier's method: Furuncles, carbuncles, abscesses, infected wounds, puerperal mastitis, gonorrheal joints, felon, acute osteomyelitis, erysipelas, compound fractures, tuberculosis of bone, varicose ulcers, gangrene, frost-bites, the various forms of acute articular rheumatism, meningitis, diphtheria, lumbago, trigeminal neuralgia, sea-sickness, dysmenorrhea, acute gonorrhea, acute eczema, psoriasis, etc. The variety and extent of this list may surprise and render skeptical many physicians, but they should remember that Bier's method is not a cure-all, nor do its advocates claim for it infallibility. It is an extremely ingenious application of the well-recognized principles, by which nature attempts, through a locally increased blood supply, to limit infections. By the use of Bier's treatment we supplement the efforts of nature. Many ingenious mechanical devices are in use to make effective the so-called Bier principle, and the experienced surgeon will reflect also that that principle may well be supplemented by judicious opsonic therapy, though the writers of the book before us do not dwell upon this last phase of the problem.

We commend the book cordially to all practitioners of medicine, surgery and the specialties.

THE BOSTON

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TUBERCLE BACILLI IN BUTTER.

The extent to which ingestion tuberculosis obtains has not as yet been definitely determined. Opinions differ as to whether this channel of infection is more or less common than that of inhalation; nevertheless, it occurs so often that the likelihood of it can never be disregarded. Those who consider it infrequent declare that, even admitting Koch's position to be erroneous, the milk of tuberculous cows is not likely to contain the bacillus except in that very small percentage of cases where there are tuberculous lesions of the udder. And, indeed, we do not fear to let the infant suckle its consumptive mother; if it takes the germ into its body we do not consider that it does so through the mother's milk. Moreover, the musculature of consumptive animals does not manifest tubercles until after the organs and most other tissues have become involved — probably last of all. So that such meat, when thoroughly cooked, is not dangerous (though, of course, it should not wittingly be eaten) unless the animal be in the last stages of the disease.

Those, on the other hand, who hold strongly for ingestion tuberculosis declare milk to be an ideal culture medium; that, after being drawn from the animal, it easily harbors the germ and fosters its propagation, especially under unhygienic conditions in the dairy and during its transit from the farm to the consumer. Ravenel's now classic experiment is here in point: he fed bacillus-laden butter to animals ascertained by the tuberculin test to be healthy; having shortly after their meal killed them, he found bacilli in the chyme in the thoracic duct, although the intestinal mucous membrane and lymphatics showed no evidence of involvement. Pulmonary tuberculosis under such circumstances is understood to be by way of the thoracic duct, through the vena cana, the right heart and thus to the lungs, the respiratory sifter of impurities. The position of those who hold for infection by ingestion seems much fortified by the findings of E. C. Schroeder and W. E. Cotton of the experiment station service in Washington, set forth in Circular 127,[1] entitled "Tubercle Bacilli in Butter." These authors consider that "a very large amount of butter infected with tubercle bacilli is daily consumed by our people," that this food is an ideal environment for the preservation of this bacterium. After ninety days these germs show only a doubtful reduction of pathogenic virulence. They tend to separate themselves from the milk by rising with the cream or precipitating with the sediment. Consequently, these are the parts of milk which are most intensely infected. Butter probably contains them in discernible numbers, "13 times for every 10 times they are sufficiently numerous in milk to be detected." These workers further declare that from 15% to 30% of the cows from which our cities draw their milk supply are affected by tuberculosis; that about one fourth of the samples of sediment taken from the cream separators of public creameries throughout the country show tubercle bacilli; and that the frequency with which these bacilli occur in the sediment from milk is a fair measure of their frequency in cream, from which butter is made. "Measure for measure, infected butter is a greater tubercular danger than infected milk." Furthermore, because of the shield offered by butter against the germicidal action of sunlight, it tends ideally for their preservation; and tests show that in the ordinary salted butter of commerce the Koch bacillus "may live and retain virulence practically four and a half months, or longer."

Thus does the problem here presented differ somewhat from that of milk alone. Communities are by no means alike in their appreciation of sanitary necessities and the stand which their health authorities take regarding pure milk; each can control fairly well its own milk supply and has only itself to blame when things go wrong. But it is different somewhat with the butter supply, which is drawn from various and often distant parts of the country. And the evidence educed by Schroeder and his colleague demonstrates that the most conscientious and energetic of local health boards must remain unable to cope with the problem they submit. The matter seems eminently one for state or federal consideration.

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[1] Issued by the Bureau of Animal Industry of the Department of Agriculture.

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REPORT OF BOSTON PAUPER INSTITUTIONS DEPARTMENT.

The Boston Pauper Institutions Department, consisting of the hospital and almshouse on Long Island, has long been before the public eye. Through its various vicissitudes it may fairly be said that there has been a constant improvement in the character of the important work done at the institution in its various departments. This has arisen largely from the fact that the conviction has grown and is apparently now definitely established, that the hospital must be regarded as the essential part of the institution, and that in providing adequate treatment for the chronic sick a necessary addition to the hospital facilities of the city has been established. We have no desire at this time to speculate as to the future of the institution, but there is small question that so far as the medical side is concerned it will continue to develop and become a recognized hospital for chronic disease under the jurisdiction of the city. To this end a change of name is desirable and also a separation of the hospital from the almshouse department.

We note in another column the appointment of Dr. Charles E. Donlan to the superintendency of the institution, made vacant by the recent resignation of the former incumbent. The appointment of a physician to this responsible post must certainly meet the approbation of those who have followed the later development of the institution. It recognizes the predominance of the hospital and naturally is an augury of its further development. At present, in addition to the superintendent, there are, resident on the island, a chief physician and six house officers. It cannot, therefore, be questioned that the needs of the infirm and sick are being met more skilfully and completely than ever before in the history of the institution.

We have before us the eleventh report of the department. The present Board of Trustees is evidently warmly in favor of the completest possible development of the hospital, as may be seen by a perusal of the report signed by the board. So far as the Visiting Staff is concerned, a natural and, in a measure, insuperable difficulty lies in the unsatisfactory character of the boat service. This the trustees allude to and urge strongly the necessity of a new boat, basing their argument largely on figures which can hardly be overlooked. The report of the Visiting Staff discusses many matters to which attention has been drawn for many years. Among these are the unfortunate declaration of pauperism required of patients admitted to the institution, the somewhat unavoidable overcrowding of the hospital, the inadequate accommodation for nurses and the need of a new boat. On the whole, however, the situation is decidedly encouraging, and it is hardly to be questioned that whatever vicissitudes the institution may have in the future it will maintain the position which it has now attained as a well equipped and well managed hospital for chronic disease.

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AN OPERATION FOR THE LOCAL TREATMENT OF CHRONIC DIARRHEA.

At the last meeting of the Medical Association of the Greater City of New York, Dr. Samuel G. Gant described for the first time a new operation for the local treatment of chronic diarrhea in cases in which non-operative treatment has proved inadequate, either because the condition is due to an enterocolitis or because the solutions used to wash out the bowel fail to reach ulcers located in the upper part of the large intestine. This new procedure, he said, he had designated, for want of a better name, as "cecostomy with an arrangement for irrigating the small intestine."

A seromuscular pursestring suture is inserted on the anterior surface of the cecum at or outside the longitudinal band directly opposite the ileocecal valve and an opening made in the gut. The bowel having been grasped in such a way that the valve rests between the thumb and fingers, a Gant catheter guide is introduced through the opening and directed across the cecum, where it is inserted into the small intestine. The guide is held by an assistant while the obturator is removed and a No. 12 catheter introduced into the small intestine; after which the guide is withdrawn and the catheter anchored to the cecum by suture. A piece of rubber tubing of the same caliber is then introduced into the cecum for an inch or more, when both catheters are fastened together by adhesive plaster. The pursestring suture is tied, and three or four similar sutures are introduced, one above the other, so that there results a cone-shaped projection around the catheters, the object of which is to prevent the escape of gas and feces. The cecum is scarified and anchored to the abdominal wall by through-

and-through sutures; after which the abdominal incision is closed and the catheters are stitched to the skin, or, preferably, retained in place by adhesive plaster.

By means of the two catheters thus inserted an effective method of irrigating both the small and large intestine is afforded, and it is hoped that this method may prove of service in various other conditions beside chronic diarrhea.

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MEDICAL NOTES.

Award of the Gibbs Prize. — The New York Academy of Medicine has awarded the Gibbs Prize of $20,000 to Dr. Normal Ditman. The prize was established in 1901 by Mrs. Sarah Gibbs and was to be awarded triennially. This, however, is the first thesis considered worthy of the award. Its subject is, " The Cause and Possible Prevention of Bright's Disease." The work represents much experimental research and is likely to prove a distinct addition to our knowledge.

Lecture on Internal Secretion. — On April 23, Prof. E. A. Schäfer, F.R.S., of the University of Edinburgh, delivered a lecture on " Internal Secretion " before the Medical Society of the George Washington University. The lecture was followed by a smoker. On April 22, a dinner in honor of Professor Schäfer was given at the Shoreham Hotel by representative educational and medical men of Washington. Brief speeches of welcome were made by President Needham, George Washington University; President Buell, Georgetown University; Dr. Barchfeld, Member of Congress; Surgeon-General Wyman, United States Public Health and Marine-Hospital Service; Doctor White, Superintendent of the Government Hospital for the Insane; Professor Shields, Catholic University of America; and Professor Franz, George Washington University, to which Professor Schäfer fittingly replied.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, April 29, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 57, scarlatina 79, typhoid fever 83, measles 325, tuberculosis 55, smallpox 0.

The death-rate of the reported deaths for the week ending April 29, 1908, was 25.57.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, April 25, 1908, was 241, against 257 the corresponding week of last year, showing a decrease of 16 deaths and making the death-rate for the week 20.62. Of this number 128 were males and 113 were females; 236 were white and 5 colored; 151 were born in the United States, 88 in foreign countries and 2 unknown; 42 were of American parentage, 171 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 56 cases and 5 deaths; scarlatina, 77 cases and 0 death; typhoid fever, 106 cases and 13 deaths; measles, 284 cases and 3 deaths; tuberculosis, 46 cases and 14 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 30, whooping cough 3, heart disease 30, bronchitis 8, and marasmus 5. There were 12 deaths from violent causes. The number of children who died under one year was 46; the number under five years 75. The number of persons who died over sixty years of age was 50. The deaths in public institutions were 86.

There were 4 cases and 1 death reported from cerebrospinal meningitis during the week.

Measles at Wakefield, Mass. — An extensive epidemic of measles has appeared in Wakefield, Mass., wide-spread in its distribution. The closing of the schools is being considered pending the abatement of the disease.

Bequests. — By the will of the late Charles H. Newhall, of Lynn, Mass., upwards of one hundred thousand dollars is given in public bequests. Among these the Lynn Hospital receives $50,000 in memory of the testator's parents; the Lynn Home for Aged Women, $20,000; the Centennial Home for the Aged, at Concord, N. H., $5,000; and the Lynn Home for Aged Men, $15,000. Under certain conditions the Lynn Hospital and the Lynn Home for Aged Men become residuary legatees.

Fiftieth Anniversary, Worcester North District Medical Society. — The Worcester, Mass., North District Medical Society met in Fitchburg, April 28, to observe the fiftieth anniversary of the founding of the society. Dr. Ernest P. Miller, of Fitchburg, delivered an historical address, and the following physicians spoke at the after dinner exercises: Dr. Francis W. Goss, of Roxbury, secretary of The Massachusetts Medical Society; Dr. Ernest V. Scribner, president of the Worcester District Medical Society; Dr. Charles W. Page, superintendent of the Danvers Insane Hospital, and Dr. Everett

Flood, of Palmer, superintendent of the Massachusetts Hospital for Epileptics.

Dr. J. G. Henry, of Winchendon, Mass., was elected president of the society.

Superintendent of Almshouse and Hospital, Long Island. — Dr. Charles E. Donlan, of Dorchester, Mass., has been appointed superintendent of the almshouse and hospital at Long Island, Boston Harbor, his term of service beginning May 1. Dr. Donlan was born in Lowell, Mass., in 1873. He pursued his medical studies at the Harvard Medical School, and was graduated in 1898. During the Spanish War he was associated with Gov. Curtis Guild as surgeon of the 7th Army Corps. After his resignation from the army in 1899 and a period of study abroad, he became, in 1902, superintedent of the Lowell City Hospital and Almshouse, a position which he held for more than five years. In 1905 he again visited Europe for the purpose of studying the work of institutions. We note with satisfaction that the trustees of the Long Island Institution have seen fit to appoint a medical man as superintendent. The rapid development of the hospital side of the institution makes the appointment of a physician highly desirable.

Reappointment of Dr. S. H. Durgin. — It will be a matter of general satisfaction to the medical profession and to others conversant with the situation that Mayor Hibbard of Boston has reappointed Dr. S. H. Durgin to the position of chairman to the Board of Health. Dr. Durgin has served the city thirty-five years in this capacity, and in spite of many political changes has consistently endeavored to establish the work of the board on a basis of honesty and efficiency. Without Dr. Durgin's predominant influence it is not pleasant to contemplate the inefficiency to which this important board might have come. His reappointment is a recognition of a long period of devoted service under many and peculiar difficulties. It is interesting to record at this time that in 1867 Dr. Durgin was Port Physician and at the same time Resident Physician at Deer Island in Boston Harbor. On the establishment of the Boston Board of Health in 1873, Dr. Durgin became its first, and has remained its only chairman. This makes him the oldest health officer in the United States in point of service. One of his first acts as a health officer was to seize a building on Marcella Street for the purpose of combatting a smallpox epidemic which had appeared in the city. At that time, in January, 1873, there were 676 cases, and a few hours after the establishment of the Board of Health a number of these were placed in the Marcella Street building. From that time to this Dr. Durgin's activity in meeting the exacting demands of his office has never failed.

NEW YORK.

To Protect Saratoga's Springs.—One of the last bills to pass the State Senate before its recent adjournment was the act designed to protect the mineral springs of Saratoga by prohibiting the further extraction of carbonic acid gas. The bill had previously been passed by the lower house of the legislature.

Apartment House Life a Source of Debility. — Dr. Elias H. Bartley, one of the best-known physicians of Brooklyn, in speaking on April 15 at Historical Hall in connection with the exhibit of congestion, which was removed to Brooklyn, after it closed in Manhattan, severely criticised the conditions of living in modern apartment houses. "I believe," said he, in the course of his remarks, "that children of apartment houses are often less able to withstand severe illness than those of the average tenement house. The luxurious, over-heated and poorly ventilated rooms in apartment houses cause more debility and lack of vigor in children than the unsanitary conditions in the tenements."

Current Literature.

New York Medical Journal.
April 4, 1908.

1. Peterson, F. *What We Have Not Done for the Insane.*
2. Wiener, J. *General Surgical Considerations of Joint and Bone Tuberculosis.*
3. Gilbride, J. J. *Gastro-enterostomy in Cancer of the Stomach.*
4. Pettey, G. E. *Chronic Alcoholism.*
5. Emerson, H. *Carious Teeth in the Tenement Population of New York City.*
6. Newmayer, S. W. *A Practical System of Medical Inspection with Trained Nurses, Adapted for Public Schools of Large Cities.*
7. Mackay, M. *The Clinical Laboratory of the General Practitioner.*
8. *Carter, C. E. *Lactacid Milk in Infant Feeding*

8. Carter believes that buttermilk feeding affords an uncertain and temporary expedient always. Some of its disadvantages are that it contains little or no fat; that it varies in the amount of its component parts, and that often it is absolutely unhygienic. Lactacid milk is the term adopted for fresh cow's milk which has been artificially impregnated with the "bacillus bulgaricus." The lactacid milk is logically indicated in children in difficult feeding cases, in fermental diarrheas and possibly in specific enteric infections with typhoid and tubercle bacilli.

[R. I. L.

New York Medical Journal.

April 11, 1908.

1. Satterlee, G. R. *A Case of Pernicious Malaria with Autopsy.*
2. Herzig, A. J. *Choriod.*
3. Pedersen, V. C. *Vivisection from a Student's Standpoint.*
4. Rose, A. *Malaria in Greece.*
5. Friedman, G. A. *Cammidge Reaction in Pancreatic Disease, with Notes of a Case.*
6. Stout, E. J. *A Case of Poisoning with Tansy (Tanacetums).*
7. *Van Gieson, R. E. *The Comparative Therapeutical Value of the Compounds of Iron.*
8. Coughlin, R. E. *Report of a Case of Cerebral Abscess with Masked Symptoms.*

7. Van Gieson finds that the official preparations of iron, so long useful in the past, increase hemoglobin, and that the newer so-called organic preparations of iron are apparently not as efficacious as the ferrous carbonate, the soluble oxide with sugar, the double salts with the vegetable acids and the solution of the perchloride. In all iron medication the question of defective metabolism is important. Rest in bed, massage, milk diet and electricity may be valuable adjuvants. [R. I. L.]

The Journal of the American Medical Association.

March 28, 1908.

1. Jackson, E. *Importance of Ocular Lesions and Symptoms.*
2. Getty, S. E. *Infant Mortality in the Summer Months. Methods Adopted at Yonkers for its Reduction and the Results.*
3. Frankenheimer, J. B. *Adiposis Dolorosa.*
4. Beardsley, J. G. *Epididymitis and Orchitis Complicating Typhoid.*
5. Franchehe, F. E. *Foreign Bodies in the Larynx.*
6. *Geyser, A. C. *Using the X-Ray without Burning. Addendum by Benjamin P. Riley.*
7. *McGuire, S. *Treatment of Diffuse Suppurative Peritonitis.*
8. Gwathmey, J. T. *Mixed Narcosis.*
9. Holmes, B. *A Suggestive Plan for a Modern General Metropolitan Hospital of Five Hundred Beds.*
10. Taylor, A. S. *Nerve Bridging. Report of One Successful Case.*

6. Geyser has perfected a new x-ray tube which is made of heavy lead glass, so that no rays are emitted except through a flint glass window, which corresponds in size to the lesion to be treated. This flint-glass window is placed in direct contact with the patient. He applies the tube for five to thirty minutes continuously. In over five thousand applications not a single case of dermatitis has developed. He claims most brilliant therapeutic results.

7. In the treatment of diffuse suppurative peritonitis, McGuire advocates with enthusiasm the so-called Fowler's position and Murphy's proctoclysis (the administration of saline solution by continuous low-pressure rectal irrigation). He much prefers angulation of the bed to angulation of the patient, and makes use of a bed seat to support the patient. Eighteen cases of diffuse suppurative peritonitis treated by this Fowler-Murphy method showed but one death. [R. I. L.]

April 4, 1908.

1. Oviatt, C. W. *The Ethics of Surgery.*
2. Ellett, E. C. *The Treatment of Iritis.*
3. Ellis, H. B. *Treatment of Ulcers of the Cornea.*
4. Butler, W. J. *Alimentary Intoxication.*
5. Hill, H. *Restoration of the Pelvic Floor.*
6. *Grinker, J. *Subacute Combined Cord Degeneration. With Report of Cases.*
7. Hemenway, H. B. *The Scarlet Fever Epidemic of* 1907.

6. Grinker groups the cases of sub-acute cord degeneration under three heads: (1) Those in which pernicious anemia was present from the beginning; (2) cases with a grave type of anemia, not necessarily of the pernicious variety; (3) cases in which anemia was insignificant. The pathology showed no strict conformity to the systemic type of degeneration in any of his cases. The degeneration appeared in more or less discrete patches. In nearly all his cases there was involvement of both the posterior and lateral columns. In his series of seventeen cases, fourteen were males, all adults, in only one case with a history of syphilis. Nearly all began with subjective sensory disturbances and disorders of co-ordination, and were followed by motor weakness and paresis. The absence of eye symptoms is of great importance in the diagnosis. Differential diagnosis from spinal syphilis may be impossible. His cases terminated fatally after one to six years. The treatment is purely symptomatic. Grinker has nothing to offer concerning the etiology. [R. I. L.]

Bulletin of the Johns Hopkins Hospital.

April, 1908.

1. Gould, G. M. *Ophthalmovascular Choke.*
2. *Crowe, S. J. *On the Excretion of Hexamethylenamin (Urotropin) in the Bile and Pancreatic Juice.*
3. Davis, J. S. *A Satisfactory Pressure Bandage for the Leg.*
4. *Opie, E. I. *The Effect of Injected Leucocytes upon the Development of a Tuberculous Lesion.*

2. Crowe found that hexamethylenamin (urotropin) when administered by mouth is rapidly absorbed and remains in the circulating blood for twenty-four hours. It is excreted in the bile, pancreatic juice and directly through the wall of the gall bladder in dogs. He was able to demonstrate hexamethylenamin in the bile, cerebral spinal fluid, synovial fluid, saliva, pleural effusion and blood of man. In a few clinical cases, when given in sufficiently large doses (75 gr. per diem), it appeared in the bile in quantities which sufficed to exercise a decided bactericidal action. No hematuria and no gastro-intestinal disturbance was noted even after 75 gr. per diem. Several cases did, however, present painful micturition.

4. Opie studied the action of the injection of washed leucocytes upon previously produced tuberculous lesions in the pleural cavities of dogs. Injection of a suspension of tubercle bacilli into the pleural cavity of a dog produces local tuberculous lesions and general miliary tuberculosis, which is fatal in most instances in five or six weeks. The injection of 10 ccm. of washed leucocytes into the infected pleural cavity retards the development of the tuberculous lesion. With inoculations repeated every week the dogs have mostly recovered. The leucocytes were obtained by repeated injection of turpentine into the pleural cavities of dogs. This produces a considerable sterile exudate, mostly composed of polynuclear leucocytes. The injection of the washed leucocytes alone caused an accumulation of fluid which disappeared in two or three days with a final normal result. Opie concludes that apparently exudates in which the polynuclear leucocytes are numerous and active have the greatest effect upon tuberculous lesions, and seem to reinforce the usual means of resistance. [R. I. L.]

Journal of Experimental Medicine.

March, 1908.

1. Howard, W. T. *A Detailed Study of the Changes Occurring in the Physiological Degeneration of Actinospherium Eichorni.*
2. *McCampbell, E. F., and White, D. S. *The Ophthalmotuberculin Reaction in Cattle.*
3. *Rous, F. P. *An Inquiry into Some Mechanical Factors in the Production of Lymphocytosis.*
4. *Brooks, H., and Crowell, B. S. *Concerning the Relation of the Coagulation Time of the Blood to Thrombosis in Phlebitis.*
5. Carrel, A. *Calcification of the Arterial System in a Cat with Transplanted Kidneys.*

2. McCampbell and White in a small series of cases in cattle find that the ophthalmotuberculin test is apparently accurate. With more experience it seems possible that it may supplant the subcutaneous method now in vogue.

3. Rous working on dogs found that the lymph of the thoracic duct furnishes to the blood a larger proportion of the lymphocytes in the circulation than is

usually supposed. The number of lymphocytes supplied by the thoracic duct in the healthy dog varies little from hour to hour under usual conditions. Glucose causes an increased output of lymph, and with it an increased number of lymphocytes, but no increased cell concentration. Muscular activity, on the other hand, produces a very marked increase in the output of the lymphocytes. The cell concentration may be tripled. The results in general prove the existence of a large fund of lymphocytes which may be rapidly supplied to the blood under certain conditions.

4. Brooks and Crowell, working on rabbits, found that variations in the coagulation time did not render animals abnormally prone to thrombosis invited by changes other than inflammatory. Thrombosis was most readily induced when active inflammatory lesions existed in the blood vessels. Toxins of various organisms and purely mechanical lesions seem to have little effect in producing thrombosis. When true phlebitis existed, the attending thrombosis seemed apt to be more extensive and less readily dissolved when the coagulation time was shortened by calcium lactate, and less extensive and more quickly absorbed when the coagulation time was increased by citric acid. [R. I. L.]

The Lancet.

March 28, 1908.

1. *Bainbridge, F. A. *Arris and Gale Lecture on the Pathology of Acid Intoxication.*
2. *Symonds, C. J. *Lettsomian Lecture on Tuberculosis of the Kidney and Malignant Disease of the Cecum.*
3. Reyn, A., and Kjer-Petersen. *Observations on the Opsonins, with Special Regard to Lupus Vulgaris.*
4. Young, M. *Modern Methods of Treating Infective Conditions of the Throat.*
5. *Telling, W. H. M. *Acquired Diverticula of the Sigmoid Flexure, Considered Especially in Relation to Secondary Pathological Processes and Their Clinical Symptoms.*
6. Williams, H. O. *A Case of Diaphragmatic Hernia.*
7. Morton, E. R. *A Case of Meralgia Paresthetica Successfully Treated with the Constant Current.*
8. Knaggs, R. L. *Perforation of the Esophagus by a Rabbit Bone; Septic Inflammation of the Mediastinum; Ulceration into the Aorta; Death from Hemorrhage.*
9. Ruppel, W. G. *The Method of Preparing "New Tuberculin" (Tuberculin T. R.); a Correction.*

1. Bainbridge gives a somewhat complicated article on the pathology of acid intoxication. A great part of this, interesting to those working along these lines, is on the more or less complex problems of metabolism resulting in the formation of these acid bodies. He speaks of post-anesthetic acetonuria as it occurs in children, describing the clinical symptoms and post-mortem appearances. He believes that it cannot be due directly to poisoning from the amount of the anesthetic, but that it is due to certain chemical combinations between the anesthetic used and certain tissues, otherwise it is impossible to explain the severe symptoms sometimes following the use of only a very minute amount of the anesthetic in question. He also believes that carbohydrate starvation is a factor in this post-anesthetic acetonuria, and that those patients who take freely of carbohydrate food before operation are less liable to this condition.

2. Symonds, in the second of the Lettsomian lectures, continues his consideration of tuberculosis of the kidney, dwelling in detail on certain symptoms, particularly renal colic, which he considers the most interesting of all the initial signs of renal tubercle. Albuminuria, another early sign, he does not believe has attracted sufficient attention. Hematuria is rare as an early symptom. A routine examination of the urine for tubercle bacilli when small quantities of albumin and pus are found without renal or vesical symptoms, but associated with ill health and anemia, will no doubt in the future discover many cases of early tuberculosis of the urinary tract. He does not believe that there is any necessity for immediate nephrectomy in cases where the disease is localized to one kidney, as the condition is generally unilateral. Where the bladder is involved, if not too extensively, he does not consider this a contra-indication against removing the kidney. He considers the question of removing the ureter along with the kidney itself. So much depends upon the general condition and the findings in the bladder and ureter with the cystoscope that it is impossible to lay down any general rule.

5. Telling presents a careful study of something over one hundred cases of acquired diverticula of the sigmoid flexure. Diverticula may occur in any part of the intestine, and are divided into two kinds, congenital and acquired. Meckel's diverticulum is the most familiar example of the first kind. In some cases of acquired diverticulum there is only one diverticulum; usually there are two or three, and on careful examination others can be found. They occur generally in two rows at the sides of the gut, or close to the mesenteric attachment, resembling hollowed-out pockets, varying in size from a pinhead to that of a hazel nut and occasionally larger. Usually all the coats of the bowel are represented. A great majority of cases occur in old subjects; in 80 cases the average age was sixty years. The average age at which the diverticula caused clinical symptoms, however, was fifty-five years; 53 were males and 28 females in 81 cases. Certain observers believe that obesity is a definite predisposing factor. It is generally considered that the presence of constipation, causing pressure within this part of the bowel, is the most important etiological factor. He mentions other conditions which may cause this, such as congestion of the vessels of this part of the intestine from heart disease or other cause, muscular deficiency of the wall of the intestine, etc. The pathological conditions resulting from these diverticula may come from thinning of the diverticulum wall, perforating action of the retained concretion, the presence of micro-organisms and their toxins, and consequent inflammatory reaction of varying consequent degree. There may be infection of the general peritoneal cavity from thinning of the sac walls, without perforation; acute inflammation, chronic proliferative inflammation with thickening of the gut wall and stenosis of the bowel, the formation of adhesions, lodgement of foreign bodies, local peritonitis, the development of carcinoma, and perforation into a hernial sac. These conditions he takes up and considers in detail. In regard to differential diagnosis, this condition is often mistaken for so-called left-sided appendicitis. Left-sided tumor and abscess formation was a striking feature in 63 cases; a tumor was felt in 20 and abscess formation occurred in 23. The condition is often alluded to as sigmoiditis or perisigmoiditis, the importance of the diverticula being overlooked. The chief diseases from which it must be differentiated would appear to be ordinary appendicitis, pelvic inflammations, ovarian cysts with strangulation or inflammation, actinomycosis of the sigmoid flexure, and syphilitic and tuberculous pericolitis. He considers in more or less detail this condition as a cause of intestinal obstruction and perforative peritonitis, and presents a summary of 105 cases with a very complete bibliography. The article is a careful review of this subject. [J. B. H.]

The Practitioner.

March, 1908.

1. *Broadbent, J. F. H. *The Aortic Incompetence of Later Life.*
2. Bishop, E. S. *Appendicitis.*
3. Crawfurd, R. *Valvular Disease of the Heart.*
4. Syme, W. S. *Simple Nasal Obstruction.*
5. Legg, T. P. *The So-Called Adenomata of the Palate.*
6. Hicks, H. T. *Rupture of the Genital Canal During Labor.*
7. Mayou, S. *Ophthalmia Neonatorum.*
8. *Edmunds, A. *A New Method of Intestinal Anastomosis Suitable for Cases of Gangrenous Intussusception.*
9. Tyson, W. J. *Future Lines of Treatment; Their Effects on the Profession.*
10. Shaw, H. B. *A Review of Diseases of the Blood, and Blood-forming Organs.*
11. Sikes, A. W. *A Review of Some Recent Work on Gout.*
12. Falconer, A. W. *A Case of Retro-Peritoneal Endothelioma Simulating Malignant Disease of the Pancreas.*

13. PHILLIPS, H. R. *Open Method of Ether Administration Combined with Chloroform.*

1. Broadbent presents a careful article on aortic regurgitation of later life. This is due either to senile degenerative changes, or to high arterial tension, or to constant undue strain on the valves or on the arch of the aorta. This may be the result of lead poisoning, over-eating and drinking with imperfect elimination, or be associated with gout, rheumatoid arthritis or diabetes. Severe intermittent strain on the valves, such as is entailed in various occupations (miners, colliers, etc.), he believes is an important factor. Syphilitic aortitis has long been known to cause degenerative changes in this region. He considers the physical signs in detail, the symptoms and course of the disease, and the causes of death, whether from syncope, aneurysm, angina pectoris, or from uremia. In considering treatment he takes up the question as to the use of digitalis. He believes it is seldom called for, the object of the treatment being to relieve the left ventricle by lowering the blood pressure, rather than attempting to stimulate it. If, however, compensation has completely broken down, with mitral regurgitation and pulmonary engorgement, digitalis will be of service. In young people especially, unless there are symptoms of mitral insufficiency in addition, he does not believe in using digitalis.

8. Edmunds describes a method of intestinal anastomosis for cases of gangrenous intussusception. In view of the fact that the mortality from this condition following resection of the gangrenous part of the bowel is at least 90%, he thinks it very important to find out some satisfactory substitute for this procedure. He describes previous attempts which have been made to do this. His operation consists in tying off that part of the mesentery with the vessels which supply the gangrenous part of the intestine. The intussusception is then cut away and the two cut ends of the intestines are pulled up into the wound. The special enterectomy forceps are then taken, and one blade thrust downward into each end of the open gut, and so placed that the two mesenteric attachments are brought into apposition. On closing the forceps these two surfaces of the bowel are pressed firmly together and completely deprived of their blood supply, the two plates thus acting like the two halves of a Murphy button. Then especially constructed Paul or Mixter tubes are tied into position. These tubes have a longitudinal fissure which fits exactly the arm of the forceps, so that it is possible to insert a tube into the bowel and tie it in place with the arm of the forceps lying in the groove of the tube. The rest of the operation and after-treatment consists in carrying on proper drainage until that portion of the bowel clamped by the forceps has sloughed away, leaving a large longitudinal opening between the two ends of the bowel. The cut ends of the bowel are either closed or are allowed to close by natural processes, which in his experience does not generally result in a fecal fistula. He believes that this operation will be of help in cases of intussusception which have gone on to gangrene and, in addition, in many cases of strangulated hernia, etc., in children, where a resection is impossible on account of the condition of the patient. [J. B. H.]

THE EDINBURGH MEDICAL JOURNAL.

MARCH, 1908.

1. *MORISON, A. E. *Remarks on Empyema Based on a Series of One Hundred Consecutive Cases.*
2. BRUCE, L. C. *The Symptoms and Etiology of Mania.* (Continued.)
3. FOWLER, J. S. *A Résumé of the Report of the Royal Commission on Human and Bovine Tuberculosis.*
4. *ELSWORTH, R. C. *Tumor of the Corda Equina Removed by Operation; Recovery.*
5. STRUTHERS, J. W. *A Review of Recent Work on Spinal Anesthesia.*
6. MARSHALL, D. J. *Tropical Diseases; Notes on Some of the More Interesting Cases Recently under Treatment in Edinburgh.*

1. Morison presents a study of one hundred consecutive cases of empyema. Among his conclusions he states that during anesthesia in the operation for this condition the patient should not be turned over, and that in adults it is safer to do the operation without general anesthesia. He believes irrigation to be unnecessary and dangerous, and that rib resection is needful in some neglected cases, but in the majority of cases is meddlesome surgery.

4. Elsworth reports an interesting case of tumor of the cauda equina removed by operation, with subsequent recovery. The patient was a young man of nineteen. The symptoms began nine years previously with pain in the legs and general weakness. The salient points of the case were pain in the back and along the course of the sciatic nerves, wasting of the gluteal muscles, and the muscles supplied by the great sciatic, anterior crural and obturator nerves; pain on percussion of the spine, on bending forward and on standing in the erect position, together with great general emaciation and weakness. He considers the differential diagnosis from sciatica, neuritis and pressure from causes outside of the spinal canal. Among the lesions inside the spinal canal which could account for these symptoms he considers caries of the spine and tumor in the canal. After ruling out the first condition, the question remained as to whether this was a lesion of the spinal cord or a lesion of the corda equina. After careful consideration he came to the conclusion that the patient was suffering from a tumor in the spinal canal at the level of the fifth lumbar vertebra, that the tumor was on the posterior aspect of the cauda equina, and that it was soft and probably non-malignant. Operation was advised and consented to. On opening this part of the spinal canal and removing the laminæ from the fifth lumbar vertebræ up to the second the tumor was in evidence, having already absorbed the dura mater. It was very friable and easily scooped out. It was found that it had passed through the fifth lumbar inter-vertebral foramen on the left side towards the left iliac fossa. Here it was followed and found to be encapsulated and removed. The dura mater having been destroyed, it was impossible to close the spinal canal by this means, and during convalescence considerable trouble was found from collections of spinal fluid which continued to drain off for some time. This finally ceased, and the last report from the patient, four months after the operation, was that he was doing well and improving in weight and strength. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 9.

FEB. 27, 1908.

1. *EWALD, C. A. *The Treatment of Acute Gastric Ulcer.*
2. *ALEXANDER-KATZ, W. *Gastric Ulcer and Cancer.*
3. MORITZ, F. *Percussion of the Right Border of the Heart.*
4. *BAER, G. *Deviation of Larynx and Trachea, Especially the Slanting of the Rima Glottidis, in Pulmonary Tuberculosis.*
5. BERGEL, S. *The Hemolytic Action of Fibrin.*
6. *GEORGOPULOS, M. *The Stimulation of Diaphoresis in Renal Insufficiency.*
7. POLLAK, A. *A Method for Operating in Phimosis.*
8. TREYMANN. *Trigeminal Neuralgia Due to Retention of a Tooth.*
9. FREUND, W. A. *The Operative Era in Obstetrics.*

1. Ewald found 4.8% of tardy hemorrhage among 166 cases of acute gastric ulcer. In a previous series of 482 cases he found 3% of late bleeding. He has noticed that these hemorrhages invariably occurred only when food was given by the mouth, and that they stopped when the patient was nourished only by the rectum. Nutrient enemata are mainly useful in supplying fluids, as the amount of nourishment absorbed is very small. He gives in some detail the treatment he follows in these cases, and says that he has found very useful a decoction of ten sheets of gelatin in 200 gm. of water, to which is added a tablespoonful of citric acid, a tablespoonful of sugar, and ten drops of a ferric chloride solution, the whole warmed until it is fluid, and taken a tablespoonful every two hours.

2. Alexander-Katz reports a case of gastric ulcer simulating cancer. The patient, a woman of forty-six years, had had such symptoms for eight years as to render the diagnosis of cancer apparently certain, the only evidence against it being the prolonged course of the disease. The

patient is still living and has gained much weight, although still anemic. She is now practically well.

4. Baer finds that in pulmonary tuberculosis there is frequently a slanting of the rima glottidis, which can be easily detected with the laryngoscope. In 200 tuberculous patients examined he found it present in 27%. It is assumed to be due to retraction on the part of the diseased apex.

6. Georgopulos concludes, after some extensive experimental work and reviewing the work of others, that diaphoresis, although it removes part of the circulating toxins, leaves the others in a more concentrated form. For this reason the patient must be weighed before and after the sweating, and water given to make up the loss. If the kidneys eliminate water freely, there need be no restriction of the water given, but if they do not eliminate freely, the amount of water to be given must be carefully estimated for each case. If uremic symptoms predominate, it is better to disregard the dropsy and give plenty of water. The danger of uremia is greater in those cases without dropsy. [L. G. M.]

No. 10. March 5, 1908.

1. Bruck, C., and Stern, M. *The Wassermann-Neisser-Bruck Reaction in Syphilis.* (Continued article.)
2. *Lenzmann, R. *A New Method of Treatment for Syphilis.*
3. Benckiser and Krumm. *A New Method for Treatment of Cancer Proposed by Keating-Hart.*
4. Nagelschmidt, A. *The Electric Treatment of Cancer (Fulguration).*
5. *Cohn, M. *Freund's Operation for Emphysema of the Lungs.*
6. Salomon, A. *Locally Aggressive Lymphomatosis in a Case of Testicular Tumor.*
7. Spaeth, F. *Myomotomy during Pregnancy for Torsion of the Uterus.*
8. Schultz, F. *Experimental Transmission of Common Warts from Animals to Man.*

2. Lenzmann has treated fourteen cases of syphilis with injections of quinine, giving 7½ gr. of the hydrochlorate, and repeating this dose the next day. He then injects 9 gr. and repeats this at four-day intervals for four times. To keep the beneficial action of the hyperleucocytosis he gives additional injections of a mixture of 40 parts nucleinic acid and 60 parts quinine; one part of this is suspended in 20 parts olive oil and 10 ccm. of this suspension is the dose for intramuscular injection. He describes in detail his satisfaction with the results of this treatment. After the ninth injection all signs had disappeared. Whether the cure will be permanent or not time alone will show, but the method will prove useful in those cases in which mercury fails or is not tolerated.

5. Cohn describes a case of long-standing emphysema in which he resected the second, third, fourth and fifth ribs, after the method described by W. A. Freund. The operation offered no difficulties, and the result was markedly successful. The expansion of the upper chest was only 1 cm. before the operation, while afterwards it was 5 cm., and the patient was free from respiratory distress. [L. G. M.]

Archiv für Klinische Chirurgie.

Band 83. Heft 2.

1. *Ruge, E. *The Pathology and Treatment of Purulent and Ulcerative Proctitis.*
2. *Lexer, E. *The Ideal Operation for Arterial and Arterio-venous Aneurysms.*
3. Von Baracz, R. *Strangulated Hernia Complicated by Thrombosis of the Superior Mesenteric Vein.*
4. Stich, R. *The Transplantation of Organs by Means of Vessel Suture.*
5. *Offergeld. *Lung Complications Following Ether Narcosis.*
6. *Sauerbruch. *The Application of Lowered Pressure Methods in the Surgery of the Heart.*
7. *Frank, A. *The Treatment of Subcutaneous Injuries of the Kidney.*
8. Thiemann. *Needle Wound of the Right Ventricle and Auricle; Suture; Cure.*
9. Moszkowicz, L. *The Technic of Uranoplasty.*
10. Gluck, T. *The Development of Lung Surgery.*
11. *Guleke, N. *Acute Yellow Atrophy of the Liver Following Chloroform Narcosis.*
12. Küster. *Diverticulum and Circular Scars of the Esophagus.*
13. Owtschinnikow, P. J. *Chronic Fibrous Encapsulated Peritonitis.*
14. Wendel, W. *Surgery of the Esophagus Performed via the Thorax.*
15. Bally, R. *Tuberculous Coxa Vara.*
16. Schultze. *A Simple Apparatus for Raising the Patient during Abdominal Operations.*

1. Ruge has collected the data on seventy-five cases of rectal ulcers and strictures which have occurred in the clinic of Körte during the past seventeen years. From these he concludes that simple medical treatment, even when combined with general and local anti-syphilitic measures, is only curative when there are no formed ulcers present, i. e., in simple purulent proctitis. In the presence of ulcers and strictures, medical treatment, even with the addition of bougies, can only improve the condition somewhat. The same is true when the local applications are made through a colostomy opening. The use of retrograde bougies through such an opening is not without danger. If one can be sure that the ulcers do not extend above the flexure of the sigmoid, and if this is freely movable, extirpation of the diseased portion of the rectum with subsequent suture will bring about a radical cure. If the ulcers extend above the lower portion of the sigmoid, a rectal extirpation can be accomplished only by the combined abdominal and perineal routes. The simple perineal operation is of value only when the lowest portion of the rectum is alone involved. Excision of the stricture, by the sacral route, with subsequent transverse suture of the gut, is only feasible in the absence of extensive or deep ulcerations. A posterior rectotomy should be performed when the conditions are such as to make an excision impossible, in cases where the form or severity of the disease makes some operative interference necessary. In these cases the outlook for a cure is relatively small. In every instance free exit for the secretions should be provided by cutting the sphincter. The etiology of ulcerative proctitis, as well as that of the inflammatory rectal stricture, is usually syphilis. Tuberculosis, dysentery and gonorrhea are less often seen.

2. Lexer advocates lateral suture in all cases of aneurysm where there is sufficient sac. If the vessel has been more extensively injured it should be resected and the ends united by a circular suture. If the resulting space between the ends after resection prove too large, a transplantation of a piece of vein should be attempted.

5. As a result of numerous experiments on guinea pigs and rabbits, Offergeld finds that ether administered by the drop method causes less grave pulmonary changes than when given by the cone or by an apparatus which mixes it with oxygen.

6. Sauerbruch reports his experience in the surgery of the heart with the negative pressure apparatus as follows: (1) The performance of heart operations in the pneumatic cabinet, since the dangers of pneumothorax are removed, can be carried out through whatever incision seems most simple and convenient. (2) By being able to regulate the amount of pneumothorax, operations can be done at a pressure difference of 3 mm. Hg under which conditions the bleeding from the heart wound is much lessened and the placing of sutures much facilitated by the flabbiness of the heart wall. (3) After the suture is completed, by raising the negative pressure to 7 or 8 mm. of Hg, the partial pneumothorax can be removed before closing the wound. By this means disturbances of the circulation are avoided, and immediately there ensues a marked stimulation of the heart action. By obviating the pneumothorax the danger of infection of the pleural cavity is much lessened. (4) In placing sutures in the right heart a transient angulation of the cava by dislocation of the heart is of great aid.

7. Frank concludes from observations on 39 cases of ruptured kidney that operation is not necessary except

when the kidney has become infected. In the presence of infection operation is indicated as soon as possible. Of the uncomplicated cases, many of which were severe, there were no deaths under symptomatic treatment, and no case was so incommoded as to be unable to work after recovery. Of the 39 cases, 6 died, while 33 recovered; of 9 cases in which other severe injuries accompanied the ruptured kidney, 5 died and 4 were cured. Of 30 uncomplicated cases one died of suppuration, while 29 recovered under expectant treatment. No cases died or needed operation on account of either primary or secondary hemorrhage.

11. Guleke reports the case of a girl of twenty-three years, well and strong, for whom a radical cure of an inguinal hernia was performed. The operation lasted scarcely a half hour. Chloroform was the anesthetic used. Death followed ninety-two hours later from very severe, rapidly progressing jaundice and cholemia. At autopsy there was found marked destruction and fatty degeneration of the liver cells, as well as of the convoluted tubules of the kidneys. The straight tubules were less affected, while the glomeruli were normal. Leucin and tyrosin were present in the urine. [W. C. Q.]

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Miscellany.

FIFTH PAN-AMERICAN MEDICAL CONGRESS.

The Fifth Pan-American Medical Congress will be held in Guatemala City, Guatemala, Aug. 5, 6, 7, 8, 9 and 10, 1908. The Executive Committee have announced the following subjects as having been chosen for the general discussions:

GENERAL MEDICINE.

Tropical anemias.

The present cause and treatment of cancer.

SURGERY.

Prostatectomy: Operations for repairing the ureters.

HYGIENE AND DEMOGRAPHY.

Should the segregation of lepers be inforced?

Demographic distribution of tuberculosis in America.

MENTAL AND NERVOUS DISEASES.

Classification of mental diseases.

A discussion of dementia precox.

INTERNAL MEDICINES.

Tropical diseases the character and causes of which have not yet been determined.

Ankylostoma.

GYNECOLOGY.

Can metritis be considered as predisposing cause of cancer of the uterus?

The best means of keeping the uterus in position in cases of prolapse.

MILITARY SANITATION.

First aid to the injured on the battle field and organization of an advance guard to render assistance.

The hygienic equipment of the soldier.

The supply of drinking water in ports; its distribution and the best way of preventing its contamination by insects.

SYPHILIS AND DERMATOLOGY.

Paresis and the locomotor ataxia syphilitic.

OPHTHALMOLOGY.

What is the best method of treating pigmentary retinitis that we have at present?

Discussion of trachoma.

OBSTETRICS.

Post-partum hemorrhage in valvular lesions of the heart.

CHILDREN'S DISEASES.

Infantile meningitis.

MEDICO-LEGAL.

Psychical causes that attenuate or annul the responsibility.

Civil rights relative to people's mental condition.

LARYNGOLOGY AND RHINOLOGY.

Cause and treatment of rhinoscleroma.

DENTAL SURGERY.

Indications of the extractions of teeth.

TROPICAL DISEASES.

Prophylaxis and treatment of yellow fever.

RADIOGRAPHY.

Exact methods used in radiography.

BACTERIOLOGY.

Bacteriological study of typhus fever. Bacteriological study of rhinoscleroma. Bacteriological study of leprosy. Filaria sanguinis hominis in Central America. Diseases that can be transmitted by mosquito bites.

MATERIA MEDICA.

Central American quinine. Central American sarsaparilla. A study of the myroxylon pereiræ tree in the botanical, chemical and statistical way.

The names of gentlemen desiring to take part in the discussions and to present a paper can be sent to Dr. Azurdia, General Secretary, Guatemala; or to Dr. Ramon Guiteras, American Secretary, 75 West 55th Street, New York.

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Correspondence.

CHELSEA FIRE. PHYSICIANS' RELIEF COMMITTEE.

377 Beacon St.,
Boston, Mass., April 27, 1908.

Mr. Editor: I enclose for publication a statement of the contributions which have been received for the relief of the physicians who suffered in the Chelsea fire. Further contributions are earnestly solicited and will be gratefully acknowledged.

Very truly yours,
Robert B. Greenough, M.D.,
Treasurer, Physicians' Relief Committee.

Previously acknowledged in the Boston Medical and Surgical Journal of April 23, 1908: $2,237.00.

Drs. H. L. Burrell, $25, S. D. Presbrey, $5, F. H. Thompson, $5, W. M. Conant, $25, J. J. Putnam, $25; Miss Lydia Ross, $2; Mrs. Ellen F. Woodbury, $10; Drs. Farrar Cobb, $15, Henry C. Angell, $25, D. F. Jones, $10; The Misses Storer, $10; Dr. Wm. N. Swift, $25; Extensor Communis Medical Club, $100; Dr. Charles J. White, $15; Beverly physicians, additional, $5; Drs. E. A. Codman, $10, John B. Brainerd, $10; Mellin's Food Co., $50; Drs. V. Y. Bowditch, $20, F. W. Johnson, $25, C. Morton Smith, $5, S. J. Mixter, $25, M. W. Richardson, $10, W. A. Perrins, $10, J. L. Ames, $5, C. W. Townsend, $15; Mr. F. L. Higginson, $20; Drs. E. H. Bradford, $25, Owen Copp, $10, E. M. Buckingham, $20, J. A. Denkinger, additional, $3, J. L. Morse, $25, H. P. Bowditch, $20, M. V. Pierce, $25, H. T. Baldwin, $10, N. S. Hunting, $15. Total, $2,897.00.

RECORD OF MORTALITY

For the Week ending Saturday, April 18, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	2
Chicago	627	196	Waltham	8	1
Philadelphia	—	—	Pittsfield	9	2
St. Louis	—	—	Gloucester	—	—
Baltimore	190	47	Brookline	4	1
Cleveland	—	—	North Adams	3	1
Buffalo	—	—	Chicopee	11	6
Pittsburg	—	—	Northampton	9	1
Cincinnati	—	—	Medford	3	1
Milwaukee	—	—	Beverly	3	1
Washington	—	—	Leominster	2	1
Providence	69	20	Hyde Park	5	2
Boston	241	64	Melrose	7	0
Worcester	47	17	Newburyport	—	—
Fall River	46	28	Woburn	1	1
Cambridge	36	9	Westfield	6	1
Lowell	42	15	Marlboro	5	0
Lynn	28	6	Revere	4	2
New Bedford	41	14	Attleboro	1	0
Springfield	35	5	Peabody	—	—
Lawrence	30	9	Adams	3	2
Somerville	15	3	Clinton	3	0
Brockton	15	6	Gardner	7	4
Holyoke	15	7	Milford	3	—
Malden	15	4	Watertown	4	0
Chelsea	—	—	Plymouth	—	—
Newton	8	3	Weymouth	4	0
Salem	12	4	Framingham	4	—
Haverhill	16	2	Southbridge	5	4
Fitchburg	6	2	Wakefield	—	—
Everett	4	—	Webster	—	—
Taunton	12	5	Arlington	—	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED APRIL 15, 1908.

Mead, F. W., surgeon. Granted leave of absence for ten days from April 12, 1908. April 11, 1908.

Carrington, P. M., surgeon. Granted leave of absence for four days from April 8, 1908, under paragraph 189, Service Regulations.

McIntosh, W. P., surgeon. Directed to proceed to Boston, Mass., for special temporary duty, upon completion of which to rejoin his station at Portland, Me. April 12, 1908.

Cobb, J. O., surgeon. Relieved from duty at Cairo, Ill., and directed to proceed to Milwaukee, Wis., assuming charge of the Service at that port. April 8, 1908.

Guiteras, G. M., surgeon. Directed to proceed to Pascagoula, Miss., for special temporary duty, upon completion of which to rejoin his station at Mobile, Ala. April 13, 1908.

Stimpson, W. G., surgeon. Directed to assume temporary charge of Port Townsend Quarantine Station during absence of Passed Assistant Surgeon Oakley, on leave for one month from April 15, 1908. April 11, 1908.

Nydegger, J. A., passed assistant surgeon. Granted leave of absence for two days from April 11, 1908, under paragraph 191, Service Regulations.

Oakley, J. H., passed assistant surgeon. Granted leave of absence for one month from April 15, 1908. April 11, 1908.

Wickes, H. W., passed assistant surgeon. Relieved from duty at Stapleton, N. Y., and directed to proceed to New Orleans, La., reporting to the medical officer in command of the marine hospital for duty and assignment to quarters. April 8, 1908.

Goldberger, Joseph, passed assistant surgeon. Granted leave of absence for seven days from April 9, 1908. April 11, 1908.

Schereschewsky, J. W., passed assistant surgeon. Directed to report at the Bureau, Washington, D. C., for special temporary duty, upon completion of which to rejoin his station in Baltimore, Md. April 13, 1908.

Wilson, R. L., passed assistant surgeon. Relieved from duty at New Orleans, La., and directed to proceed to Cairo, Ill., assuming command of the Service at that port. April 8, 1908.

Jackson, J. M., acting assistant surgeon. Granted leave of absence for ten days from April 4, 1908. April 8, 1908.

James, W. F., acting assistant surgeon. Granted leave of absence for thirty days from July 1, 1908. April 4, 1908.

Rice, W. E., acting assistant surgeon. Granted leave of absence for fourteen days from May 1, 1908. April 13, 1908.

Scott, E. B., pharmacist. Granted leave of absence for two days from April 14, 1908. April 13, 1908.

BOARD CONVENED.

A board of medical officers was convened to meet at Seattle, Wash., April 13, 1908, for the physical examination of an alien. Detail for the Board: Passed Assistant Surgeon M. W. Glover, chairman; Assistant Surgeon C. W. Chapin; Acting Assistant Surgeon F. R. Underwood, recorder.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING APRIL 26, 1908.

C. N. Fiske, passed assistant surgeon. Orders to Washington, D. C., revoked; to continue treatment at the naval hospital, Mare Island, Cal.

F. X. Koltes, assistant surgeon. Detached from the navy yard, Mare Island, Cal., and ordered to the "Connecticut."

R. C. Ransdell, assistant surgeon. Detached from the "Connecticut" and ordered to the second torpedo flotilla.

J. G. Ziegler, acting assistant surgeon. Ordered to duty at the naval hospital, Portsmouth, N. H.

C. N. Fiske, passed assistant surgeon. Ordered home and granted sick leave for two months when discharged from treatment at the naval hospital, Mare Island, Cal.

M. D. Baker, pharmacist. Appointed pharmacist from April 17, 1908.

SOCIETY NOTICES.

American Laryngological Association. — The Thirtieth Annual Congress of the American Laryngological Association will be held at Montreal, Canada, May 11, 12 and 13, 1908. The sessions will be held at the Windsor Hotel. The profession is cordially invited to attend.

James E. Newcomb, M.D., *Secretary*.

American Medical Editors' Association. — The Annual Meeting will be held at the Auditorium Hotel, Chicago, on May 30 and June 1. An extensive and interesting programme has been prepared and every member of the Association is urged to be present and editors of medical magazines, not now affiliated, are also invited to meet with them. Do not forget the date, Saturday, May 30, and Monday, June 1.

J. MacDonald, Jr., M.D., *Secretary*.

National Confederation of State Medical Examining and Licensing Boards. — The Annual Meeting of the National Confederation of State Medical Examining and Licensing Boards will be held at the Lexington Hotel, 22d Street and Michigan Boulevard, Chicago, Ill., on Monday, June 1, 1908. The sessions will be called to order at 10 a.m., 2 p.m. and 8 p.m.

Murray Galt Motter, M.D., *Secretary*.

RECENT DEATHS.

Catherine Maloney Kennedy, M.D., M.M.S.S., died in Springfield, April 10, 1908, aged sixty-three years.

Gustavus Hay, M.D., M.M.S.S., died in Jamaica Plain, April 26, 1908, aged seventy-eight years.

Marcello Hutchinson, M.D., M.M.S.S., died in Lynnfield Centre, April 20, 1908, aged fifty-eight years.

BOOKS AND PAMPHLETS RECEIVED.

Medical Gynecology. By Howard A. Kelly, A.B., M.D., LL.D., F.R.C.S. (Hon. Edinb.) Illustrated. New York and London: D. Appleton & Co. 1908.

Hot Springs, Virginia. By Guy Hinsdale, A.M., M.D. Reprint.

In Memoriam. Samuel Edwin Solly, M.D., M.R.C.S., Brig.-Gen. Charles H. Alden, M.D., U.S.A., W. C. Glasgow, M.D. Reprint.

The Mellin's Food Method of Percentage Feeding. Boston, 1908.

The Sanatorium Treatment of Mental and Nervous Diseases. By Dana F. Downing, M.D. Reprint.

Twenty-third Annual Report of the Adirondack Cottage Sanitarium. Saranac Lake, N. Y. 1907.

Cancer. Relief of Pain and Possible Cure. By Skene Keith, M.B., F.R.C.S. Ed., and George E. Keith, M.B.C.M. New York: The Macmillan Co. 1908.

R. H. Lin

TO

REGINALD HEBER FITZ, M.D., LL.D.

HERSEY PROFESSOR OF THE THEORY AND PRACTICE OF PHYSIC
IN HARVARD UNIVERSITY

FROM

HIS FORMER HOUSE PUPILS AT THE MASSACHUSETTS
GENERAL HOSPITAL AND ASSISTANTS IN THE
DEPARTMENT OF THE THEORY AND
PRACTICE OF PHYSIC, HARVARD UNIVERSITY

IN HONOR OF

HIS SIXTY-FIFTH BIRTHDAY

MAY 5, 1908

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REGINALD HEBER FITZ.

REGINALD HEBER FITZ, whose house officers and assistants have united to celebrate his sixty-fifth birthday, has for thirty-eight years been an active factor in the development of medicine and medical education, not only in Boston, but also in the United States. Having graduated from Harvard in 1864, Dr. Fitz started his medical studies in Cambridge under the inspiring direction of the eminent physician and anatomist, Jeffries Wyman. At the same time he attended the lectures at the Harvard Medical School. The following year he came to Boston and devoted himself to study at the Medical School until April, 1867, when he became house officer at the Boston City Hospital. Here, during the service of Dr. John G. Blake, he had an opportunity to study a severe epidemic of typhus fever. After the hospital service, a few months sufficed to give him his degree, and at the end of his four years of medical training, soon after commencement, in 1868, he sailed for Europe.

Virchow had published his "Cellular Pathology" ten years before, and during the time that had elapsed the men who were to make modern medicine had developed under the inspiration of this truly epoch-making man and were in a position to give their best teaching. In Vienna under Oppolzer and Skoda, in Berlin under Virchow, in Paris under Cornil and in London under Murchison, Dr. Fitz studied and worked. Before his return to Boston in 1870, he published a paper in Virchow's *Archives* on "Bronchiectasis."

Coming back to Boston from his period of close application in the European laboratories, his ability and attainments were at once recognized, especially by the older and powerful group of men at the Massachusetts General Hospital and the Harvard Medical School, so that in 1871 he was made Microscopist to the former and at the latter Instructor in Pathological Anatomy. His methodical German methods at autopsies were a revelation to the house officers of that day, and he early demonstrated his skill as a microscopist by making, in a tumor of doubtful origin, a correct diagnosis of syphilis, to the discomfiture of his competitors in microscopic work.

Two years later, in 1873, he entered the faculty of the Harvard Medical School as Assistant Professor of Pathology, so that for thirty-five years he has had to do constructively with medical education.

Dr. Fitz's return to Boston, it will be remembered, was coincident with Charles W. Eliot's advent to the presidency of Harvard College. President Eliot had immediately joined the radicals of the medical faculty, and aided them in putting through the changes which did away with the old lecture system and established the first graded course of medical instruction in the country. Although Dr. Fitz took no part in bringing about this change in the course of study, nevertheless as secretary of the faculty from 1874 to 1883 he did much towards setting forth the advantages of the graded continuous course of study, so that one by one the other schools of the country fell into line. He early became a member of the committee of the faculty on the course of study, and for many years has acted as chairman of this committee. In this position he has exerted an influence on medical education by many carefully considered reports which he has presented to the faculty.

As we have seen, Dr. Fitz early took rank as a pathologist, but at the same time he held the position as physician at the Boston Dispensary from 1871 to 1882, and he has, throughout his career, looked upon pathology and allied medical sciences as the handmaidens of clinical medicine rather than goddesses to be pursued for their own charms.

Dr. Fitz was appointed Professor of Pathological Anatomy in 1878, the title being changed to Shattuck Professor of Pathological Anatomy the following year. His lectures were descriptions of the changes found in regions and organs rather than of the processes bringing about the changes. The causal factors in disease were but dimly understood until the later days of his professorship, but his clear-cut, concise description of pathological changes will ever remain with his pupils.

In 1886 he presented, at the meeting of the Association of American Physicians, his most celebrated contribution to medical literature, entitled, "Perforating Inflammation of the Vermiform Appendix, with Special Reference to its Early Diagnosis and Treatment."

In the following year, 1887, he was appointed one of the Visiting Physicians of the Massachusetts General Hospital, though he maintained his position of professor of pathological anatomy at the Medical School till 1892, when he became Hersey Professor of the Theory and Practice of Physic. In this position he made no attempt to modify the old lecture system of this professorship beyond the establishment of his famous quiz-clinic, where the students' reasoning faculties were sharpened under the watchful eye of the professor himself. In his lectures selected groups of diseases were treated so that the student might have a comprehensive grasp of the underlying pathological conditions on which the whole group was dependent.

In 1900, urged on by the great development in the knowledge of disease processes and of laboratory methods for the recognition of morbid conditions, Dr. Fitz found it necessary to introduce into his department a body of assistants who should aid in the work. This group of men have taught in small sections, giving in the second year the most elementary instruction, which is supplemented in the third year by more advanced work.

This system of teaching he expanded until now in the fourth year there are courses in the hospital wards and laboratories where patients are under continuous observation by the students. Opportunity is also offered at the Medical School for original investigation on medical problems, making in all a very comprehensive course of study for the student in the Theory and Practice of Medicine.

In 1889 Dr. Fitz delivered, before the New York Pathological Society, his second notable contribution to medical literature, the Middleton Goldsmith Lecture on " Acute Pancreatitis."

Honors in the medical world have come to Dr. Fitz, and we find that he has had not only membership in the local medical societies, but a guiding hand as well, having served The Massachusetts Medical Society as Councilor for many years, and the Boston Society for Medical Improvement as president. In 1889 he was elected a Fellow of the American Society of Arts and Sciences; in 1892, Associate Fellow of the College of Physicians of Philadelphia; in 1893 Honorary Member of the Medical and Chirurgical Faculty of the State of Maryland; in 1900 Corresponding Member of the Schlesische Gesellschaft für Vaterländische Cultur; in 1904 Honorary Fellow of the New York Academy of Medicine; in 1907 Corresponding Member of Gesellschaft für innere Medicin und Kinderheilkunde of Vienna; in 1905 Harvard College conferred the degree of LL.D.; he was president of the Association of American Physicians in 1894, and in 1907 he was president of the Congress of American Physicians and Surgeons, delivering an address entitled the " Borderland of Medicine and Surgery."

The work that Dr. Fitz has done during his active period of life has been largely critical and judicial, though always with a constructive tendency. He has formed his opinions for himself, and then bravely stood by them, even at times when they were in opposition to those of a majority of his friends or to the potent influence of the president of the university. His general position has been that of a conservative and critical councilor rather than a radical leader. His industrious habits of work have been individualistic on the whole. He has studied the works of others, rearranged their ideas or presented them in a new and truer light to the world but has not sought to be the leader of a group of students searching for new facts. Yet his personal industrious application to study has been a source of inspiration to those who have had the good fortune to be his students and assistants.

The freedom from the petty annoyances of teaching and hospital detail that is to come to him is to be considered an earnest of wise and thoughtful articles in the near future on some of the great problems that concern medical advancement.

A. K. Stone.

SOME BLOOD PRESSURE OBSERVATIONS IN ECLAMPSIA.

BY GEORGE S. C. BADGER, M.D., BOSTON,

Medical House Pupil, Massachusetts General Hospital, 1898; Physician to Out-Patients, Massachusetts General Hospital; Assistant in the Theory and Practice of Physic, Harvard University.

The study of the blood pressure in pregnancy and the puerperium has assumed considerable importance since the development of accurate and simple sphygmomanometers. In uncomplicated pregnancy the blood pressure has been demonstrated to be within normal limits until the beginning of labor pains. With each pain there is a rise of pressure, the maximum being reached with the expulsion of the head. Following delivery there is a rapid decline of pressure to the normal. Any marked departure from this normal is pathological. Vogeler [1] gives, as the normal range of systolic pressure during pregnancy, 100 to 150 mm. of mercury. These figures he obtained from the weekly estimation of pressure in 50 pregnant women, 38 primiparæ and 12 multiparæ. His observations extended over many weeks preceding delivery, the patients being in an institution where they were under perfect control. Similar conclusions were reached by Lebedoff,[2] Stengel and Stanton,[3] Goldwater,[4] Cook and Briggs,[5] Vaquez,[6] and others. During labor they record a rise of pressure with each pain, the maximum, as already stated, occurring with the expulsion of the head. This increased tension is called the tension of effort. The fall of pressure to the normal after labor is rapid and is permanent.

A rise of blood pressure above the normal during pregnancy or the puerperium is pathological and of diagnostic importance. Vogeler [1] says the most common causes of a peristent elevation are arteriosclerosis, nephritis and eclampsia. Moderate elevations, 150 to 180, are found in arteriosclerosis and nephritis. Extreme hypertension, 180 and over, is significant of eclampsia, even in the absence of albuminuria.

How early in the development of eclampsia the blood pressure rises I have been unable to determine from the literature. The cases reported have come under observation when the eclamptic condition was well established. Future observations may show that it is one of the earliest signs. Queirel and Reynaud [7] conclude that in pathological complications of pregnancy it gives precise information for prognosis and treatment. A continued high tension, unrelieved by treatment, makes the prognosis unfavorable. It is an absolute indication for delivery in eclampsia. Cook and Briggs [5] claim that a study of the blood pressure in eclampsia is a better guide to treatment than a study of the urine. Vogeler reports that in eclampsia the blood pressure is invariably high, and that this is the best prodromal symptom, whether albumin be present or not, and if the pressure remain high, regardless of symptoms, the prognosis is bad.

After delivery in eclampsia, the blood pressure falls in cases going on to a favorable ending. The persistence of the high pressure demands active treatment and suggests an unfavorable outcome.

In post-partum eclampsia the pressure is high. Cook and Briggs [5] report a case. At the time of delivery the systolic blood pressure was 200, and a few hours later it rose to 210, when convulsions occurred. With treatment it fell to 125 slowly, then to 75, gradually rising to 95. Eclampsia evidently existed in this patient at the time of delivery but without convulsions. The diagnostic importance of continued high tension after delivery is illustrated by this case.

A most striking fall of blood pressure occurs in some cases of eclampsia very soon after delivery, without hemorrhage or shock to account for it. In the case just quoted the tension in the artery fell in a few hours from 210 to 75. Other similar drops in the pressure are reported. Thus Vogeler reports two cases: a primipara, age twenty-two, after the first convulsion showed a systolic pressure of 155, rising quickly to 180, when further convulsions occurred. One hour after delivery, with chloroform anesthesia, the pressure was 80, rising in twelve hours to 150. In the second case, a primipara of thirty-six, with edema of three weeks' duration, nausea and vomiting, blindness and albuminuria, a blood pressure was recorded of 200. Three hours after delivery it was 125, and three hours later 95, a total fall of pressure in six hours of 105 mm. of mercury. During the next few days it rose slowly to 160, falling later to 110 just before death. These excessive falls of blood pressure are not the usual occurrence. The fall after delivery is rapid, but moderate in favorable cases. Thus Queirel and Reynaud [7] report a pressure of 230, rising to 240 at the time of delivery. Nine hours later it was 180, and in the following days gradually returned to normal.

The observations of the systolic blood pressure in eclampsia which I wish to record were made with a Janeway sphygmomanometer, with a twelve-centimeter armpiece. The eclamptic condition was well established in both patients when they came under observation. Each patient was studied a few days before delivery, and the effects of treatment other than delivery watched. The usual treatment for eclampsia was given. A strictly milk diet, free cartharsis, hot air baths with free sweating, produced but little effect on the blood pressure. In one instance before a hot-air bath the pressure was 222, and directly after the bath, during which there was free sweating, it was 218. Tension-lowering drugs, tincture of aconite and nitroglycerin in large and frequently repeated doses, produced almost no impression. Following delivery in both cases there was a fall in the pressure to normal, in one case a rather rapid fall, in the other a very gradual one.

Case I. (Chart I.) IIpara, thirty-four years, entered St. Elizabeth Hospital Oct. 23, 1907, six months pregnant.

Family history unimportant.

As a child had scarlet fever, measles and frequent sore throats. Otherwise perfectly well. Has one child three years old. During the last two months of that pregnancy had swelling of the ankles to a moderate extent. Otherwise the pregnancy and confinement were normal. Since then has been in perfect health.

Last catamenia was in the latter part of April, 1907, and until the present illness she had been in excellent health.

During the three weeks before entrance to the hospital she had noticed swelling of the ankles, legs, hands and face. There were frequent vomiting and scanty urine. Just before entrance there occurred a slight convulsion.

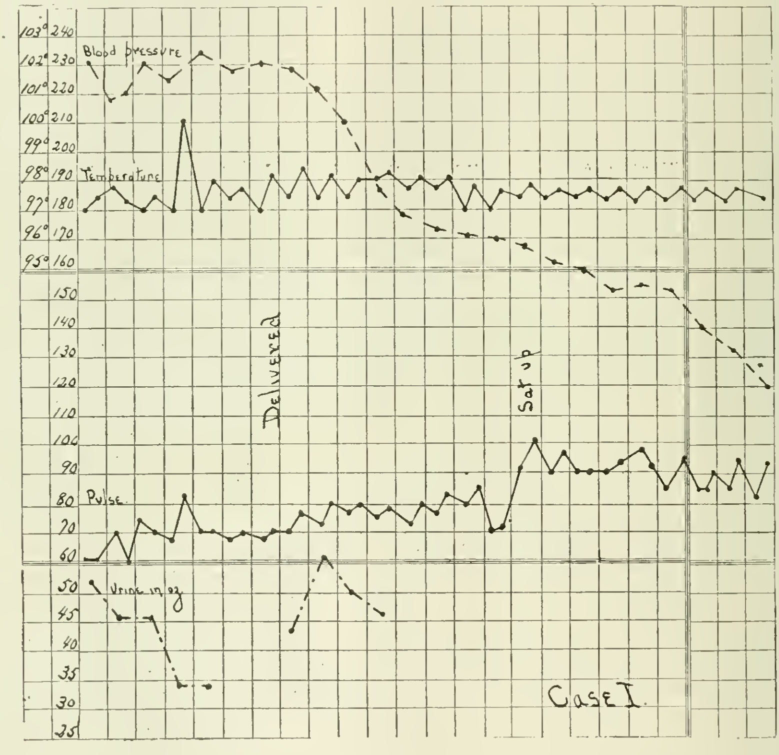

Chart I.

Examination showed nothing remarkable beyond the edema and a large amount of albumin with hyaline and granular casts. The twenty-four-hour quantity of urine was 450 ccm. The tension in the radials felt very high.

Considerable improvement followed treatment, the quantity of urine increasing to over 2,500 ccm. in the twenty-four hours. A week after entrance, in spite of treatment and apparent improvement, the blood pressure was 230, and remained at about this point. As a retinal hemorrhage now occurred, immediate delivery was done. The accompanying chart shows the gradual decline of the pressure until normal was reached (150) ten days after delivery. At the time of discharge the urine was free from albumin, the eyesight was normal, the blood pressure 120. Three months later she reported at my office in good health, with a normal blood pressure.

Case II. (Chart II.) IVpara, thirty-one years. Five and a half months pregnant.

Family history unimportant.

Measles as a child, otherwise always well.

One child living, four years old. Two miscarriages at seven months, cause unknown. There was nothing in the history to suggest kidney trouble, no headaches, unusual nausea or vomiting, edema, or eye symptoms. Until the present illness began was never up at night to micturate.

Entered St. Elizabeth Hospital Nov. 8, 1907. Five days before complained of pain between shoulders. The next day was in bed because of great weakness. The urine at this time was noticed to be scanty. There was severe headache and a complaint of specks before the eyes. There were no edema, no convulsions.

Physical examination showed nothing remarkable beyond a very high tension pulse (220), a sharply accentuated aortic second sound, and the uterus enlarged to correspond to a pregnancy of about five and one-half months. The urine was diminished in quantity, 850 ccm. in the twenty-four hours; there was a large amount of albumin and many casts, both hyaline and granular.

Under treatment the urine increased to 2,000 ccm., but the blood pressure remained high (225).

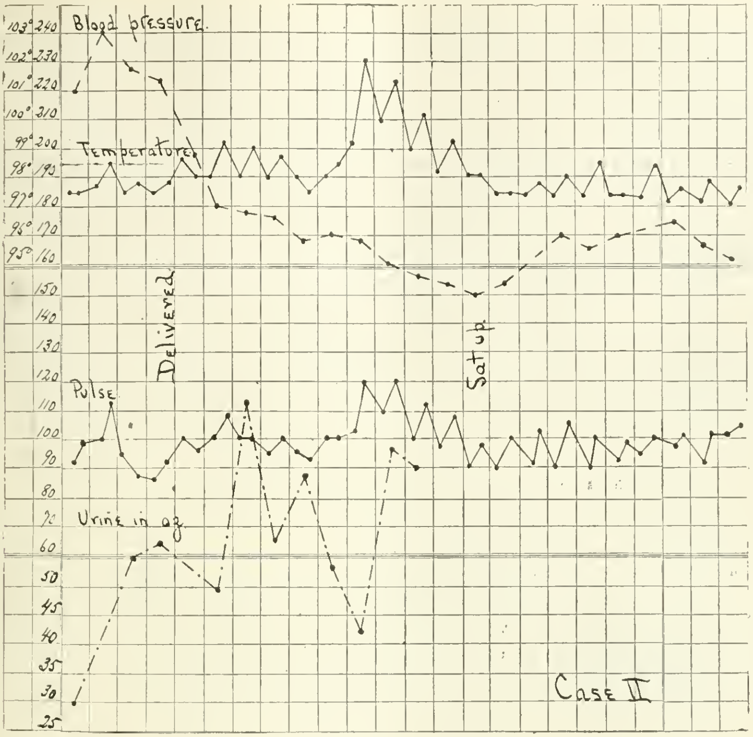

Chart 11.

Nov. 11, three days after entrance, the eyes were examined and showed the presence of fresh retinal hemorrhages. Labor now began and she delivered herself on Nov. 12. Forty-eight hours after delivery the blood pressure had dropped from 223 to 180, and marked improvement had taken place in the patient's condition. From Nov. 18 to 23 there was a febrile condition without obvious cause, yet during this the blood pressure continued to fall. A complete recovery was not made in this case. The lowest point reached in the blood pressure was 150 on the 23d of November. At this time she was allowed to sit up in bed and gradually to get up and about. Coincident with this the blood pressure rose again to 170 and remained about that point up to the time of discharge from the hospital. The urine was never free from albumin, the eyesight remained considerably blurred.

Three months later she reported at my office, feeling fairly well. Vision had improved somewhat, but was not yet good. She tired easily, was up two and three times at night to micturate. The urine was pale, of 1,012 specific gravity, and contained a good trace of albumin. The blood pressure was 175. The heart was very slightly hypertrophied, the aortic second was sharply accentuated and ringing.

CONCLUSIONS.

1. The blood pressure in eclampsia is high, and of diagnostic and prognostic importance.
2. In spite of improvement in subjective symptoms and increase in the quantity of urine, the blood pressure may remain high.
3. In which case the prognosis is grave, and labor ought to be induced.
4. The continuance of high blood pressure during the puerperium warrants a grave prognosis as to complete recovery.

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[1] Vogeler: Am. Jour. Obs., 1907, lv, 490.
[2] Lebedoff and Porochjakow: Centralbl. für Gyn., 1884, lviii, 1.
[3] Stengel and Stanton: Wm. Pepper Lab. of Clinical Med., 1906.
[4] Goldwater: Med. News, 1903, lxxxii, 926.
[5] Cook and Briggs: Johns Hop. Hos. Rep., 1903, ii, 451.
[6] Vaquez: Bull. de la Soc. d'Obst., Paris, 1906, ix, 34.
[7] Queirel and Reynaud: xiii Congrès Internat. de Med., Paris, 1900, xv, Sect. d'Obst., 170.

◆

TWO CASES OF ATYPICAL LEUKEMIA.

BY WILLISTON W. BARKER, M.D.,
Medical House Pupil, Massachusetts General Hospital, 1908.

I. Acute fatal anemia with terminal blood-picture of lymphatic leukemia.

C. C., female, twenty-five, married, Italian, housewife, entered the Massachusetts General Hospital on the service of Dr. E. G. Cutler, June 1, 1907. Family history and previous history negative. Habits and hygiene good. Eight weeks before entrance she began to have pain in back, legs, shoulders and head, not involving joints, at times requiring morphia for its relief.

Two weeks before entrance she began to be pale and yellowish, weak, and short of breath on exertion. For ten days she had been in bed; had lost from 15 to 20 lb. in weight. She had several times seen small red and black spots appear suddenly on neck and arms, later disappearing. One week before entrance her throat began to be sore.

Physical examination showed that she was well developed and nourished, but her skin and mucous membranes were pale. Pupils were equal, reacted normally. Left tonsil was reddened, swollen and covered with whitish exudate. Heart's apex impulse in fifth space, four inches to left of mid-sternal line; left border of dullness corresponded; no enlargement to right. Sounds of good quality; no murmur heard. Pulse of rather low tension. Lungs normal. Abdomen normal. Liver and spleen easily felt; liver dullness from sixth rib to costal margin. Slight edema of ankles present. No glandular enlargement. Urine high-colored, acid, 1,017–1,024, without albumin, sugar or bile. Urea, 2.99–2.02%. Sediment showed only squamous epithelial cells. Stool gave negative reaction for blood by guaiac test; no ova or parasites found. Temperature ranged from 99° to 97.4° F.; pulse from 88 to 110; respiration from 18 to 26. Cultures from the throat were free from diphtheria bacilli, and the exudate disappeared a few days after entrance.

TABLE OF BLOOD COUNTS.

	Hb. Per cent.	Erythrocytes.	Leucocytes.	Per cent in count of 200.					Seen in Count Blasts		Platelets.	Stippling.	Polychromatophilia.	Poikilocytosis.	Macrocytosis.	Microcytosis.
				Poly. Neut.	Lymph. Large. Small.	Poly. Eos.	Mast cells.	Myelocytes.	Nor.	Meg.						
June 1.....	55	2,136,000	3,300	53	45	0	1	1	7	1	diminished	slight	moderate	moderate	little	much
,, 10....	55	2,044,000	4,400	52	48	0	0	0	1	5	rare	none	marked	,,	,,	,,
,, 14....	45	2,580,000	6,000	37.5	59.5	1	0	2	2	2	very rare	slight	,,	,,	,,	,,
July 12.....	15	1,072,000	14,700	6.5	92.5	1	0	+	6	2	very rare	marked	,, ,,	,,	,,	,,
,, 14....	15	816,000	91,500	6.1	92.9 84 8.9	0.1	0	0.9	6	9	* ,,	,,	,, ,,	,,	,,	,,

*In count of 1000 whites.

Patient felt very much better after coming to the hospital and was discharged at her own request, June 14, "much relieved," but without any notable change in physical signs.

She re-entered the ward on the service of Dr. H. F. Vickery, July 11, 1907, with a story of progressive weakness ever since discharge. She complained bitterly of pain in the long bones. She had had a normal menstrual flow two weeks after leaving the hospital.

The following changes were observed in physical signs. The skin had become lemon yellow and the mucous membranes exceedingly pale. There were small ecchymoses on neck, front of chest, right shoulder and abdomen. Heart's apex impulse in fifth space five inches to left of mid-sternal line; loud systolic murmur heard all over precordia; pulmonic second sound markedly accentuated. Liver edge questionably felt. Spleen felt two inches below costal margin, hard and tender. Motions of spine limited, apparently by pain and spasm. Moderate tenderness over long bones. Urine pale, acid, 1,010, with a very slight trace of albumin, without albumose, sugar or bile. Urea 1.39%. Sediment showed an occasional red or white blood corpuscle; no casts seen. Stools bloody, with masses of clay-colored feces. Guaiac test for blood strongly positive. Microscopic examination showed fat and fatty acid crystals, red and white blood corpuscles. Temperature fell gradually from 103.4° at entrance to 98.4°; pulse ranged from 110 to 140; respiration from 30 to 50. For blood examinations see table.

Patient vomited frequently and her bowels moved from one to four times daily; vomitus once was bloody. She failed steadily and died July 14 after two hours of wild delirium. Autopsy not obtained.

Five examinations of the blood were made; the last one, dated July 14, was completed about half an hour before death. The percentages given in this examination are based upon a differential count of 1,000 white cells, the others upon differentials of 200. The large lymphocytes were mostly of medium size; they were several times observed to be phagocytic for erythrocytes. (See Table of Blood Counts.)

The absence of an autopsy makes the case incomplete and renders any absolute diagnosis impossible, but such evidence as is at hand makes the diagnosis of acute lymphatic leukemia most probable. The striking features are: (1) The acute course, under four months; (2) the extreme and progressive anemia; (3) the overwhelming increase, both relative and absolute, in the number of large lymphocytes; (4) the practical absence of platelets in the later examinations; (5) the absence of glandular enlargement. Several similar cases of acute anemia with terminal lymphemia have been reported (Litten, Luce, Körmöczi and others); in some of them the marrow has been examined and has shown lymphoid instead of erythroblastic "hyperplasia" or "degeneration." A case of myelocytic leukemia was reported in 1907 by Hunter in which the blood picture changed in three weeks from pernicious anemia to leukemia, the leucocyte count having risen in that time from 6,000 to 290,000. In 1907, also, a case was reported by Sluka which presented in life the blood of pernicious anemia but showed at autopsy the bone-marrow of large cell lymphatic leukemia. It has been suggested by Dr. J. H. Wright that in the case here reported the disease was wholly a hyperplasia of large lymphocytes or pre-lymphocytic cells in the marrow, manifesting itself at first only by a reduction in the number of circulating erythrocytes and platelets and the attendant clinical symptoms and signs of anemia, but revealing its existence just before death through the escape or discharge into the blood-stream of some of the essential factors, the lymphocytes. Without microscopic examination of the marrow such a theory "is very largely conjecture." As for the absence of glandular enlargement, so many cases of lymphatic leukemia without glandular enlargement have recently been reported that this case is in very slight degree noteworthy in that respect.

The classification and nomenclature of the so-called primary blood diseases is the subject of lively discussion. It is not yet determined whether there is a disease "leukanemia" with the red cells of pernicious anemia and the white cells of leukemia, or whether fatal anemia with very late lymphemia or entirely without lymphemia but with lymphoid bone marrow shall be called "pseudo-leukemia." In view of the established usage of the latter term in respect to Hodgkin's disease it seems more reasonable to us to call it "aleukemic leukemia." For further discussion of this subject reference may be made to the writings of Pappenheim, H. Hirschfeld, and others published especially in *Folia Hæmatologica.*

II. Acute fatal anemia with hematoma of knee, extreme terminal leucocytosis and hyperplasia of megakaryocytes.

F. M., male, eighteen, single, American, chair-maker, entered the Massachusetts General Hospital on the service of Dr. C. A. Porter July 18, 1907. Family history and previous history negative. Five months previous to entrance he noticed a hard tender swelling just above right knee, extending slowly until it involved the whole knee and thigh; not very painful until four weeks before entrance, when it became exceedingly painful and tender. He gave up work at once and went to bed on account of the pain; since then his appetite had failed, he had grown pale and he had lost much weight and strength.

Physical examination showed that he was frail, emaciated, and very pale. Reflexes normal. Tongue clean. Throat and lungs normal. Heart enlarged slightly to right, not to left. Systolic murmur heard at apex, not transmitted. Pulmonic second sound accentuated. Abdomen normal except for edema and ecchymoses in right flank. Liver and spleen not felt. No glandular enlargement found. Right thigh and knee swollen, hot and tender, but not red. Fluid present in and about joint. Pale yellow ecchymoses in skin over thigh. No edema nor purpura except as above noted. Urine normal in color, acid, 1,023, without albumin or sugar. White count 55,000. Temperature 101.8°, pulse 112, respiration 24.

The patient was admitted from the accident room to the ward with a probable septic knee. On the following day the knee-joint was aspirated by Dr. Jones, who withdrew ℥viii of dark, bloody fluid. Stained smears showed red blood cells, polynuclear leucocytes and fibrin; no micro-organisms. The thigh was then opened above the knee and several ounces of similar fluid were obtained from a cavity extending down to bare bone. The bony surface showed no evidence of sepsis or neoplasm. Cultures from both specimens of fluid remained sterile after seventy-two hours of incubation.

The patient failed gradually after operation, vomiting frequently and oozing serum into the dressing. His temperature varied from 98.4° to 102.6° F., his pulse from 112 to 138, and his respiration from 22 to 31. He was seen in consultation July 22 by Dr. J. J. Minot and July 24 by Dr. H. F. Vickery, who concurred in the diagnosis of acute primary anemia. He died quietly July 25. No autopsy was obtained, but Dr. Oscar Richardson was permitted to remove sufficient bone marrow from the exposed end of the femur to make smears; it was unfortunately too soft to be removed through the wound in condition to be hardened and sectioned. The following examinations were made of the blood:

July 19. Hb. 55%. Whites 63,800. Polynuclear neutrophiles 91%, large lymphocytes 8%, small lymphocytes 1%, in a count of 100 white cells. The red cells showed some variation in size and shape, with marked polychromatophilia and stippling, and one megaloblast and one normoblast were seen while counting.

July 20. Whites 106,000.

July 22. Whites 78,400. Reds 1,520,000.

July 24. Hb. 15%. Reds 1,080,000. Whites 222,000. Polynuclear neutrophiles 91.46%, large lymphocytes 3.07%, small lymphocytes 2.78%, polynuclear eosinophiles 0.29%, neutrophile myelocytes 2.4%, mast cells absent, in a count of 1,000 white cells. Platelets 1,188,000. The red cells showed considerable variation in size and shape, with a tendency to microcytosis; stippling and polychromatophilia were marked. Seventy-nine megaloblasts and 74 normoblasts were seen in the count of 1,000 whites, or about 34,000 per cubic millimeter. Many of them showed mitotic figures. Some idea of their frequency may be obtained from the fact that as many as eleven were seen in one field of a thin smear with oil-immersion objective and high-power eyepiece.

The bone marrow was soft, semi-fluid, the color of raspberry jelly. The smears showed an apparently normal number of erythroblasts and myelocytes, mostly of small size, and very few polynuclear neutrophiles. The giant cells, on the contrary, were markedly and strikingly more numerous than in smears of normal bone marrow; they also were of small average size. It is interesting to note relation between the number of giant-cells in the marrow and the number of platelets in the blood. According to the conclusions of Wright, the blood platelets are detached fragments of the cytoplasm of megakaryocytes (giant cells of bone marrow). If the imperfect examination of bone marrow in smears is a fair index of the general condition of the marrow, the co-existence of increased platelets in the blood and giant cells in the marrow is in harmony with the conclusions of Wright.

No case exactly similar to this has been found in the accessible literature. Large hematomata requiring operation are not very rare in severe anemias and leukemias. Milward reports a case in which there were swellings about the knees supposed to be scorbutic; the case afterward proved to be lymphatic leukemia. Barié and Salmon also report a case of enormous hematoma of the shoulder in a case of acute leukemia. The case reported here was at first supposed to be sepsis; this was disproved by microscopic examination of and by cultures from the fluid removed from the swelling; it was then considered to be perhaps a tumor of bone which had undergone degeneration, but neither the appearance of the bone in the neighborhood nor the microscopic examination of the marrow supports this theory. In the absence of a complete autopsy we are again reduced to conjecture, but the cellular elements of the marrow, taken with the blood picture, point to the marrow as the most probable primary seat of disease.

It has been suggested that there was a general hyperplasia of the bone-marrow cells, and that the terminal drain, perhaps of the operation and subsequent oozing, drew out the erythroblasts, platelets and polynuclears into the blood-stream but left the giant cells *in situ* because of some mechanical obstruction. It is undoubtedly true that rapid changes took place in the blood just before death and that a very large increase occurred in the number of circulating polynuclears and erythroblasts, but there is no evidence in the smears of marrow of increased formation of those cells, while there is to be seen a great excess of giant cells. In fact, the giant cells may be considered to have interfered with erythrocyte and perhaps with polynuclear leucocyte generation in some such way as the lymphocytes do in acute lymphatic leukemia. In other words, this case may be considered to be a "leukemia" of the megakaryocytes. It is to be said, however, that this is only one way of explaining a somewhat obscure and, in the absence of autopsy, an incomplete clinical and histological picture. Just where the case is to be placed in any system of classifying diseases of the bone marrow is a matter for discussion. If the term "aleukemic leukemia" is admissible, if "leukemia" is taken to mean merely a primary hyperplasia of one or more of the cellular elements of marrow without regard to leucocythemia, why is not "pernicious anemia" a "leukemia"? "That way madness lies." It is likely that in future a system of nomenclature to include all the myelogenous diseases may be adopted, with divisions allotted to erythroblastic, leucoblastic and platelet-forming cells.

In conclusion the writer wishes to acknowledge his indebtedness to Drs. Cutler, Vickery, Porter and Jones for permission to report the cases, and to Dr. J. H. Wright for kindly and enlightening aid in their study.

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ON THE TOXIN OF ECLAMPSIA.

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1. EARLIER RESEARCHES ON ECLAMPSIA.

Puerperal eclampsia has been for many years the subject of careful clinical and pathological study. The literature on eclampsia is very extensive and goes back to the early forties. But in spite of this fact very little real progress has been made in determining the cause of the disease. It is to-day considered a decided pathological entity associated with lesions so characteristic that after death, at least, there can be no doubt about the diagnosis. As to the diagnosis during life, it is a very different matter; personally I have no doubt that many cases of uremia and epilepsy are diagnosticated as eclampsia, and when the patients recover there is no means of knowing that the diagnosis was not correct.

Based on the presence of albumin in the urine, the theory of Frerichs, who pronounced eclampsia a condition secondary to uremia, was for many years the accepted teaching. Frerichs attributed the symptoms to a poisoning of the blood through the retention of urea and the conversion of the latter into ammonium carbonate. We know today, however, that cases of eclampsia without albuminuria or signs of kidney disease occur not infrequently. Rosenstein attributed the convulsions to anemia of the brain; others (Cohnheim, Spiegelberg, Schroeder) sought the cause of eclampsia in a spasm of the arteries in the kidneys and brain, produced reflexly by the pregnant uterus. Halbertsma assumed that the convulsions were due to disease of the kidneys secondary to pressure upon the ureters. But many cases of eclampsia have come to notice where each and all of these conditions were absent.

Ludwig and Savor revived a modification of Frerichs' original uremia theory by their assumption that eclampsia was an auto-intoxication due to the retention of poisonous products of metabolism which the kidneys were functionally unable to eliminate from the system. These authors chose carbamic acid and ammonium carbamate as the materia peccans in place of the ammonium carbonate of Frerichs. Vollhard succeeded in completely disproving this theory. Numerous theories, some of which have sought to account for eclampsia as due to anomalies of structure and function of the blood vessels and nerve centers (von Herff, Kundrat, etc.), and others which sought the cause in a bacterial invasion or bacteriotoxic poisoning of the system (Albert, H. Mueller, Levinowitch, Stroganoff) have shared the fate of the earlier theories.

Of course, physico-chemical methods of investigation have also had their day. The freezing point of the blood and urine of normal and eclamptic pregnancies was studied by many authors (Koranyi, Kroenig, Fueth, Szili, Dienst, J. Veit, Schroeder, Caspar and Richter). They found that in three fourths of all cases of pregnancy the urine shows an insufficient molecular concentration and consequent insufficient diuresis, which reaches its lowest level at childbirth. Immediately after childbirth the molecular concentration of the urine begins to rise rapidly. The molecular concentration of eclamptic urines was found by most authors to be practically that found in normal cases; Schroeder alone found values in eclampsia which are far below those given as the lowest for the molecular concentration of the urine in normal pregnancies. It is a remarkable fact that with such decidedly insufficient diuresis the urine may be absolutely free from albumin.

Investigations on the toxicity of the blood and urine by the so-called Bouchard method have not yielded results of any value. In fact, Schuhmacher found that the urine of non-pregnant women was equally as toxic as that of normal pregnancy or eclampsia. This he found also to be true of the blood sera of normal and eclamptic women when they were injected intravenously into rabbits.

The bio-chemical method of investigation was used in cases of eclampsia by Halban and Langsteiner. Applying the methods of Ehrlich and his pupils they studied the action of parental and fetal blood on normal human blood, on the blood of rabbits and on bacteria (hemolysis, agglutination, bactericidal action), as also the influence of the two kinds of blood on fermentative (trypsin) and toxic processes (agglutination with abrin and ricin). Finally they attempted to determine the quantity of agglutinable and precipitable substances in the parental and fetal blood. As a result of their work Halban and Langsteiner, as also Veit, found slight but distinct bio-chemical differences between the mother's blood and that of the fetus; and Halban was able to show that a reciprocal agglutination and even hemolysis is possible between parental and fetal blood.

The careful studies of Stumpf and Winkel, and after them of Jürgens, Schmorl and Lubarsch, have thrown much light on the nature of the eclamptic lesions. Stumpf and Winkel were the first to call attention to the fact that the fetus usually shows kidney and liver lesions similar to those of the mother. Schmorl discovered the fact that eclamptic blood contained from five to eight times as much fibrin as the blood of normal pregnancy. He also laid great stress on the peculiar nature of the liver lesions as well as on the almost universal thrombosis present in cases of death from eclampsia. To quote from Williams: "In eclampsia, as was first pointed out by Jürgens, Schmorl and others, the lesions consist in hemorrhagic necroses occurring in the portal spaces, dependent upon thrombotic processes in the smaller portal branches. At first they are sharply limited to the portal spaces, but as they enlarge, they invade the lobules from the periphery toward the center; and are so characteristic that their mere presence justifies the diagnosis of eclampsia without any clinical history of the case."

J. H. Wright does not agree with Schmorl in attributing the focal liver necroses to thromboses. While he concedes the fact that the necrosis seems to proceed from the periphery of the lobule toward the center, he maintains that the lesions are not necessarily associated with thrombosis. To Wright the most striking feature of the eclamptic liver section is to be found in the character of the necrosis, which is always associated with the formation in large quantity of a peculiar reticulated fibrinoid substance. This substance, according to Wright, is never seen in such remarkable distribution and quantity in any other pathological condition of the liver.

The occurrence of an abnormally large quantity of fibrin in the eclamptic blood has led Dienst to base a method of diagnosticating eclampsia on the determination of fibrin in the blood of pregnant women. If the fibrin test is positive Dienst immediately begins a treatment for eclampsia which consists in the introduction of the largest possible quantities of alkaline solutions into the system, together with hot-air baths, catharsis, etc. He claims in this manner to be able to prevent in practically every case the occurrence of convulsions and coma.

Schroeder, who has made a special study of the blood pressure in cases of eclampsia, comes to the conclusion that in many cases of this disease the blood pressure is practically normal and that on this account the determination of the blood pressure is of no value as a means of diagnosis.

Weichardt, a pupil of Schmorl, and Pilz have recently obtained most interesting results. They argued that since both the mother's tissues and those of the fetus showed the lesions of eclampsia, the toxic element was probably produced in and disseminated from the placenta. In order to eliminate from the placental tissues any antitoxin which the blood might contain, they removed the blood as completely as possible from the fresh placenta (perfusion with physiological salt solution at body temperature through the unbilical arteries) and extracted the finely divided organ with physiological salt solution. This extract they found to contain a most powerful toxin (syncytiotoxin) which was very virulent to rabbits. One to three cubic centimeters of a total extract of 30 ccm. (obtained from 50 gm. of crushed placenta) given intravenously to rabbits, caused death to occur very rapidly due to paralysis of respiration. The heart continued in each case to beat for some time after the cessation of respiration. By injecting very small, non-lethal doses of the active extract into the mesenteric vein of rabbits, Weichardt and Pilz succeeded in producing an immunity to the poison. Their active solution was, however, very thermolabile, since heating it at 60° on the water-bath for a short time was sufficient to render it absolutely innocuous. It is to be noted that Weichardt and Pilz obtained their active solution from normal placentas.

I began my work on eclampsia in 1896, when I was assistant in pharmacology at the University of Strassburg. In attempting a solution of the problem I approached the subject from the point of view of the pharmacologist, that is to say, my aim was to determine whether or not the blood of eclamptic women, or that of the eclamptic placenta, contained an active, non-proteid body, which might perhaps be isolated and recognized to belong to one of the established pharmacological groups of poisons, or to form a representative of a new group.

With this end in view I proceeded in a manner radically different from that of the serologists of the Ehrlich school. It was my object to obtain proteid-free solutions; this necessitated the application of heat with consequent inactivation or precipitation of serum or tissue-juice constituents like the body of Weichardt and Pilz. To test the activity of my solutions I made use of intravenous injections into rabbits. In each instance but one I have given the chief clinical data of the case from which the material was derived. It will be seen from the histories that the clinical picture of the case gives no indication of the presence or absence of the toxin in the blood and tissues.

II. PERSONAL OBSERVATIONS.

A. — My first material was obtained from the Frauenklinik in Strassburg, and consisted of 250 ccm. of blood drawn by venesection from a patient who, according to Professor Fehling, had a typical case of eclampsia.

The blood was clotted when I received it; I was, therefore, obliged, after removing the serum, to triturate the clot with a little water and pure washed sand. The finely divided clot was transferred to a filter and thoroughly extracted, first with cold, then with hot distilled water. The filtrate was united with the serum, the whole barely acidulated with acetic acid and then heated in a large evaporating dish on the water-bath for several hours. When the red color of the fluid had changed to a light straw color the finely divided coagulum was collected on a filter and thoroughly washed with hot water. The clear filtrate and wash water were united and again heated on the water-bath. After a certain degree of concentration had been reached, a second finely divided coagulum was formed; this was again removed and the same process of fractional coagulation was continued until the resulting fluid amounted to about 10 ccm. of a reddish-brown liquid which did not yield the faintest biuret reaction, and which was therefore free from proteid.

Feeling that the fluid if active at all would be only slightly so, I slowly injected nearly the entire quantity into the large vein of a rabbit's leg. As I was completing the injection the rabbit had one violent convulsion and died. Only about 1 ccm. of the solution remained; this I injected into the ear vein of another rabbit. The second animal did not seem in the least disturbed by the injection; a few moments after it he ate food in a normal manner. This was at about 3 o'clock in the afternoon; at 6 P.M. I examined the animal and found it apparently normal. The next morning I learned from the attendant that at 9 P.M. he had found the animal dead, but still warm. The rabbit had probably died very shortly before 9 P.M., death having occurred in about six hours.

Post-mortem section of the two rabbits showed no macroscopic changes; microscopic sections of the organs were not made.

B. — On March 14, 1907, I received a placenta from the Boston Lying-in Hospital. The history of the case is as follows:

E. S., Russian Jewess, twenty-seven, Ipara. Brought to hospital in state of coma on the evening of March 13. Indefinite history of convulsions, headaches for past two to three days. Catheter specimen of urine showed slightest possible trace albumin, no sugar, no renal elements. Left hemiplegia, left pupil widely dilated. Reflexes normal, no Babinsky, no Kernig's. Temperature 101°, pulse 112.

Patient was delivered under ether with forceps at 12.55 A.M., March 14. After delivery patient continued comatose and died at 10 P.M. A post-mortem section, which was performed at the Massachusetts General Hospital by Dr. O. Richardson, showed:

Disseminated areas of hemorrhage in the brain. Thrombosis of right lateral sinus. An area of softening on the floor of the third ventricle. Acute degeneration of the kidneys. Acute degeneration of the liver with hemorrhages. Hemorrhagic edema of the lungs. The liver findings are not those typical of eclampsia. (J. H. Wright.)

The placenta was finely divided in a meat chopper and extracted with large quantities of distilled water until the strained extracts were practically colorless. The blood and the tissue extracts were united with the total wash waters, barely acidified with acetic acid and heated in a large porcelain dish on the water-bath. The proteids were removed by fractional coagulation and the solution concentrated as described above. The final reddish-brown fluid obtained showed a faint acid reaction and possessed a peculiar, not agreeable, odor.

EXPERIMENT 1. March 16. Rabbit (2 kg.) given, 3 P.M., 4 ccm. placental fluid into vein of ear. No immediate symptoms. 5 P.M., animal refuses food, crouches in somnolent condition in a corner of the cage and does not react to stimuli. Respiration 140. Pulse too rapid to count. Temperature 105°.

March 17. 8 A.M., rabbit found dead in cage, still warm; death had therefore occurred in about eleven hours. Sections of the liver show necrotic areas with diffuse hemorrhages.

EXPERIMENT 2. March 17, rabbit (1.5 kg.) given, 5 P.M., 1.5 ccm. subcutaneously. No action.

March 18. Animal well.

March 19. Animal well. 3 ccm. solution given subcutaneously. No action.

March 20. Animal well.

EXPERIMENT 3. March 20. Guinea pig given, 5 P.M., 1 ccm. solution subcutaneously. No immediate symptoms.

March 21. Animal refuses all food; crouches in corner of cage with fur bristling.

March 22. Animal normal.

March 23. Animal normal. 2 ccm. solution subcutaneously. No action.

March 24. Animal normal.

EXPERIMENT 4. March 21. Rabbit (2 kg.) received, 11 A.M., 1.5 ccm. dilute solution intravenously; 5 P.M., animal seems affected, refuses all food and does not react to stimuli.

March 22. Animal decidedly ill, refuses all food; labored, rapid respiration.

March 23. Animal still ill, but not so prostrated as day before; 1 ccm. fluid injected into vein of ear.

March 25. Animal very ill; somnolent; hind legs appear to be somewhat paralyzed.

March 26. Animal a little brighter; makes weak effort to eat. Intravenous injection of 3 ccm. fluid.

March 27. Animal shows decided dyspnea; lies in unnatural position with outstretched hind legs.

March 29. Animal died during night.

Post-mortem sections of liver show multiple necrosis, but no typical hemorrhages.

C. — On Sept. 20, 1907, I received from the Boston Lying-in Hospital a placenta with a clinical history as follows:

L. C., Italian, eighth pregnancy. No eclamptic history with any of earlier confinements. Nine months pregnant. No symptoms until night before. No headaches, no edema or eye symptoms. 10.30 P.M., Sept. 18, epigastric pain. 5.30 P.M., Sept. 19, first convulsion followed at intervals by nine others, the last 3 of which occurred in the hospital. Convulsions called "typical eclamptic." Very little edema of legs, none of face and hands. Unconscious; respirations good, not stertorous.

Urine: bloody, albumin ¼%. Sediment: many hyaline and fine granular casts; much blood. Case delivered. Recovery.

The placenta was treated as described under *B* and a proteid-free fluid was obtained. With this the following tests were made:

Experiment 1. Sept. 22. Rabbit (1.5 kg.) receives, 11.30 a.m., 2 ccm. fluid intravenously. 2 p.m., animal appears stupid; is easily hypnotized to retain any position and is roused with difficulty only from the hypnotic sleep. Respiration rapid and labored. 5 p.m., hypnotic condition still more pronounced. Respirations labored, 184. Pulse not obtainable on account of rapidity. Temperature 104.5°.

Sept. 23. Animal found dead.

Sections of liver show necrotic areas with diffuse hemorrhages.

Experiment 2. Sept. 25. Rabbit (2 kg.) receives, 3 p.m., 1.5 ccm. concentrated solution intravenously. 3.30 p.m., animal appears normal. 4.30 p.m., animal decidedly affected; appears to fall asleep spontaneously; does not react to stimuli. Respirations very rapid. Pulse too rapid to count. Temperature 105.2°. 5.30 p.m., animal dead.

Sections of liver show considerably cloudy swelling, but no typical hemorrhages.

D. — On July 22 I received from the State Hospital at Tewksbury, a placenta with the following history: Ipara, nineteen. For several weeks under treatment for albuminuria, which has somewhat improved. False pains July 17. July 20, 3 p.m., convulsions of five minutes' duration (number not given). 3.30 p.m., delivered under ether with forceps; no more convulsions. Urine at birth, clear, considerable in quantity, trace of albumin.

The placenta of this case was treated as described above (*B*). With the proteid-free extract experiments were made on rabbits. *The solution was found to be absolutely inactive.*

E. — On March 5, 1908, I received a placenta from the Boston Lying-in Hospital accompanied by a history as follows:

H. A. H., twenty-four, Ipara. Last menstrual period in June, 1907. March 4, 1908, patient was seized in the afternoon with vomiting and pain in the epigastrium. Patient was given castor oil with the desired result. Pain and vomiting ceased. Early in the morning of March 5, patient was seized again with pain in epigastrium, very severe this time, and vomiting, as also blindness. She had one convulsion. She was sent to the Lying-in Hospital, and delivered at 11.30 a.m. Recovery. *The proteid-free extract obtained from this placenta was also quite inactive.*

Several other placentas which I received and which were accompanied by a clinical history strongly suggestive of eclampsia yielded an inactive extract. Extracts of numerous normal placentas were invariably found inactive.

PREPARATION OF ACTIVE BODY IN PURE STATE.

The remainder of the fluid from case C was completely precipitated with a large excess of alcohol. The doughy, white precipitate was collected on a filter and thoroughly washed with alcohol. The alcoholic filtrate (*A*) was evaporated on the water-bath with constant additions of water until all the alcohol had been removed.

Experiment 1. The residue, amounting to a few cubic centimeters, was given intravenously to a rabbit. No action.

The precipitate produced by the alcohol was dissolved in about 50 ccm. of water and treated on the water-bath until all traces of alcohol had disappeared. The solution was tested as follows:

Experiment 2. Oct. 6, 1907. Rabbit (2 kg.) receives, 4 p.m., 1.5 ccm. of a dilute solution intravenously. At first animal appears normal. 4.30 p.m., respiration labored and rapid; animal stupid and easily hypnotized in most unnatural positions. 4.45 p.m., respiration still more labored; animal very restless, keeps turning around in a circle. 4.50 p.m., animal apparently very ill, assumes position as if about to jump, and remains in this position for hours. Respiration 104. 5.00 p.m., animal drops to sleep spontaneously, awakening just as it is about to fall over.

Oct. 7. Animal fully recovered.

Having found the solution of the alcohol precipitate to be active, I attempted to reprecipitate the active substance from solution. The solution was fractionally precipitated with alcohol, and each fraction obtained tested for pharmacological action. None of the fractions obtained showed any action. The remaining solution, to which a large excess of alcohol had now been added, showed a marked turbidity, but yielded no further precipitate, not even on several days' standing. I therefore added a large amount of ether to the solution, thereby increasing the turbidity. No precipitate was formed. The solution, well covered, was set aside. In the course of a week, beautiful, colorless needles began to form. In order to insure complete separation I added more ether and allowed the solution to stand ten days longer. At the end of this time I collected the crystals on a hardened filter, washed them carefully with alcohol-ether, dissolved them in a little water and recrystallized them from solution by the addition of alcohol and ether. The quantity obtained was minimal and not sufficient for analysis. I dissolved the crystals, therefore, in very little distilled water and tested them for pharmacological action.

Experiment 3. Nov. 1, 1907. Rabbit (2 kg.) receives, 11 a.m., 1 ccm. solution of colorless crystals intravenously. Animal at first normal except for slight restlessness. 1 p.m., animal somnolent, purging and passing of urine. 1.30 p.m., somnolence increases; animal crouches in corner with eyes closed and does not react to loud noise; slight reaction to tactile stimuli; animal very easily hypnotized in every conceivable position, and difficult to rouse from hypnosis. Respirations 136, labored. Marked tremor from time to time; pronounced trismus. The animal's snout appears peculiarly pointed on account of muscular contraction. 3.30 p.m., stupor constantly deepening. When placed flat on its back the animal remains for hours in this, for it, most uncomfortable position. Concussion of the substratum produces violent trembling, but does not rouse the animal from the hypnosis. Frequently repeated concussions cause the animal slowly to rouse from his stupor. Respiration, 192. Temperature, 105°. Veins of ears strongly injected.

Nov. 2. Animal apparently recovered.

Nov. 10. Animal found dead.

The foregoing experimental investigation would seem to show that there are certain cases of acute intoxication, due to a definite non-proteid active principle, which during life present the clinical picture of eclampsia. Much more experimental work will be necessary to enable us clinically to distinguish the cases in which the toxin is present, from cases of "eclampsia" due to other causes, such as epilepsy and uremia. The solutions I obtained do not as a rule produce the convulsions typical of eclampsia. Possibly the toxic substance undergoes certain modifications of structure or composition during its isolation which affect the quality of its action. Of recent years numerous cases of "eclampsia without convulsions" have been described; perhaps the toxin acting in these cases is identical with the substance obtained by me. In order to produce its action the toxin and solutions containing it must be given intravenously. This is true of many other poisons. Possibly the toxin is rendered inactive by combination with a tissue-component when it is given subcutaneously.

As to the pharmacological character of the toxin little can at present be said. It seems to act as a protoplasmic poison. It paralyzes the centers of the brain and cord, especially the respiratory center.

I have at present material in hand which may make it possible for me to obtain a sufficient amount of the toxin for analysis and chemical characterization.

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THE TENT WARD AT THE MASSACHUSETTS GENERAL HOSPITAL.

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At the present time, when hospital construction is thought of as being accompanied by great expense, it may be of interest to know how much can be accomplished with a comparatively small outlay.

During the spring of 1907, two wards at the Massachusetts General Hospital were to be renovated at once. One ward was moved to the "Relief Ward," the other to the "Tent Ward." This ward was open from June 13 to Nov. 1.

The Tent Ward was equipped as follows: there were two tents, 14½ x 19½ feet in dimensions, each of which could accommodate three patients easily, and four if necessary; one tent, 14½ x17 feet, used as a kitchen and fitted up with ice-box, electric-toaster, water-cooler, sink and tables; eight tents, 12 x 17 feet, six of which were used for patients, two being accommodated in each tent, so that a total of eighteen patients could be accommodated; one of the two remaining tents was fitted up with medicine closets, chests for linen and blankets, and a table and chairs for nurses' use; and in the other there were a bath-tub, hopper, toilet, sink, and rack for solutions. The tent last mentioned and the kitchen tent had hot and cold water and sewer connections. All tents were provided with a fly and the walls could be rolled up for better ventilation. Ventilation was also aided by slits in the roof of tents, protected by the fly. The lighting was by electricity, and in each tent there was a Hy-lo electric lamp so attached as to be portable to all parts of the tent. The tents were arranged in a long row with the two large tents at the ends and with the medicine and solution tents in the center of the row; the kitchen tent was opposite and at a short distance from the center of the row. In front of one of the large tents a fly was spread of the same size as the tent and used as an office; it was equipped with desk, chairs, telephone and couch. All tents had a flooring of ⅞ in. spruce, laid on 2 x 3 joists, and there were walks of the same material connecting them. The beds were "dormitory beds" with low head, with "National wire springs" and one mattress. There were a table and chair for each bed. In the latter part of the season each bed was supplied with two mattresses, extra blankets, and when necessary hot-water bottles and soapstones were used, and even when the weather became quite cold, a tent could be warmed in fifteen minutes by means of an oil heater, so that baths could be given. Hot air baths were given with good results until the weather became quite cold. The total actual outlay for the tents, which were second hand, for lumber, labor and lighting was $525. Everything else came from the general supplies of the hospital. All food came from the hospital diet kitchen.

Three nurses and one head nurse were assigned to the ward. The work was not more difficult than the regular ward work, the increased distances and the difficulty of watching all the patients being compensated for by the greatly diminished housekeeping necessary. There were two night nurses, for the double purpose of watching the patients sufficiently and to avoid loneliness. Canvas hats were worn by the nurses as a protection against sun and rain, and rubber coats and boots in stormy weather. The nurses, without exception, enjoyed the work, none was in any way harmed by exposure, and the general health of all seemed improved, in some cases quite markedly.

Ninety patients were admitted to the tent ward. There was no selection of cases until the last two weeks when, because of the inclement weather, it seemed wise to admit to the ward only patients whose condition called for out-of-door treatment. The mortality was seven, none in any way due to the open air treatment; two were cases of pernicious anemia who died shortly after admission and both of whom had been admitted to the hospital several times previously; two were suffering from chronic interstitial nephritis with uremia; one died on the day of admission, the other responded to treatment well at first, but died at the end of a week. One fatal case was a patient with cardiac disease who died shortly after admission; another cardiac case with embolism died after two weeks' stay in the ward, and the last (the seventh) was a patient who had severe myocarditis. The cases of typhoid, twelve in number, all made good recoveries; though several of them were very sick and five had relapses; they seemed to require fewer baths than one would expect in a closed ward. Patients with pleurisy with effusion and tubercular peritonitis, excepting two which were very far advanced, patients with pneumonia, bronchitis, debility and neurasthenia, as would be expected, did remarkably well.

Cases of arthritis were watched with interest, but there were no cases where the course of the disease seemed to be prolonged by the fresh air treatment. The renal and cardiac cases seemed to be benefited by being out-of-doors. Three cases of malaria were admitted and were segregated only by individual mosquito nets, but no case of malaria developed in the ward.

Perhaps the most remarkable clinical fact was the great reduction in the frequency with which hypnotics had to be prescribed, even in the cases where the patients were high-strung, and even the pain due to malignant disease seemed to be controlled by much smaller amounts of analgesics than would ordinarily be expected.

However, the most striking feature was that the patients, all women, and all belonging to the humbler classes, really the most conservative portion of society and with whom fads and innovations find the least favor, in all cases took kindly to life in the open, and after a short experience with tent life enjoyed it immensely and seemed to consider it a hardship when, for any reason, they had to be transferred to a regular ward.

I wish to express my thanks to Dr. Herman F. Vickery, visiting physician to the Tent Ward, for whom the writer was senior house-officer during the greater part of the existence of that ward, at whose suggestion this account is written, and to Dr. Frederic A. Washburn, acting administrator of the Massachusetts General Hospital, for permission to do so.

THE HISTOLOGY OF MULTIPLE MYELOMA. A COMPARATIVE STUDY OF ELEVEN CASES.*

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(*From the Laboratory of the Department of the Theory and Practice of Physic, Harvard University.*)

Since Bence Jones, in 1848, studied the peculiar proteid body excreted in the urine of a patient with diseased bones, an increasing number of cases have appeared in the literature, and gradually this urinary condition has come to be regarded as almost pathognomonic of certain bone tumors, myelomata. The chemical constitution of the Bence Jones body, however, still remains uncertain, notwithstanding much study of this phase of the subject. The reason for its formation and excretion, when such tumors occupy the bones, is practically unknown. The symptomatology and pathological anatomy on the other hand have been very thoroughly studied, for now the reported cases are quite numerous. The pathological histology of multiple myeloma, however, like its chemistry, has remained a matter of discussion, and more particularly with regard to the cytology of the condition is this true. Finer details of cell structure could not be studied in the earlier cases as they were investigated at a time prior to the development of the modern histological technic. In the reports of recent cases differences of opinion as to the nature of the tumor cells have arisen, either because actually tumors of different cell structure have been included under the term myeloma or because too few cases have been examined by one investigator for the range of possible variation in tumor cells histogenetically the same to be appreciated. Three cases seem to be the largest number carefully studied by one individual previous to my reports in 1907.[1] Since then, through the courtesy of friends, I have been able to collect five more cases, making a total of eleven cases available for comparative histological study.

Since the important factor in determining the nature of the cells in multiple myeloma is a comparison, side by side, of sections from different cases, a brief summary of the histological appearances of the six cases previously reported will be given, accompanied by photomicrographs, and the histological description of the new cases will be given in greater detail. It will be possible then to summarize the histology of myeloma as illustrated by this group of cases and to show by means of the photomicrographs taken under similar conditions of preparation and magnification that there is a marked similarity in the cells of all cases, but that there are minor variations in detail of structure which is not so great but that the tumors may be arranged in series so that between the individual cases of the series the differences are exceedingly slight.

Case I.[2] Sections[3] show the tumor to be very cellular and to consist of cells varying only moderately in size, shape and structure. (Fig. 1.) The cells lie in a coarse-meshed reticulum. The individual cells are round, oval, roughly polygonal or cuboidal. (Fig. 13.) There is no cell membrane. Not infrequently the cell edge is slightly ragged. The cytoplasm is slightly basophilic and is finely granular. The nuclei of most of the cells are round or oval, with a distinct nuclear membrane. The nuclei are vesicular and have a fine chromatin net-work with coarser chromatin masses attached to the nuclear membrane and scattered throughout the central part of the nucleus. The nuclei contain a distinct metachromatic nucleolus. Slight variations from this cell structure occur, but they are not very common.

Case II. This tumor is made up almost entirely of cells. (Fig. 2.) Connective tissue reticulum is very slight in amount. The cells vary somewhat in shape, but usually they are rather polygonal. (Fig. 18.) There is no cell membrane. The cytoplasm

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[1] Christian: Multiple myeloma: A histological comparison of six cases. Jour. of Exp. Med., 1907, ix, 325.

[2] For further details in regard to cases I–VI, see Jour. Exp. Med., 1907, ix, 325–343. Here also will be found an acknowledgment of the sources of the material in each case and a statement as to whether it has been described elsewhere.

[3] Unless otherwise noted, all tissue was fixed in Zenker's fluid.

has a very finely granular ground-glass appearance. Some cells are finely vacuolated and may have a ragged outline. The cytoplasm is slightly basophilic. The nuclei are round, sometimes oval, sometimes slightly irregular in contour. The nuclei are almost always eccentrically placed in the cell. There is a distinct nuclear membrane. Chromatin masses are small and tend to a peripheral position against the nuclear membrane. A distinct metachromatic nucleolus is common. The nuclei in this tumor show considerable variation in structure, but the one described above is the most common type.

Case III. This is a very cellular tumor with a fine meshed reticulum. (Fig. 3.) The cells are round, slightly oval, sometimes polygonal. (Fig. 12.) Cell outline is distinct and regular, and in places there is some indication of a cell membrane. The cytoplasm is very finely granular or almost homogeneous and is very slightly basophilic. Nuclei are round or oval, usually of regular contour. In relation to cell body the nucleus is rather large. It usually has an eccentric position. There is a distinct nuclear membrane. The nuclei are vesicular with rather fine chromatin masses diffusely scattered. At times there is a slight peripheral grouping of the chromatin, but this is never very marked. Many nuclei show a metachromatic nucleolus.

Case IV is a cellular tumor with sparse stroma of reticular type. (Fig. 4.) The cells are oval to roughly polygonal and have a distinct cell outline. (Fig. 22.) In some sections the nuclei are distinctly eccentric in the cell. Cytoplasm is finely granular, almost homogeneous. Some of the cells show a ragged, frayed-out edge. Cytoplasm is weakly basophilic. Nuclei are vesicular, with a distinct membrane. Chromatin is present in rather small masses scattered throughout the nucleus. There is a slight tendency to peripheral grouping of the chromatin. Many of the nuclei contain a metachromatic nucleolus.

Case V. In some parts of this tumor connective tissue stroma is present in large amount, and everywhere it is more abundant than in the preceding tumors. (Fig. 5.) Tumor cells here vary more in shape than in the other cases because they frequently appear to be crowded into narrow crevices between connective tissue bundles. Where this is not the case they are oval or polygonal. (Fig. 16.) The cell outline is sharp though there is no indication of a cell membrane. Cytoplasm is homogeneous, very finely granular, at times it is finely vacuolated. Cytoplasm is weakly basophilic. Nuclei are round or oval, sometimes slightly irregular, almost always eccentric in the cell. Chromatin is in fairly fine masses scattered throughout the nucleus, but is relatively not very abundant. There is a slight tendency to peripheral arrangement of chromatin masses. In many nuclei there is a metachromatic nucleolus.

Case VI. Stroma is very slight in amount in this tumor, and appears as a delicate, coarse-meshed reticulum. (Fig. 6.) The tumor cells are of a surprisingly uniform appearance. They are round or oval, frequently polygonal. (Fig. 23.) The cytoplasm is almost homogeneous and has a slight affinity for basic dyes. The nucleus is almost always round and an eccentric position is almost constant. Chromatin masses are relatively large in size, and for the most part lie in close apposition to the cell membrane so that there is left a small central portion rather free from chromatin. In a moderate number of the cells there is a distinct metachromatic nucleolus.

Case VII (University of Buffalo, 2368)[4] was autopsied by Dr. C. A. Bentz, of Buffalo, on Oct. 13, 1904. This was a patient, a male, aged forty-nine years, who had been in good health almost up to the time of his admission to the hospital on July 5, 1904. Three months prior to this time he began to feel severe pain along the course of the sciatic nerves. Previously he had had occasional twinges of pain in the same region. The pain during the three months had grown steadily worse and the patient was confined to bed almost all of the time. The urine examination showed a few hyaline casts and albumin, but no mention is made of the presence of albumose. The autopsy showed cirrhosis of the liver and chronic interstitial nephritis. There were osseous projections laterally from the bodies of the vertebræ and a tumor growth in the sternum and third lumbar vertebra. The tissue from these tumors preserved in formalin was put at my disposal for study.

The tumor is for the most part very cellular, with a small amount of intervening stroma. (Fig. 7.) In other places the cells are separated by a fair amount of connective tissue. Throughout the tumor there are numerous blood vessels of relatively large caliber and thin walls. Many sections show an extensive degree of hemorrhage into the cellular portions of the tumor; this is so marked in places that it gives the appearance of a blood clot, with here and there scattered small groups of tumor cells.

The tumor cells themselves are of a quite uniform appearance, not varying very greatly either in size, in shape or in staining reaction. The contour of the individual cells (Fig. 19) is regular and sharply outlined, but there is no evidence of a distinct cell membrane. The cells are for the most part round or slightly oval. Where they are most crowded together there is a slight tendency to a polygonal shape, and in a few places where stroma is fairly abundant the cells may be squeezed into somewhat irregular shapes. The average of a number of measurements of these cells is 9 x 7.7 microns. The cytoplasm of the cells, whether stained with hematoxylin and eosin or with phosphotungstic acid hematoxylin after mordanting with picric acid and ammonium bichromate, is very homogeneous, presenting a ground-glass appearance (Fig. 19), with only an occasional cell that is finely vacuolated. The cytoplasm is distinctly, though moderately, basophilic. The cells in this tumor do not show the ragged, frayed-out edge due to peripheral vacuolization as described in some of the other of these tumors.

In the phosphotungstic acid hematoxylin preparations many of the cells show near the nucleus a distinctly paler zone, near whose center lie two minute dots similar to those described in the preceding tumors and considered to be centrosomes. These dots lie very close together and frequently it is impossible to make out more than one dot. This appearance of a single dot may be due either to the fact that one dot overlies the other dot or to the fact that it is not always possible optically to resolve bodies lying as close together as some of these may.

The nucleus of these cells usually has a distinctly eccentric position in the cell body, and frequently it lies peripherally. (Fig. 19.) The nuclei themselves are round or oval and the average of a number of measurements is 5.3 x 4.6 microns. Occasionally a nucleus has a slightly irregular contour or it may show an indentation of its sides suggesting direct division. Sometimes a nucleus has a pseudopodic projection, but this is not common. Nuclei vary rather more in size than do the cell bodies, still there is no very great irregularity in nuclear structure. The chromatin is present in rather fine masses which show a slight tendency to a peripheral grouping. (Fig. 19.) However, this is not marked and there is no definite mural arrangement of the chromatin, though there appears to be a fairly distinct nuclear membrane.

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[4] I take pleasure in expressing here my thanks to Dr. Bentz for his courtesy in furnishing this tissue and his permission to use it in this connection.

A number of cells show near the center of their nucleus a small, rounded mass tending to stain slightly metachromatically and which may be regarded as a nucleolus. Here again this is not a very marked feature of the tumor, though in some of the cells the mass is very distinct. No mitoses were found in the examination of a large number of fields.

Three variations of the type cell of the tumor occur, but the total number of these cells is very small. Some of the cells have two, three or rarely four, nuclei, with a corresponding increase in the size of the cell body. Other cells have nuclei larger, more deeply staining and slightly more irregular in contour than the type cell. The upper limit of the size of these nuclei is about 2½ times the average nucleus. A moderate number of cells have nuclei which show slight degrees of shrinkage with a diffuse, rather dark staining nucleus (pyknosis). There is no evidence of hemoglobin staining in the tumor cells even where there is marked hemorrhage, and in this respect the tumor differs from most of the preceding ones.

Case VIII (Myeloma "X").[5] Tissue consists of a portion of a rib and part of a nodule adjacent to the rib. Both pieces were preserved in alcohol. There is no bone present in the nodule, whereas tissue from the rib contains bone requiring decalcification with 5% nitric acid before sectioning. This is a cellular tumor with rather more fibrous tissue stroma than was present in many of the other specimens of myeloma. Again, the arrangement of the stroma is rather different from most of the other cases in that there are moderately coarse connective tissue bundles forming elongated spaces or meshes in which the cells are closely crowded, with little or no intercellular stroma. (Fig. 8.) Blood vessels for the most part run in these connective tissue bundles and consequently have fairly definite, rather thick walls in comparison with the diameter of the blood vessels themselves. Individual cells vary considerably in shape, depending upon how closely crowded together they are. Where they lie fairly far apart they are for the most part of an irregular, oval shape; sometimes they are round, but more usually they are polygonal, owing to pressure of adjacent cells, but even under these conditions they are very apt to have one diameter longer than the other. (Figs. 14 and 15.) They are of a fairly uniform size, and the average of a number of measurements is 11.2 x 10 microns. The cell outline is almost always distinct, but there is no suggestion of a cell membrane. The cytoplasm is finely granular, of a ground-glass appearance (Fig. 27), but some cells have a slightly more coarsely granular cytoplasm. Occasionally a cell is finely vacuolated. (Fig. 14.) The latter, however, is an infrequent finding and is not sufficient to give the cells the frayed-out ragged border which has been described in several of the other cases. The cytoplasm is distinctly, though not markedly, basophilic. The nucleus very frequently is eccentrically situated, and it is unusual to see the nucleus distinctly centrally placed. (Figs. 14, 15 and 27.)

The nuclei are round to slightly oval and have a distinct outline which may be interpreted as a nuclear membrane. (Fig. 14.) The nuclei vary considerably in size and also in structure. Some of them are distinctly vesicular with fine chromatin granules which show a distinct tendency to group themselves peripherally on the nuclear membrane. In others there is very little peripheral grouping of the chromatin. In most of these nuclei, usually somewhat eccentrically placed, though sometimes in the center, there is a distinct, rounded, homogeneous, refractile mass, staining with eosin and averaging 1 micron in diameter, rarely 2 microns. (Fig. 15.) This is interpreted to be a nucleolus. Nuclei of this type average 6.6 x 6.1 microns in diameter.

Another very common type of nucleus is about one half the size of the one previously described, is very much less vesicular, the chromatin granules are coarser or more or less fused together into a diffusely staining mass. This type of nucleus seems to pass by gradual transitions into one still smaller, more homogeneous and more deeply staining, until finally the nucleus is represented by a deeply stained, homogeneous mass, one quarter or less the size of the first described vesicular nucleus. It would seem that this represents a progressive, degenerative change with shrinkage of the nucleus from the original vesicular nucleus. Another very common type of cell has a nucleus no longer vesicular and in which the nuclear material forms itself into six to ten rounded homogeneous, deeply-staining masses varying in size from one to two microns. (Fig. 27.) In a number of these cells the masses group themselves peripherally, and the nucleolus can still be distinguished in the center. However, the nuclear membrane often seems to have disappeared or to be only indefinitely represented. (Fig. 27.) Instead of a nuclear membrane, very frequently there is a pale zone immediately around the nuclear mass, as if this nuclear material lay in a vacuole; and with the peripheral grouping of the globules of nuclear material it frequently presents a picture not dissimilar from that shown in certain stages of the segmentation of malarial parasites.

In other cells, with the disappearance of the nuclear membrane, the chromatin masses appear to lie free in the cytoplasm of the cells. In this type of cells the nuclear masses may remain connected to each other by means of a fine thread staining indistinctly with nuclear stains. In some fields of the sections this type of fragmented nucleus is much more abundant than in other fields, though there is no other difference suggestive of a cause for this.

An occasional cell contains two or three nuclei, and in the latter the nuclei may show any of the varieties of structure already described. No positive evidence of mitosis can be found in the cells of this part of the tumor. Sometimes the formation of separate nuclear fragments gives a picture suggestive of some stage of mitosis, but in all cases it seemed that the picture could not justly be interpreted as one of mitosis. These changes are regarded rather as a peculiar form of degeneration, such as has already been described in some of the previous cases. Moreover, there is no indication of indirect division taking place in the cells.

The sections made from portions of the rib and adjacent tissue after decalcification show almost complete disappearance of the marrow and replacement by tumor tissue. Here the tumor does not show the arrangement with coarser bands of connective tissue enclosing groups of tumor cells, but there is a rather more generally distributed connective tissue framework made up of very delicate connective tissue bundles and thin walled, small blood vessels which frequently lie in close apposition to tumor cells. Fragmentation of the nucleus and formation of several small masses of nuclear material do not appear to take place except infrequently in these portions of the tumor. The tumor cells in these sections, however, have the same general characteristics with regard to cytoplasm as described above. Numerous shrunken, more deeply staining nuclei occur as in the adjacent nodule. Mitotic figures occur and are not very infrequent in these sections. The trabeculæ of bone seem to have atrophied to a great extent; the tumor has penetrated the bone in places and infiltrated the adjacent fibrous, adipose and muscular tissue. The distinctly invasive character of the tumor growth is best shown where the tumor has invaded striated muscle and the tumor cells are crowded between the muscle fibers. In a few of the sections the bone marrow is not entirely replaced by the tumor, and tumor cells can be seen scattered singly or in small groups amidst the bone marrow cells. The tumor cells can be easily picked out from the other marrow cells by their larger size, the distinct nucleolus and the fine chromatin granules tending to group themselves on the periphery. No hemoglobin pigmentation of the cells in this tumor can be made out.

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[5] For this tissue I am indebted to Dr. E. Libman, Mt. Sinai Hospital, New York, to whom I express my thanks. This patient did not come to autopsy.

Case IX (Buffalo Myeloma, No. 2).[6] This case, a man of forty-nine years, was autopsied Oct. 11, 1907, by Dr. C. A. Bentz, in Buffalo. There were numerous tumors present in the bones of the skull, clavicle, ribs and sternum. The eighth rib on the left side showed a growth the size of an English walnut, which had produced fracture of that bone. The fifth rib on the right side showed a similar tumor. At the junction of the gladiolus and manubrium sterni there was a tumor mass about the size of a dollar, and here the bone also was fractured. At the sterno-clavicular articulation on the right side there is a growth 2½ in. long and 2 in. in width, which originates in the clavicle and presents on section a mottled gray and red appearance. This bone, too, is fractured. Above the left ear in the skull there is a mass the size of a silver dollar which is soft, with crater-like edges. On the forehead, 3 in. above the right eyebrow, there is a similar mass the size of a hazelnut, and another back of the right ear. The abdominal and thoracic viscera present no abnormalities, and there is no evidence of any metastases beyond the bones.

This tumor is composed almost entirely of cells, among which there are scattered a few connective tissue fibrils forming an ill-defined reticular meshwork. (Fig. 9.) In addition there is a moderate amount of connective tissue accompanying rather large blood vessels, but the walls of the blood vessels for the most part are thin. In some sections, however, there are very large blood vessels with quite thick connective tissue walls containing relatively few cells and no definite muscularis or elastic tissue layer. These areas give the appearance of an angioma made up of rather large venous sinuses, between the walls of which are scattered the myelomatous tumor. Hemorrhagic areas occur quite often.

The cells in this tumor are of quite uniform size. For the most part the cell outline is distinct without there being anything to suggest a cell membrane. (Fig. 21.) The cytoplasm is almost homogeneous or finely granular and has a distinct affinity for basic stains. Some cells show a fine vacuolization of the cytoplasm. The average of a number of measurements is 10.2 x 8.7 microns.

The nuclei most usually have an eccentric position in the cells (Fig. 21), though the cells in proportion to the size of the nucleus are frequently not very large and often one diameter is not very much greater than the other. Consequently, many of the cells show only a moderate rim of cytoplasm about the nucleus, and in such cells very marked eccentricity of position cannot take place. The typical nucleus is vesicular, with a distinct nuclear membrane, on which is clustered fine chromatin granules so as to give the nucleus a distinct, rather deeply staining, periphery, while scattered through the center there are rather few fine and occasionally coarser chromatin granules. (Fig. 21.) Quite a number of the nuclei show a distinct, rounded acidophilic, homogeneous body, the nucleolus. (Fig. 21.) These nuclei average 6.9 x 6.1 microns in diameter. Numerous cells are distinctly larger than these just described, and in them the nucleus is proportionately larger and has rather coarser chromatin granules without showing any other difference of structure. Some of these larger cells have two to five nuclei, though the multinuclear cells are not a predominating feature of the picture. Mitotic figures are easily found in cells of the types just described.

A common variation from cells just mentioned appears to arise from a gradual shrinkage of the nucleus, in which the nucleus as it shrinks becomes more compact and deeply staining, until it is finally represented by a shrunken, homogeneous, deeply staining mass. With the shrinkage of the nucleus there appears also to be a shrinkage of the cytoplasm, which also becomes denser and more homogeneous. The cells of the type just described very frequently show hemoglobin staining of their cytoplasm, and not infrequently they are as deeply stained with hemoglobin as are the red blood corpuscles. This phenomenon is observed most markedly in those areas in which there are scattered many free red blood corpuscles and in the vicinity of thin walled blood vessels and definite areas of hemorrhage. Here and there a nucleus presents the appearance described in the preceding tumor, in which the nuclear material becomes aggregated into several small globules. These cells are not infrequently stained with hemoglobin and resemble closely the nuclei of certain megaloblasts in pernicious anemia, in which I have frequently noted similar changes in the chromatin.

Scattered between the cells in many areas of the tumor are many hyaline, slightly eosin staining or sometimes slightly basophilic, homogeneous droplets, which measure one to two microns in diameter. Here and there an eosinophilic leucocyte has been noted in the tumor, and also a few cells indistinguishable from the plasma cells of the connective tissue. In places there appear to be intermediate stages between cells identified as plasma cells and the tumor, and it is possible that these plasma cells have arisen from tumor cells which, after all, do not differ very markedly from plasma cells except that they are larger and the usual characteristics of plasma cells are less well marked. Probably the most striking thing in regard to this tumor, as in so many of the others, is the very uniform appearance presented by any field of the tumor and the slight variation in the appearance of the cells that predominate in the tumor, notwithstanding the variations in structure which have already been described.

Here and there are quite large phagocytic cells with included cells and cell fragments. The nucleus of these phagocytic cells, when it can be made out, is distinctly more vesicular and paler than the tumor cells, is apt to be elongated or irregular in contour and resembles the nucleus of the typical phagocytic endothelial type of cell. It is very probable that these cells are endothelial cells associated with the reticular framework of the tumor, as is so common in various forms of lymphosarcoma.

Sections stained with phosphotungstic acid hematoxylin show the cell characteristics already described, except that the cytoplasm after this treatment is rather more granular than when stained in other ways, and most of the cells show near the nucleus a paler zone in which is situated two small intensely black staining granules interpreted as centrosomes. Whereas it is common to make out two of these dots, not infrequently only one can be distinguished, while in other cells, especially in the cells which contain more than one nucleus, three or four dots can be made out.

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[6] This case was placed at my disposal by Dr. C. A. Bentz, of Buffalo.

Case X (Myeloma " Y ").[7] The case has been reported by Dick (*Trans. Chicago Path. Soc.*, vol. vi, 1903-1906, p. 168), from which the following brief clinical note and autopsy findings were abstracted. The patient was a man thirty-two years of age, who, in July, 1902, had suddenly lost his sight in both eyes. Three days later he regained his sight in the left eye. Soon his eyes began to bulge and he was operated on twice for retro-ocular sarcoma. On Aug. 12, 1903, he had an epileptic seizure, followed by headache which lasted twenty-four hours. At this time there was a growth about the left orbit continuous with the frontal bone, and both eyes showed choked disks. Removal of the tumor was attempted, but the patient did not survive the operation more than a few hours.

On Aug. 15 an autopsy was performed by Dr. Wells. He found on the ninth rib at the angle a swelling just palpable externally, which measured 7 x 4 cm. This nodule lay beneath the pleura except where a buttonlike mass projected through the pleura. The skull showed a large operative defect in the frontal bone, 4 x 5 cm. At the outer angle of this there was a mass of tissue, 2 cm. in diameter, adherent to the bone, white and soft. More tumor tissue extended beneath the left zygomatic arch and was intimately connected with the bone. The bone was very soft and infiltrated with tumor. The entire left frontal lobe of the brain was occupied by tumor mass. No tumor metastases were found in the internal organs.

Stroma in this tumor is very slight in amount and is present only as fine connective tissue fibrils forming a reticulum in which lie tumor cells, at times closely packed together, at other times fairly well separated. (Fig. 10.) When closely packed, the cells are roughly polygonal in shape (Fig. 20); when loosely scattered, they are round or slightly oval. These cells average 12 x 9.7 microns in size. The cell outline is distinct, occasionally there is a suggestion of a cell membrane. The cytoplasm of many cells is finely vacuolated. Not infrequently these cells have a rather ragged, frayed-out border. In other sections many of the cells are very finely granular, almost homogeneous, and the vacuolated cells are less numerous. The cytoplasm in relation to the nucleus is quite abundant, and the nuclei almost always distinctly eccentrically placed in the cell. (Fig. 20.) The nuclei are round or slightly oval, with finely granular chromatin, often tending to group itself peripherally on the nuclear membrane. They measure 6.2 x 5.8 microns. Occasionally a cell shows a fairly distinct nucleolus. In many of the cells the nucleus shows shrinkage and has a more deeply uniformly staining nucleoplasm. A few cells show two or three nuclei. In some sections many of the nuclei show the chromatin collected in fairly coarse masses grouped peripherally on the nuclear membrane, and in places these chromatin masses appear to have become free in the cytoplasm, though still more or less closely grouped together, so that we have a cell in which at one point are several small chromatin masses grouped together without any definite arrangement and apparently not within a nuclear membrane. In most of the tissue repeated search failed to reveal any mitoses but in one section a single nucleus in mitosis was found and this cell appeared to be a tumor cell.

In a number of the cells the cytoplasm has a distinct yellowish tinge, suggestive of hemoglobin staining, but it cannot be definitely stated to be hemoglobin owing to the unsatisfactory way in which the tissue takes the stain. However, this condition is rather more marked in those portions of the tumor in which hemorrhage has taken place. In the sections stained with phosphotungstic acid hematoxylin the cytoplasm shows a quite distinct tendency to take the hematoxylin stain and is finely granular. Centrosomes could not be made out in some of the sections, possibly owing to unsatisfactory staining with phosphotungstic acid hematoxylin, but were quite distinct in a number of cells in one section.

Case XI (St. Paul, Myeloma).[8] A man of fifty-eight, a patient of Dr. T. W. Stumm, St. Paul, Minn., began in August, 1905, to have a feeling of weakness in the legs, which at first came on after a hard day's work, but soon increased in severity so that he could scarcely walk. His legs were now stiff as well as weak, and there was slight pain starting in the small of the back and radiating down the legs. After two or three months the condition improved and he was able to do some work on the farm, but in the spring of 1906 the condition grew worse, and on Aug. 8 he entered the City and County Hospital in St. Paul. He could now walk around only a little by supporting himself by the bed or with a cane. He complains of pain in the small of his back, radiating down the thighs and legs, but when lying on his back rests very comfortably. Palpation with only very moderate pressure on the lower sides of the chests causes him to cry out with pain. This pain he locates in the dorsal region. When one taps along the vertebral column, he complains of pain in the lower dorsal region. He can only sit up by hanging his feet over the side of the bed and then holding on to the side of the bed with his hands. He holds himself pretty rigidly and moves slowly and cautiously in a spastic manner. Knee-jerks are much exaggerated and there is no ankle clonus. There were no very marked changes to be made out on physical examination other than these. He gradually became weaker, and for most of the time his temperature was one or two degrees above the normal. He died early in 1907.

Urine examined during his stay in the hospital showed no albumin and no special mention is made in the report of the presence or absence of albumose.

The tissue available for study from this case consists of several vertebræ preserved in formalin. Sections from these after decalcification show bone marrow and tumor quite intimately intermingled. (Fig. 11.) This fact renders it difficult in most places to positively separate tumor cells from cells which might be regarded as normal constituents of the bone marrow, and for this reason cell measurements were not made. However, there are foci here and there in which cells of quite uniform appearance are grouped together in the same relation to each other as is common in the other examples of myeloma, and it seems fair to regard these cells as undoubtedly the tumor cells and not normal constituents of the bone marrow. Most of these cells are irregular in shape, polygonal from pressure of adjacent cells. The cell outline is fairly distinct with no indication whatsoever of a cell membrane. (Fig. 17.) The cytoplasm is finely granular and of a less homogeneous ground-glass appearance than was the case with preceding tumors. The cytoplasm is possibly slightly basophilic, though the staining reactions are not perfectly satisfactory in this regard.

The nucleus in relation to cell body is rather large and there is some tendency to an eccentric position of the nucleus. The nuclei themselves are vesicular. There is a distinct nuclear membrane and fairly fine chromatin granules with some slight tendency to peripheral grouping. In some cells a fairly distinct nucleolus can be made out, but this is not common. Scattered among these cells are cells with slightly smaller, more deeply staining nuclei, which may be considered as tumor cells in varying stages of degeneration. There are also some cells in which the chromatin granules are coarser and definitely grouped on the nuclear membrane.

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[7] This tissue was sent me by Dr. H. G. Wells, of the University of Chicago, to whom I wish to express my sincere thanks.

[8] This tissue was sent me by Dr. T. W. Stumm, of St. Paul, accompanied by a clinical history of the case, from which I have abstracted the above notes. I desire to express my sincere thanks to him for this courtesy. The case will be published in detail later by Dr. Stumm.

There is nothing particularly notable in those parts of the bone marrow in which no tumor cells occur. The bone marrow is moderately cellular, indicating a fair degree of proliferative activity, and megakaryocytes are quite numerous. Mitotic figures occur in association with tumor cells, but it is not possible to say with certainty that these mitotic figures are not in intermingled cells normal to the bone marrow. In general, the cells in this tumor correspond in appearance to the cells in the previously described tumors, but owing to their diffuse distribution in bone marrow in which a large variety of cells is normal, it does not seem fair to state that any transition between tumor cells and fairly typical plasma cells can be made out. The transition is suggested, but in a tumor of this structure error of interpretation can be easily made. However, it seems justifiable to include this tumor in the group and to consider it as a true myeloma, but it would not be possible to base very definite conclusions as to cell structure on a study of this case alone. That myelomata may sometimes grow diffusely in the bone marrow, as in this case, was well shown in Case I, in which the cells are relatively larger and more easily distinguishable from any cell of the normal bone marrow. In that case small groups of tumor cells could be easily recognized in the bone marrow of the femur, which macroscopically appeared perfectly normal, and entirely different in appearance from the other bones examined in which the marrow had practically been entirely replaced by tumor cells. In connection with the other tumors I think the cytology of this case can be understood and is properly to be interpreted as I have done above.

In my previous paper were collected from the literature those cases in which cell structure was described in detail sufficient to show the character of the cells composing the tumors. Those cases, in so far as may be judged from their descriptions, show a quite uniform cell type, though there are considerable minor variations in cells in the different tumors. For eight of the cases collected from the literature it is claimed by their reporters that the cells find a close analogy in the plasma cell. Of six it is believed that the cells bear a close relation to immature myelocytes. In one, the case of Sternberg, cytoplasmic granulation is described. In Ribbert's case an erythroblastic nature is claimed. In some cases no attempt to homologize the cells was made.

Since then several other cases have been reported. Permin (*Virch. Arch. für path. Anat.*, 1907, clxxxix, 439) describes three cases in which the cells measured 9, 8.5 and 8.5 microns respectively. It is evident from his descriptions and drawings that these tumors are essentially identical in structure. The cells he would group as premyelocytes. Hueter (*Münch. med. Wochenschr.*, 1907, liv, 811) reported one case briefly at a medical meeting. He described the tumor cells as round or polymorphous without granulations in the cytoplasm. He terms the tumor cells pseudomyelocytes. Charles and Sanguinetti (*Brit. Med. Jour.*, 1907, i, 196) give the following description of the cells in a typical case: The cells are of three types: round cells uniform in size with a large pale nucleus and large protoplasmic contents which is granular in character; round or polyhedral cells with a small, deeply staining nucleus and finely granular protoplasmic contents; large round cells with large, round, deeply staining nuclei and finely granular protoplasmic contents. They regard the tumor cells as resembling cells in the normal marrow which are the predecessors of myelocytes. Dévé (*Normandie med.*, Rouen, 1907, xxii, 289 and *Rev. méd. de Normandie*, Rouen, 1907, viii, 207) has reported a case according to the title of his paper, but his paper was not available for verification. The question naturally arises, How far in the light of these cases can the histogenetic source of the tumor cells be determined?

A study of the bone marrow from a variety of cases shows that but two types of cell have any very close resemblance to the cells of these myelomata. Both are cells which have a slightly basophilic cytoplasm, distinct cell outline but no cell membrane. Both have a nucleus, frequently eccentric in position, with a distinct nuclear membrane and fairly constant nucleolus. In the one the nucleus is palely staining, with fine chromatin masses generally scattered throughout the nucleus, sometimes clumped more or less toward the center, but without any tendency to a mural arrangement. These cells (Fig. 26) belong to the myelocyte series, an early stage of development, usually before the specific granulation in the Ehrlich sense takes place, and are numerous in all active marrows. They may be called premyelocytes.

In the other cell (Figs. 24 and 25) the nucleus stains more deeply, the chromatin masses are coarser, there is rarely any central clumping of the chromatin masses. A nucleolus is a more constant feature. These cells appear to be constantly found in bone marrow. They are usually infrequent and never in large numbers. The maximum that I have ever found are scattered groups (Fig. 25, two cells in focus) of five or six cells with a few single cells, so that about every other field of a Zeiss 2 mm. objective and 4 ocular would show at least one of these cells. I have never been able to find any evidence of developmental changes in these cells. Their nature is not certain. They seem to have no relation to the formation of erythrocytes or polynuclear leucocytes. Of their relation to the lymphocyte series I can give no positive evidence. They appear closely related. Their closest analogue outside of the bone marrow is the plasma cell from which they differ in being slightly larger both cell body and nucleus, in having a less homogeneous ground-glass cytoplasm, in being rather less basophilic, in having not quite so coarse chromatin granules; but all these differences are of minor degree and do not serve to distinguish sharply these cells from the plasma cells of inflammatory tissue. However, as there are slight differences, I prefer to speak of these cells in the bone marrow as bone marrow plasma cells, and regard them as in some way related to the lymphocyte series of cells.

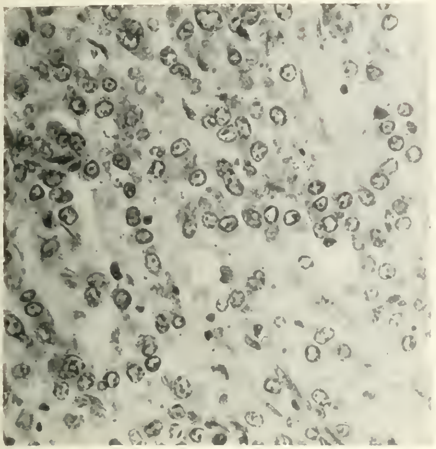

Fig. 1. Case I.

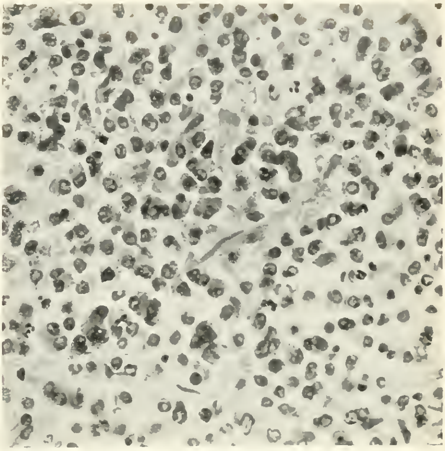

Fig. 2. Case II.

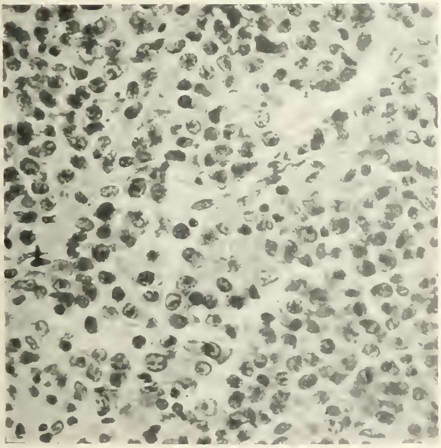

Fig. 3. Case III.

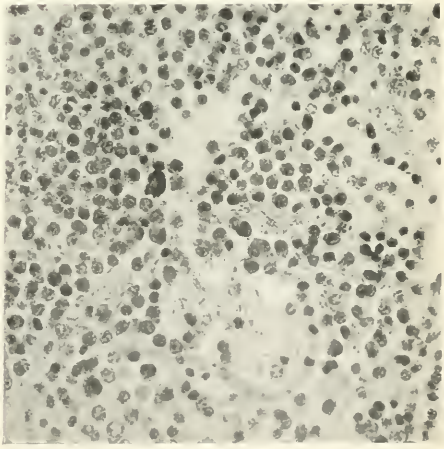

Fig. 4. Case IV.

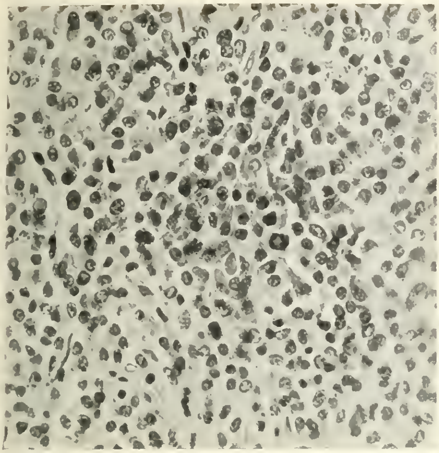

Fig. 5. Case V.

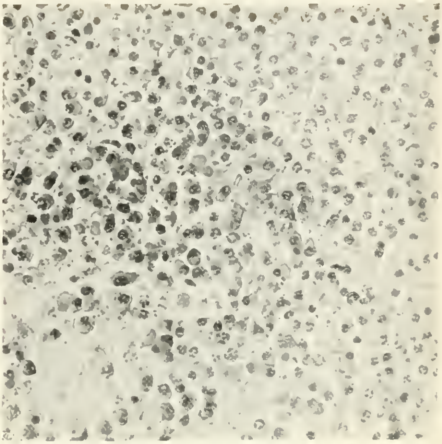

Fig. 6. Case VI.

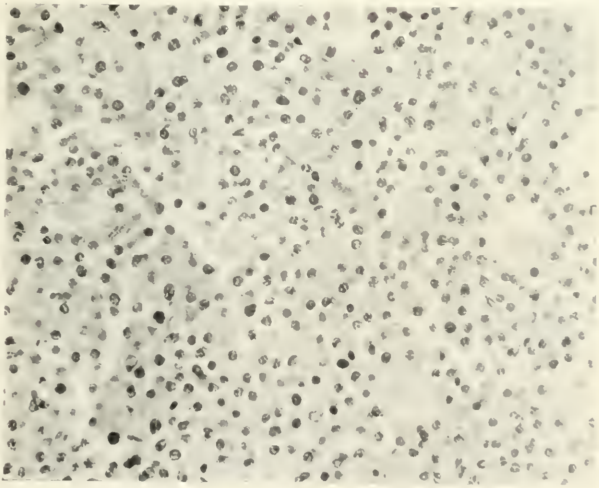

Fig. 7. Case VII.

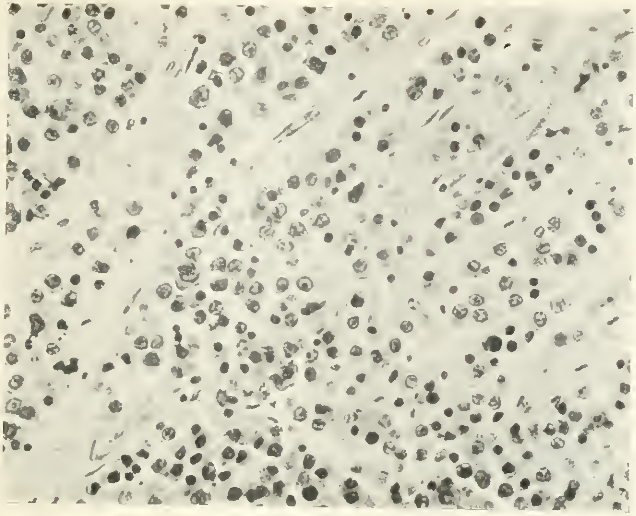

Fig. 8. Case VIII.

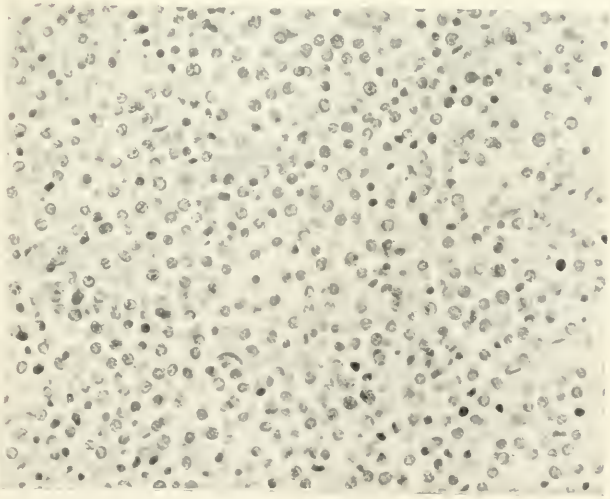

Fig. 9. Case IX.

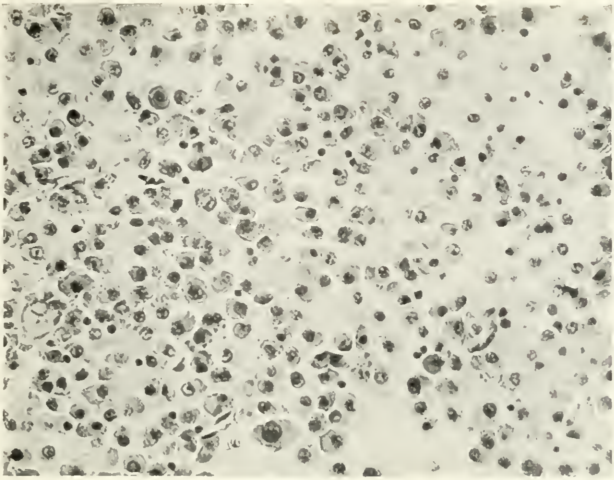

Fig. 10. Case X.

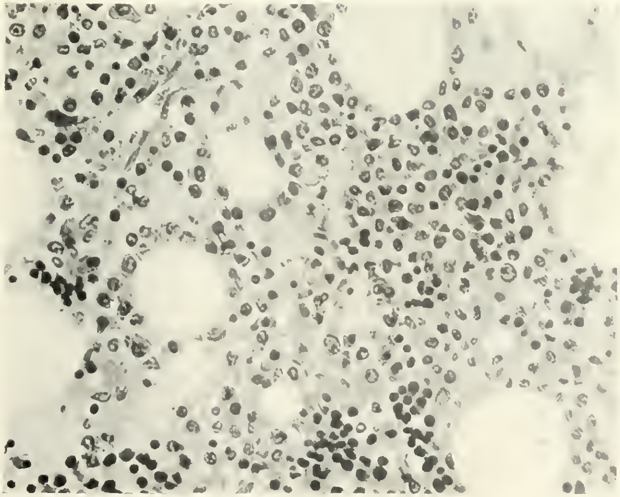

Fig. 11. Case XI.

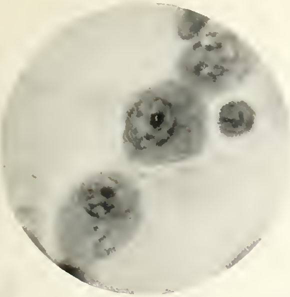

Fig. 12. Case III.

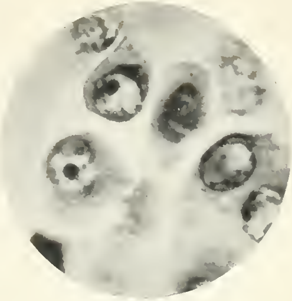

Fig. 13. Case I.

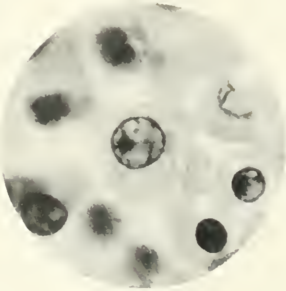

Fig. 14. Case VIII.

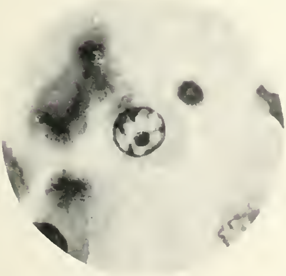

Fig. 15. Case VIII.

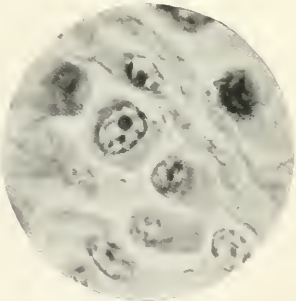

Fig. 16. Case V.

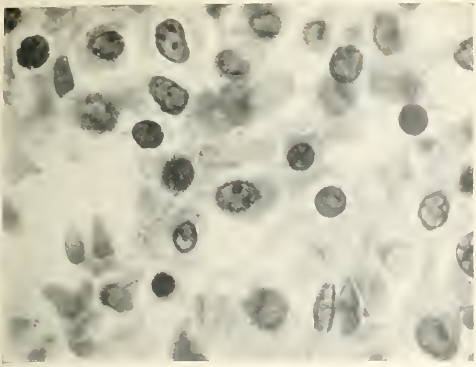
Fig. 17. Case XI.

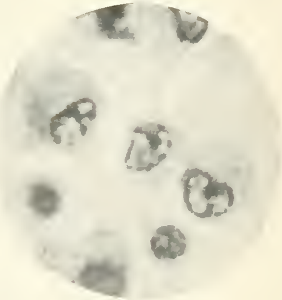
Fig. 18. Case II.

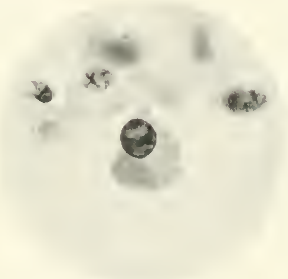
Fig. 19. Case VII.

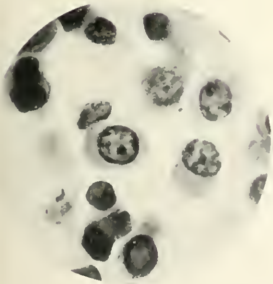
Fig. 21. Case XI.

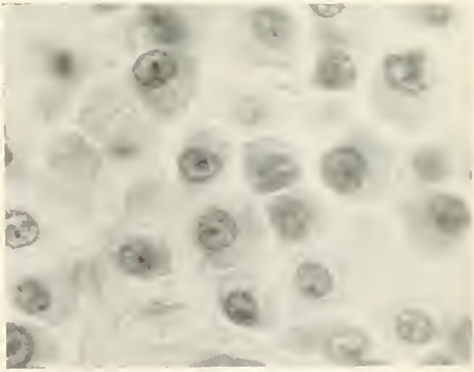
Fig. 20. Case X.

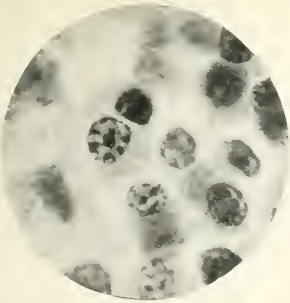

FIG. 22. CASE IV.

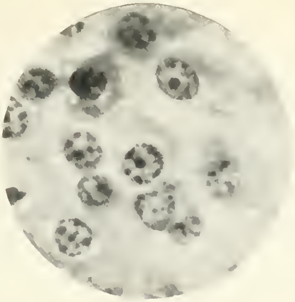

FIG. 23. CASE VI.

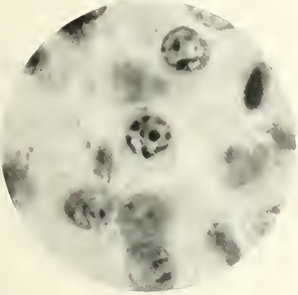

FIG. 24.

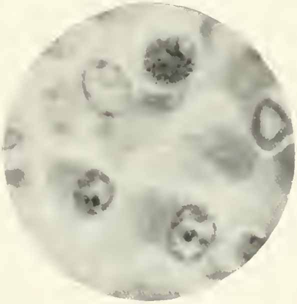

FIG. 25.

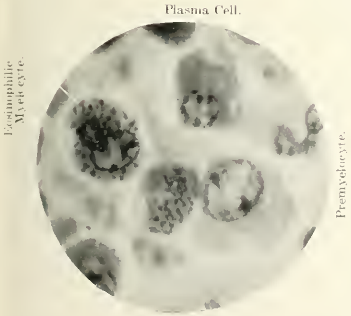

FIG. 26.

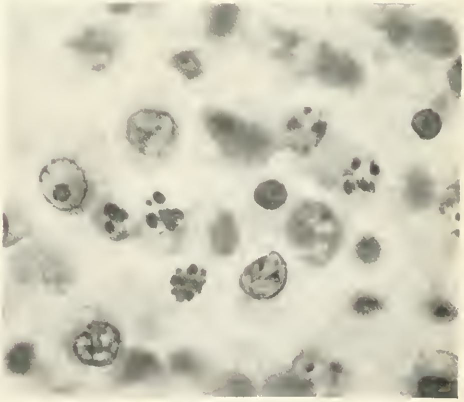

FIG. 27. CASE VIII.

Which of these cells stands closest to the myeloma cell? As is evident from the description of the cells in the myelomata reported by me and by others, there is considerable minor variation in the cell picture. The features most constant in the tumor cells are cytoplasm finely granular or slightly vacuolated, slightly basophilic; a nucleus eccentric in position, with a tendency to a mural arrangement of chromatin and a nucleolus; the presence of centrosomes. There is some variation in cell size, the average of measurements in[9] each case being:

Case VI,	cell body,	8.4 x 4.2	microns;	nucleus,	4.2 x 4.1	microns.
Case IV, sternal part,	,,	8.5 x 5.5	,,	,,	5.7 x 5.4	,,
Case VII,	,,	9.0 x 7.7	,,	,,	5.3 x 4.6	,,
Case IV, orbital part,	,,	9.4 x 7.6	,,	,,		
Case V,	,,	9.9 x 6.4	,,	,,	6.9 x 5.0	,,
Case IX,	,,	10.2 x 8.7	,,	,,	6.9 x 6.1	,,
Case II,	,,	10.4 x 6.8	,,	,,	6.0 x 6.0	,,
Case III,	,,	10.5 x 6.8	,,	,,	7.2 x 6.4	,,
Case VIII,	,,	11.2 x 10.0	,,	,,	6.6 x 6.1	,,
Case I,	,,	11.4 x 7.7	,,	,,	8.1 x 7.2	,,
Case X,	,,	12.0 x 9.7	,,	,,	6.2 x 5.8	,,

To compare with these I have made measurements of a number of cells in the bone marrow. The average of these is:

For myelocytes and premyelocytes from different cases:

11.5 x 9.25	microns;	nucleus,	8.0 x 7.5	microns.
11.8 x 8.25	,,	,,	7.2 x 6.5	,,
12.25 x 9.7	,,	,,	8.5 x 7.2	,,

For bone marrow plasma cells from different cases:

9.7 x 7.0	microns;	nucleus,	5.1 x 4.6	microns.
8.6 x 6.6	,,	,,	5.3 x 5.0	,,
9.9 x 7.5	,,	,,	5.6 x 4.8	,,

From these measurements it is evident that the cell body and nucleus of the myelocytes are rather larger than those of the tumor cells. The bone marrow plasma cells agree in size with the cells of those tumors which have the smaller sized cells. A glance at the cell descriptions in these will show that these tumors have cells which agree closely in structure with the bone marrow plasma cells. The other tumors have cells which, while retaining the characteristics in part of the plasma cells, yet show differences. Still these differences, though in the direction of the premyelocyte, do not often give a cell so large as the premyelocyte, and when compared side by side the cells appear to be more closely homologous with the bone marrow plasma cells than with the premyelocytes. This is certainly true also for the cells in many of the tumors reported by others.

In other words it seems possible to arrange the cells of these tumors in series so that between the cells of succeeding cases the differences are slight, though the differences between the cells at the extremes are fairly great. This is well shown by comparing in series the photographs, Figs. 12 to 23. The cells of one tumor described by me are almost identical in structure with plasma cells of the marrow, and those in four others are but very slightly different. The cells in the other cases seem to me to present more similarity to the plasma cell than to the myelocyte. If the myelocyte is assumed to be the ancestral cell the departure from the type is very much greater. (Compare the premyelocyte in Fig. 26 with cells in the series given above.) It is probably not possible to give any convincing proof of the ancestry of these cells. The cases studied side by side and in comparison with bone marrow cells leave the impression that we have in these tumors a development from certain bone marrow cells, which I have considered to be bone marrow plasma cells. Whether this is true for all reported cases is exceedingly difficult to say, especially for those cases in which the cells are not described in much detail. Possibly some cases, as that of Sternberg, in which neutrophilic granules are described, may have to be regarded as an exception.

In addition to this histological evidence as to the nature of the cells in myelomata the following observations may be considered in favor of their plasma cell nature though it is not claimed that they are conclusive. Eduard Müller (*Deut. Arch. für klin. Med.*, 1907, xci, 291) has described a simple method of testing the proteolytic leucocytic ferment by means of blood serum plates at a temperature of 55° to 60° Centigrade, thus inhibiting the growth of bacteria. Under these conditions leucocytes digest the blood serum, producing a depression where they come in contact with the serum. This ferment action, it has been already pointed out is not destroyed by the preservation of the cells in formaldehyde. At my suggestion Dr. Channing Frothingham, Jr., has tested in this way portions of tissue from cases I and VIII which had been preserved in alcohol. As a control bone marrow from a case of myelogenous leukemia similarly preserved in alcohol for a longer time was tested. With the tumor tissue no digestion of the blood serum took place while with the myelogenous leukemia bone marrow definite digestion resulted. Were the tumor cells histogenetically related to myelocytes, it might be supposed that they would cause digestion of the serum. This evidence for a myelocyte origin of the tumor cells is, to say the least, lacking.

Ribbert's (*Centralbl. für allg. Path.*, 1904, xv, 337) contention that the case studied by him was composed of erythroblastic cells is not supported by these cases. The frequent presence in my cases of cells stained with hemoglobin and resembling nucleated red blood corpuscles, as already described, suggests the possibility that a similar condition may have been present in Ribbert's case. In my cases it seems very certain that these cells result from a combination of cell degeneration and hemoglobin staining. Such hemoglobin staining of plasma cells is by no means uncommon, especially in the spleen where I have observed it many times, and this fact may be taken as some slight further evidence of the plasma cell nature of the tumor cells.

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[9] All these measurements were made on cells in tissue hardened in Zenker's fluid, embedded in paraffin and stained with eosin and methylene blue, except cases VII, VIII. The same lenses and micrometer were used throughout.

Certain nuclear changes regarded as degenerative phenomena are of frequent occurrence in these myelomata. Almost all show nuclei in varying stages of shrinkage. As the nuclei shrink, they stain more diffusely and more deeply until finally all evidence of intranuclear structure is lost. More interesting are the nuclear pictures shown in cases II, VIII, IX and X, in which there are many nuclei in which a process of nuclear segmentation has taken place, which results in the formation of a varying number of spherical chromatin masses of varying size and homogeneous structure. With both of these changes, as already pointed out, hemoglobin frequently is present in the cytoplasm.

In descriptions of myelomata the absence of mitotic figures has been quite often noted, and it has been suggested that the cells divide only by direct division. However, in my cases typical mitoses were found in cases II, III, IV, V, VIII, IX, X and XI(?), [10] and were quite numerous in some of these. Their absence in other cases is to be explained, I think, by the slow development of many of these tumors rather than by any peculiarity of the tumor cells. This theory is further supported by Case IV, in the sternal portion of which mitoses were easily found, while they were excessively rare or absent in sections from the orbital portion.

There is nothing in these tumors to suggest any transformation of cells along the line of development from premyelocyte to polymorphonuclear leucocyte. Sternberg is the only observer who has succeeded in demonstrating neutrophile granules in the cells of a myeloma. This fact in this single case does not seem sufficient evidence on which to base the opinion that all myeloma cells are myelocytes in some stage of development when we consider the great similarity of the cells in very many cases to plasma cells. If more cases like Sternberg's are accumulated, it would justify a subdivision of myelomata into (*a*) those with cells resembling plasma cells, and (*b*) those with cells resembling myelocytes. Even then it would still be possible without claiming a histogenetic relation between plasma cell and myelocyte to form a tumor group, having the main characteristics already described for the myelomata, in which all cases could be arranged in series with a tumor composed of cells identical with plasma cells at one end of the series, and a tumor with cells identical with myelocytes at the other, while between would come cases whose cells represented a gradual transition from one to the other. Such a group would contain tumors showing no greater differences than occur within all other tumor groups, such as sarcomata, carcinomata, etc. However, with regard to the tumors actually studied by me, all would be grouped at the plasma cell end of such a series.

A study of these cases and a review of those reported in the literature strongly suggests that the myelomata are true tumors rather than the bone marrow manifestations of a systemic disease as claimed by Pappenheim (*Folia hematologica*, 1907, iv, Supplement Heft 2, 215) and that they belong to that general group of tumors which tend to extend or metastasize chiefly in a single system of the body. A common example of this tumor group are the lymphosarcomata or lymphocytomata. However, metastasis into the viscera does take place in some of the cases of myeloma, and many show a distinct invasive type of growth where they break through their bony bounds and infiltrate adjacent tissue. This in itself seems sufficient evidence for regarding the myelomata as tumors in the commonly used sense of that word.

SUMMARY.

A histological study of eleven cases of myeloma shows a striking similarity of cell structure with differences of minor degree. The common characteristics of the cells are a finely granular, slightly basophilic cytoplasm, an eccentrically placed nucleus, a nucleolus, centrosomes, a nuclear membrane and a tendency to mural arrangement of the chromatin. Certain nuclear changes, regarded as the results of degeneration are commonly found. Mitotic figures occur in most of the cases studied by me, though absent in a few.

Myelomata are to be classed with the tumors. They tend to remain localized in the bone marrow but almost all show evidence of invasive growth into adjacent structures, and in a few metastasis has taken place. These tumors then are malignant in the usual sense of the word, but their malignant properties are apt to appear relatively late in many cases.

With these characteristics there is a greater resemblance of the tumor cells to bone marrow plasma cells than to myelocytes. In most of the cases reported by other observers the cells show these characteristics and these tumors from a group within which the cells of individual cases show no greater variation than occurs in other tumor groups.

DESCRIPTION OF PLATES.*

Figs. 1 to 11. Low power (425 diameters) fields from eleven cases to show cellular character and scant stroma of myelomata.

Figs. 12 to 23. Cells (1,500 diameters) from each tumor, arranged in series to show the slight variations in cell structure.

Fig.	12	from	case	III
,,	13	,,	,,	I
,,	14	,,	,,	VIII
,,	15	,,	,,	VIII
,,	16	,,	,,	V
,,	17	,,	,,	XI
,,	18	,,	,,	II
,,	19	,,	,,	VII
,,	20	,,	,,	X
,,	21	,,	,,	IX
,,	22	,,	,,	IV
,,	23	,,	,,	VI

Fig. 24. Bone marrow plasma cell (1,500 diameters) from a case of pernicious anemia.

Fig. 25. Group of bone marrow plasma cells (1,500 diameters) from a case of cirrhosis of the liver.

Fig. 26. Premyelocyte, plasma cell and eosinophilic myelocyte (1,500 diameters) from a case of cirrhosis of the liver.

Fig. 27. Cells showing nuclear changes (1,500 diameters). From Case VIII.

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[10] In Case X only one mitotic figure could be found. In Case XI there is the possibility that the cells found in mitosis were not tumor cells but marrow cells.

* These photographs were made by Mr. L. S. Brown, at the Massachusetts General Hospital, for whose careful work I wish to express my thanks.

THE USE OF HUMAN MILK IN TYPHOID FEVER TO INCREASE THE BACTERIOLYTIC POWER OF THE BLOOD.

BY FRANCIS P. DENNY, M.D., BROOKLINE, MASS.,

Medical House Pupil, Massachusetts General Hospital, 1895; Visiting Physician to the Massachusetts Infant Asylum; Physician to the Boston Dispensary.

The problem to be solved in devising an effective serum treatment of typhoid fever may be fairly well represented by the following experiment.[1] If to a drop of a bouillon culture of typhoid bacilli there is added a drop of the serum of a typhoid patient and then a drop of serum of a normal healthy individual, the bacilli are quickly destroyed. If the typhoid serum or the normal serum alone is added no considerable number of the bacilli will be destroyed.

Bacteriolysis, or the destruction or digestion of the bacilli in the above experiment, is brought about by the combined action of two substances: (1) the *immune bodies* (amboceptors) in the typhoid serum, which have been given off by the cells of the body during the disease, and (2) the *complement* (alexins), a ferment present in normal blood which when bound to the bacterial cell by the immune body has the power of digesting the bacteria. In the normal serum there are insufficient immune bodies to destroy the bacilli; in the typhoid serum there is absent the necessary complement to bring about bacteriolysis.

With these facts in mind one would seem justified in concluding that (1) to prevent typhoid fever in a healthy individual one should increase the immune bodies in the blood to combine with the complement already present in destroying the invading bacteria; and (2) to destroy the bacilli when the disease has developed one should increase the complement to act with the immune bodies already present.

There is abundant proof that the first conclusion is correct. The inoculation of an immune serum in a healthy individual will give a temporary (passive) immunity, while a more permanent (active) immunity can be secured by increasing the immune bodies by means of inoculations of dead bacilli, as shown by Wright in the English army.

There is, at present, no proof that typhoid fever can be effectively treated by increasing the complement, because as yet no method has been devised of increasing it. The normal serum of animals cannot be used as a source of the complement, because the inoculation of such a serum results in the production of an anticomplement which inhibits bacteriolysis. There is need, then, for a human source for the complement.

The use of human milk to increase the complement in typhoid fever was suggested to the writer by the work of Moro[2] on the bactericidal power of infants' blood. Using the plate method, he found that the average of a large number of tests made under exactly similar conditions showed that:

	Per cent of bacteria.
Maternal blood (placental) killed	58.9
Blood of older children killed	46.3
Blood of artificially fed infants killed	33.4
Blood of breast-fed infants killed	77.0

The bactericidal power of the infant's blood at birth corresponds very closely with the placental blood. Following the breast feeding there is an increase, so that it is considerably greater than that of the mother's blood, while on an artificial diet there is a rapid falling off.

Pfaundler[3] and Moro were able to demonstrate the complement in the milk of several species of animals. They found it difficult to demonstrate the complement in human milk because, as they claim, there are substances in the human milk which inhibit its action. They believe, however, that it is present.

The complement is almost invariably diminished in atrophic infants, and Pfaundler[3] believes that infantile atrophy is caused by a deficiency of the complement — at least of a *tropholytic* complement — through whose action the nutrient material is anchored to the cell and discharged from it. He believes that the deficiency of the complement is made good in the breast-fed infant by complement brought from the mother through the milk. There is abundant proof that protective substances pass from the mother to the child in the milk. Thus it has been shown that diphtheria antitoxin in the mother's blood is excreted in the milk and is so taken into the infant's circulation. Antitoxin cannot pass, however, through the milk to an animal of a different species.

In whatever way human milk may act, whether by increasing the complement or by some other as yet unknown immunizing property, it certainly gives the nursing baby a remarkable immunity against infections. For example, artificially fed infants living in institutions or asylums have a very high mortality from infectious processes of different kinds, while infants partially fed on human milk can live side by side with the artificially fed infants in such an institution, under exactly similar conditions, except for the human milk, and appear to thrive as well as in a good private home.

It is not merely an immunizing power against infections that is given the infant by human milk. As the literature abundantly shows,[4] human milk is also *curative* in its action, even in comparatively small amounts. This curative effect is seen not merely in infections of the gastro-intestinal tract, but in other infections; for example, in furunculosis and other suppurative conditions.

This protective power of human milk is not limited to the first year of life. The mothers in the tenement houses know that if they can nurse their babies two or three times a day during the second summer, the babies are much less likely to get sick. Often these mothers will leave their babies all day while they go to work (the baby in the meantime being fed on the regular family diet), but several times through the evening and night the baby will nurse. There is little milk in the mother's shrunken breast, and that little is undoubtedly of poor quality as a food, but it brings from the mother certain elements which protect the child from infections.

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[1] Richardson: Jour. Med. Res., vol. vi, 1901, 187.
[2] Moro: Wien. klin. Wochenschr., vol. xiv, 1901, p. 1073.
[3] Pfaundler: Münch. med. Wochenschr., Dec., 1907.
[4] Denny: Jour. Am. Med. Asso., 1906, vol. xlvii, p. 1904.

The curative effect of human milk is also seen during the second year. I have recently had under my care at the Massachusetts Infants' Asylum three children between one and two years of age to whom human milk was given. All were sick with severe gastro-intestinal infections, and two of them were almost moribund when first given the human milk. The beneficial effects were as prompt and decided as in any case under a year, that I have ever seen.

The question therefore arises, At what age does human milk cease to aid the individual in resisting infections? If it is of value through the second year, why not through the third and fourth and even into adult life? Are we not as well justified in concluding that a treatment which is effective for a child will be effective for an adult, as we are in reasoning from the results of animal experiments, as to the results of a given treatment in man?

It has not been proved that the protective power of human milk depends on the complement which is brought from the mother; in fact, Wasserman[5] explains in a different way the greater bactericidal powers of the blood of breast-fed infants: the soluble albumin of human milk can pass with little change into the blood of the infant, while the albumin of cow's milk, being the albumin of a different species of animal, cannot so pass, but must be transformed into human albumin by the action of ferments in the intestinal wall. Wasserman believes that the ferments which transform the foreign albumin are identical with the complement. In accordance with his theory, therefore, the bactericidal power of the artificially fed infant is low because the complement is largely employed or used up in transforming the albumin of the cow into the human albumin of the infant.

The use of human milk, an homologous albumin, as a food in typhoid fever means that less complement would be used for transforming the food, and therefore more would be free to combine with the immune bodies for the purpose of bacteriolysis.

This also suggests a reason for restricting the foreign albumin in the diet of a typhoid patient; and a diet with carbohydrates would seem more rational than the exclusive milk diet so commonly employed.

The theories of Escherich[6] suggest that human milk might be of value in typhoid fever in other ways than by increasing the complement. Escherich believes that those ferments of the internal secretions which regulate and control the growth of the tissues (Stoffwechsel-fermente) and which are the products of the so-called ductless glands, pass from the mother to the child in the milk. The nursing period is thus a continuation of the intra-uterine dependence, the child receiving substances through the milk similar to those received through the placental circulation.

These ferments of the internal secretions, if present, might well be of value to the typhoid fever patient. We know that glandular tissues suffer severely from the effects of the typhoid toxins. Thus the secretions of the digestive glands are much impaired and it seems probable that the so-called ductless glands suffer a similar impairment of their function.

There is a tendency for the tissues and organs of the body when severely injured to revert in many of their characteristics to an earlier or embryological condition. Thus in severe anemias, the blood takes on certain fetal characteristics. May it not be that metabolism in the typhoid patient, whose tissues are severely damaged by the prolonged toxemia, resembles in some respects that of the infant, and may not the ferments of the internal secretions, if present in the human milk, be of value to the typhoid patient in his struggle with the disease? From this point of view, human milk is a form of *organo-therapy*.

The foregoing considerations may be briefly summarized as follows:

1. Theoretically an increase in the complement is indicated in the treatment of typhoid fever, but no method of doing this has yet been devised.
2. The blood of the breast-fed infant has greater bacteriolytic power than that of the artificially fed infant.
3. There is some reason for believing, although it is not proved, that the complement passes from the mother to the young of the same species through the milk.
4. Human milk gives the infant a marked immunity against infections, and is curative in its effects when used in the treatment of infections.
5. The immunizing and curative effect of human milk appears to be marked in the second as well as in the first year of life, and there is no reason to suppose that these effects are limited to these first two years.
6. According to Wasserman, a foreign albumin in the food is transformed into the albumin of the body by the action of the complement; the complement, therefore, is low in the artificially fed infant because it is used up in this work. The giving of an homologous milk to a typhoid patient should therefore set free some complement which would thus be available for the purpose of bacteriolysis.
7. According to the theories of Escherich, various ferments of the internal secretions pass from the mother's blood to the infant through the milk. The so-called ductless glands may suffer an impairment of their functions in typhoid just as do the digestive glands, and these ferments if present in the milk would be of assistance to the patient.

The foregoing considerations made it seem desirable to see if any beneficial effects followed the giving of human milk to typhoid fever patients. Certainly no ill effects could follow the use by an adult of a food which is known to be the most easily digested and assimilated by the human being at the age when its power of digestion and assimilation is at its lowest stage of development.

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[5] Wasserman: Deut. med. Wochenschr., 1903, vol. xxix, p. 16.

[6] Escherich: Wien klin. Wochenschr., 1900, vol. xiii, p. 1083.

During November and December, 1907, seven patients at the Boston City Hospital were given human milk which had been collected under the supervision of the writer. Five of these cases were on the service of Dr. G. B. Shattuck, and two on that of Dr. J. L. Ames, to both of whom I am indebted for the privilege of reporting the cases. I am also greatly indebted to Dr. E. P. Joslin for much valuable assistance in the work.

The milk was collected by Mrs. A. M. Henderson, a trained nurse. After visiting a large number of nursing mothers living in the tenement house districts, a few were found who had a superabundance of milk. These mothers and their babies were all examined by me and found to be healthy before the milk was used. Precautions were taken to have the milk drawn in a cleanly manner, and put in sterile bottles and then kept at a low temperature. The ability of the mothers to draw off the milk increased markedly after the experience of a week or two. One mother was able to give us over a quart a day.

The idea of taking the milk intended for a helpless infant for the use of an adult is not wholly a pleasant one. In our experience, however, there seemed to be no objectionable features. As the milk was taken only from mothers who had more milk than their own babies required, all of the babies continued to thrive while the mothers were contributing the milk. Moreover, the general comfort and prosperity of the family was materially increased by the money which was paid for the milk.

Except for the human milk, which replaced a corresponding amount of cow's milk in the diet, the treatment of the typhoid patients was according to the hospital routine, with cold baths when the temperature was above 102.5°.

The human milk was given to the patients in the same way as the cow's milk, and was readily taken. Those patients who were somewhat dull did not appear to notice any difference. The taste is not unpleasant; it is sweeter and less heavy than the cow's milk, and has a slightly acrid taste, suggesting cow's milk well diluted with a carbonated water. Two patients taking the milk were nauseated on the same day, which suggested that the cause of the disturbance was something peculiar to the milk of that day rather than to the human milk as such. As far as is known only one other patient was nauseated while taking the milk. When one considers how common a symptom nausea and vomiting is in typhoid fever, one can say that the milk was well borne. One patient thought his bowels moved better while taking the milk.

It was hoped to give the milk to a much larger number of patients, but after the collections were begun, the cases available for a trial proved to be much fewer than was anticipated. Four of the seven cases were not satisfactory tests; in Cases III and V, the temperature had already begun to fall when the milk was started; Case VI proved to have a septic endocarditis in which there was no possibility of benefit, and Case VII did not have typhoid at all.

Case I. L. G. Female. Thirty-four years. Single. Entered hospital Nov. 12. For two weeks had felt tired, four days fever, diarrhea, headache.

Examination: Moderate prostration, tongue coated, a few râles in chest, spleen palpable, rose spots, Widal positive on Nov. 16.

Nov. 14 to 28, bacteriolytic* milk given, 20 to 30 oz. daily, average, 28.6 oz., total 13 qts. On Nov. 14 and 15 the temperature reached 104°, but on the following days it was lower, being normal Nov. 29. On the 30th, two days after the milk was stopped, there was a short rise of temperature to 104°, which was the beginning of a ten days' relapse. Dec 23, discharged well.

Case II. R. E. Female. Twenty-two years. Single. Entered hospital Nov. 15. For one week headache, fever, chilliness.

Examination: Marked apathy and prostration: tongue dry and fissured; heart irregular, systolic murmur at apex, abdomen soft, spleen felt, no rose spots.

Nov. 16, Widal and blood culture positive.

Nov. 19 to 26, given bacteriolytic milk 24 to 35 oz. daily, average 30 oz., total 7½ qts.

Nov. 26, vomited after taking the milk, which was then omitted.

Dec. 3, patient had a profuse hemorrhage from the bowels. General condition poor. Vomiting for past two days.

Dec. 5, several more hemorrhages during past few days, leaving patient very weak. Died 8 p.m.

Case III. F. Q. Male. Seventeen years. Single. Entered hospital Nov. 21. For four days weakness, chilly sensations, headache, diarrhea.

Examination: Moderate apathy; tongue has thick white coat, spleen felt; rose spots.

Nov. 22, Widal positive (?).

Nov. 29 to Dec. 2 bacteriolytic milk 33 to 76 oz. daily, average 59.7 oz., total 7½ qts. Temperature was already dropping when milk was started, and reached normal two days later. Was a mild case.

Case IV. C. L. Male. Twenty-nine years. Married. Entered hospital Nov. 30, 1907. Eight days unable to work and had felt ill for a week before that. Headache, nausea, epistaxis, constipation.

Examination: Moderate prostration and apathy, tongue coated, abdomen soft, spleen felt, rose spots.

Dec. 3, Widal and blood culture positive.

Dec. 2 to 12, bacteriolytic milk, 33 to 82 oz. given daily, average 62.9 oz., total 21 qts. 20 oz.

On Dec. 6, after taking the milk four days, the temperature dropped to normal, but went up in the evening to 102° and remained 100° to 102° for the following week. While the milk was being taken the patient thought his bowels acted better than before or after. Convalescence was uneventful. Discharged well.

Case V. W. C. Male. Twenty-six years. Single. Entered hospital Dec 5. Is said to have had typhoid eight months before. For one week feeling poorly. Headache and backache, chilly, fever, constipation.

Examination: General condition good. Moderate apathy and prostration, abdomen soft, spleen not felt, no rose spots. Widal positive.

Dec. 13 to 25. Bacteriolytic milk 64 to 79 oz. daily, average 74 oz., total, 18½ qts. The course of the fever

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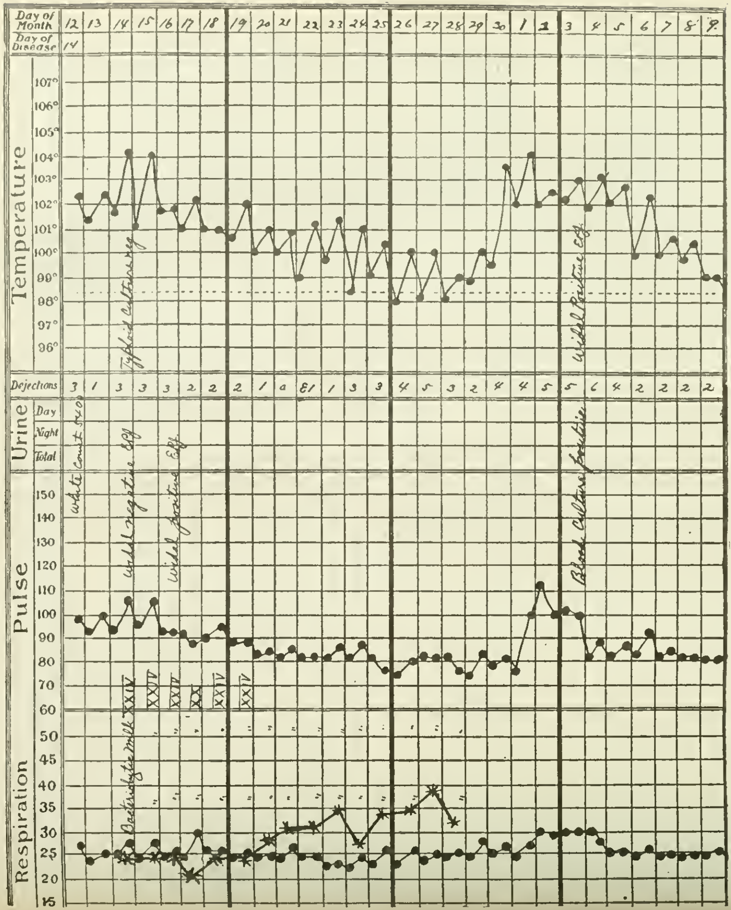
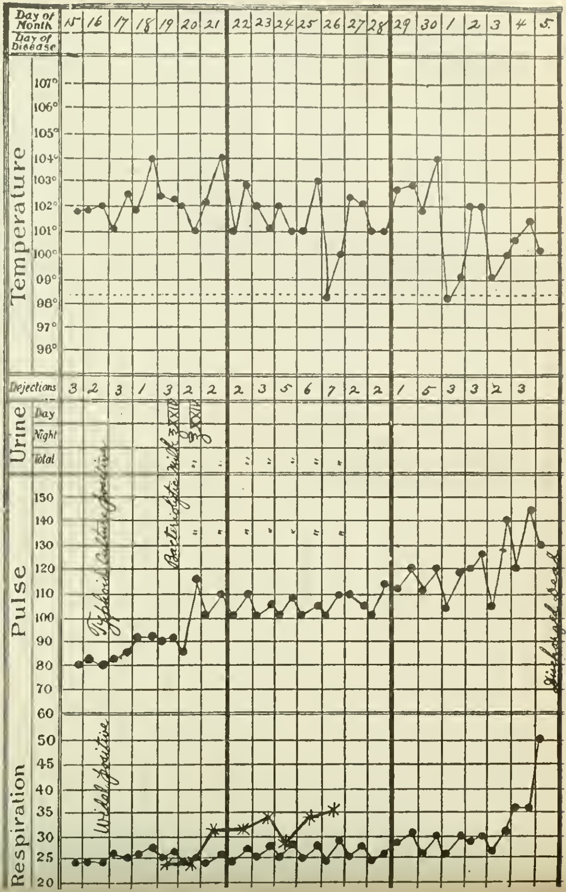
* Human milk here and throughout the records is called "bacteriolytic milk."

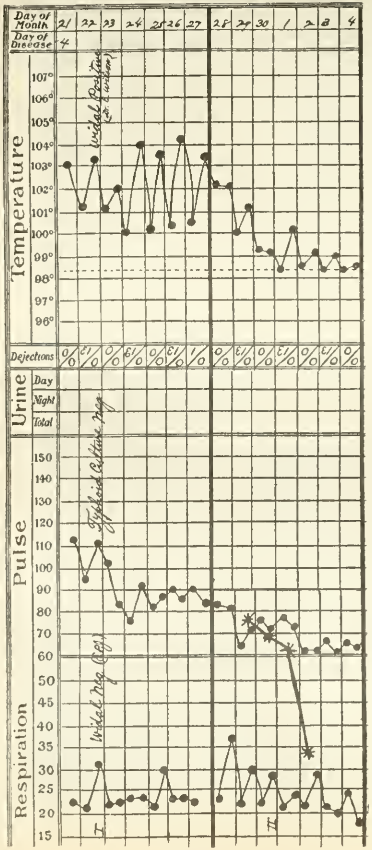


CASE I.

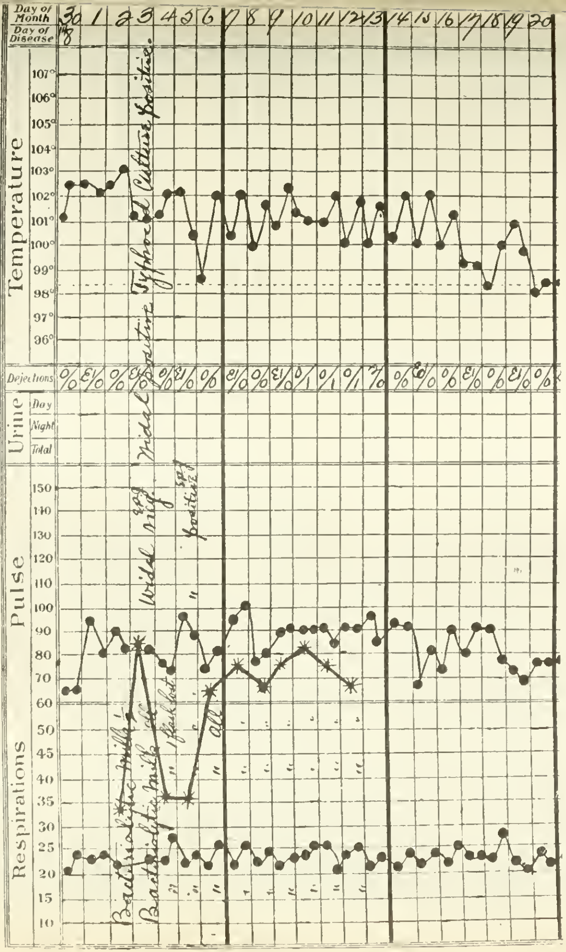


CASE II.

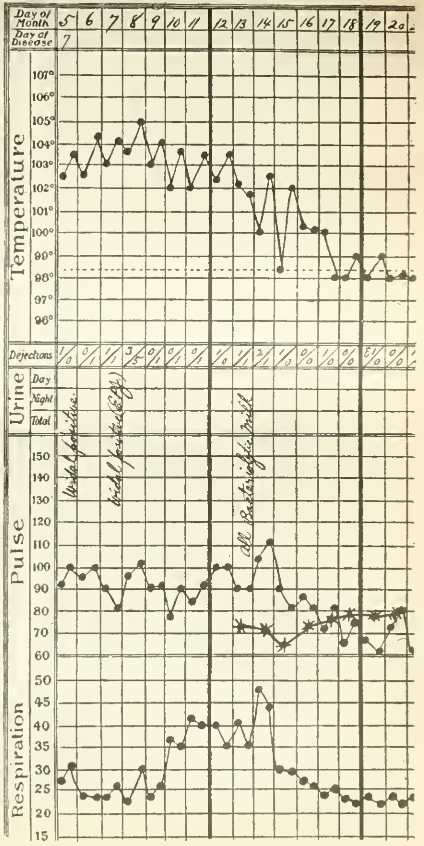
The starred line in each chart indicates the amount of human milk in ounces which the patients received.



CASE III.



CASE IV.



CASE V.

in this case lasted only three weeks, but the symptoms were severe.

CASE VI. C. E. Female. Twenty-six years. Single. This patient had typhoid fever with septic endocarditis and multiple abscesses. Bacteriolytic milk given during the tenth week, 8 to 24 oz. daily, average 18.3 oz., total 4 qts. The milk was well borne, but as was to be expected with this complication, no improvement followed and she died in the fourteenth week.

CASE VII. S. H. Female. Entered hospital Dec 20. Ill three days. Temperature 102.2°. Probable diagnosis at entrance was typhoid fever.

Dec. 21 to 25 given bacteriolytic milk, 66 to 88 oz. daily, average 73 oz., total 11½ qts. Temperature normal on Dec. 24. Widal was never positive.

The course of the disease in Cases I to V can best be followed by referring to the accompanying charts. The amount of human milk in ounces is indicated by the starred lines.

In Case II, a severe typhoid, there was no improvement while taking the milk. In Case I, the temperature began to be lower after two days on the milk. In Case IV the temperature began to fall on the day following the giving of the milk, and after four days there was a rather unusual temporary drop to normal. In Cases III and IV, where the temperature had already started to fall when the milk was first given, the temperature curve shows a more abrupt fall than is common in typhoid fever.

It is impossible to determine whether the human milk modified in any way the course of the disease in these patients. There were certainly no striking effects produced, and the course of the fever in all of the cases was such as might be seen in patients on the regular diet. It is very desirable that the milk should be tried in a larger number of cases and that a study should be made of the blood of the patients taking the milk.

An important factor in the etiology of typhoid fever that as yet we do not understand is the question why the young adult in the prime of bodily health and vigor is more susceptible and less resistant to the typhoid infection than are infants and young children. It may be that human milk will be found of more value to adults and children in infections to which infants are peculiarly liable.

This work has shown that drawn human milk can be easily obtained in considerable amounts, and that it is readily taken and well borne by the adult. This work has not proved that human milk is of value in typhoid fever, but it is hoped that it will serve to suggest, as a field that well merits further investigation, the question:

Can the protective power against infections which human milk gives to the infant be of value to human beings after the first two years of life?

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A DARWIN CELEBRATION AT CAMBRIDGE. Arrangements are being made by the University of Cambridge to celebrate on Tuesday, June 22, Wednesday, June 23, and Thursday, June 24, 1909, the hundredth anniversary of the birth of Charles Darwin and the fiftieth anniversary of the publication of the "Origin of Species." It is proposed to invite representatives of universities and other learned bodies, together with distinguished individuals, to visit the University on the occasion. — *The Lancet.*

BRONCHOPNEUMONIA: ITS CLINICAL TYPES IN RELATION TO ETIOLOGY.

BY CHARLES HUNTER DUNN, M.D., BOSTON,

Medical House Pupil, Massachusetts General Hospital, 1901; Assistant in Pediatrics, Harvard University; Assistant Physician at the Children's Hospital; Assistant Physician and Pathologist at the Infants' Hospital.

MODERN tendencies in therapeutics are coming to demand more and more an etiologic rather than an anatomic basis for the classification of disease. It is the increasing knowledge of the causes of disease which has given the stimulus to the study of the problem of immunity, a study which has produced and is producing our most brilliant therapeutic achievements; and our chief hope for the future looks to increased knowledge of causes and their mode of action as its basis. Whether our treatment be prophylactic or curative it is not anatomic lesions which we are to combat, but their causes. When the same anatomic lesions are produced by a variety of causes, the essential differences for purposes of scientific study looking toward cure are greater than when a variety of lesions is produced by the same cause. Hence a classification based on causes is to be preferred whenever possible.

Unfortunately, the clinical manifestations of disease usually owe their specific character and distinguishing peculiarities rather to the anatomic lesions than to the specific etiologic agent, characteristic symptoms being due to impairment of function from local anatomic conditions, rather than to any peculiar effect of the infecting organisms. Where specific organisms give rise to peculiar and characteristic lesions, no difficulty is encountered in classification, but it is in cases where the lesions produced are not characteristic that difficulties arise.

Bronchopneumonia is an example of this latter class of diseases. The term means an affection of the lung showing certain definite anatomic lesions, and it is upon the definite character of these lesions that bronchopneumonia rests its title to consideration as a disease entity, a title which would have no basis at all if our classification of diseases were wholly put upon an etiologic basis. We know that the lesions of bronchopneumonia are produced by a variety of pathogenic organisms, although comparatively little attempt is usually made to differentiate etiologic types. The pathologist at autopsy is usually content, upon recognizing the lesion, to call the case simply bronchopneumonia, without any further inquiry into the probable cause of the lesions, and from this fact I infer that the various pathogenic organisms have been found to produce no specific peculiarities in the lesions. I attempted to verify this inference by a study of autopsy records, but was unable to do so because I found that while the description of the lesions was most thorough, a bacteriologic study had not been made with commensurate completeness.

Nevertheless, bronchopneumonia presents itself to the clinician as a disease with distinctly varying manifestations, which fact suggested the possibility of dividing it into distinct clinical types. There seems also to be a certain relation between the clinical type and the prognosis. It has been recognized that there is also a certain amount of connection between the etiology and the prognosis, for example, that tubercular bronchopneumonia is usually fatal, while influenza bronchopneumonia is apt to recover. At once the question arises, Is there any relation between the clinical type and the etiology? for if so, such relationship would be of immense practical value to the physician when confronted by the question of prognosis.

The study of the sputum in pneumonia has thrown great light upon the question of etiology. It has been shown that the sputum is fairly characteristic in pneumonia produced by the pneumococcus only, and by the bacillus of influenza. The presence of tubercle bacilli in the sputum is considered proof of tubercular pneumonia, and even the pneumonia produced by the pyogenic cocci or by mixed infections can frequently be recognized as such.

Unfortunately, bronchopneumonia is chiefly a disease of early life, in which a satisfactory specimen of sputum is usually extremely difficult to obtain. A correspondence between clinical and etiologic types would therefore be of great added utility, if there is any such correspondence.

In the year 1903, there was a small outbreak of whooping cough in the Children's Hospital, a number of cases of which were complicated by bronchopneumonia. In children with whooping cough, it is almost always easy to obtain specimens of sputum, and I examined a number of such specimens. The bronchopneumonia presented itself in various clinical forms, and the few cases which I observed at that time seemed to suggest that there was some correspondence between the clinical type and the bacteriologic findings in the sputum. Since then I have been carrying on, rather intermittently, further investigations of this subject, in cases which did not have whooping cough, with efforts to obtain specimens of sputum by special methods, and by thorough study of cover-glass preparations taken from various parts of the lungs at autopsy, when the opportunity presented itself. The cases are still comparatively few, on account of the difficulty of obtaining satisfactory specimens. My aim is to present these results in comparison with the clinical type of the disease.

My records include 53 cases. In 31 of these cases the diagnosis of the probable etiology was based on examination of the sputum obtained during life, while in 22 cases it was based on the results of post-mortem examinations.

The results of the examination of the sputum and of the lungs post-mortem permit a division of the cases into 4 classes.

1. Five cases in which cover-glass preparations showed pneumococci only, or in very large proportion, both within and without the leucocytes. The appearance in these cases was exactly the same as that seen in cover-glass preparations of the sputum of lobar pneumonia. While other organisms were present in small numbers, the appearance suggested that the lesions in these cases were chiefly due to the pneumococcus only. This group will be spoken of as the pneumococcus group.

2. Seven cases in which the influenza bacillus was found in such enormous predominence, both within and without the cells, that the appearance suggested that this bacillus was the chief or only cause of the lesions. This group will be spoken of as the influenza group.

3. Twelve cases in which either the tubercle bacillus was found in the sputum (4 cases), or in which the characteristic lesions of tubercular bronchopneumonia were found at autopsy (8 cases). This group will be spoken of as the tubercular group.

4. Twenty-nine cases in which cover-glass preparations suggested a mixed infection, a variety of micro-organisms being found, no one in such predominance as to suggest that it could be considered the chief cause. Pneumococci were usually present to a varying extent in these cases. Associated with them were found staphylococci, streptococci, and sometimes a few influenza bacilli. This group will be spoken of as the mixed infection group.

It is not my intention to assert that the findings in the sputum are proof that the organisms found are necessarily the cause of the disease. They may be considered as indicating the most probable cause, or at least, as giving the best obtainable evidence bearing on the cause, for purposes of comparison with the clinical manifestations. In 46 of these cases the clinical diagnosis was bronchopneumonia; in 2 cases it was lobar pneumonia followed by tuberculosis, without the lesion being specified as bronchopneumonia; in 5 cases no clinical diagnosis of any pulmonary condition was made.

The cases showed a great variety of clinical manifestations. In order to see if the differences in the clinical manifestations show any tendency to correspond with the above etiologic groups, I have analyzed them under the following headings:

1. Age.
2. Primary or secondary origin.
3. Rapidity of onset.
4. General condition of the patient.
5. Mental condition of the patient.
6. Presence or absence of cyanosis.
7. Character of the temperature curve.
8. Duration of illness.
9. Termination.
10. Physical signs in the chest.

In the first place, of the 29 cases in the mixed infection group, 5 may be differentiated from the others and set in a class by themselves. In these 5 cases no clinical diagnosis was made, the diagnosis of bronchopneumonia being made only at autopsy. Although the bacteriologic examination showed a mixed infection, streptococci were especially predominant in all of these cases. I believe these cases represent a terminal infection not strictly to be classed as clinical bronchopneumonia. They occurred in children very sick with some other disease, were of sudden onset, great severity, brief duration, invariably fatal, and with slight or absent physical signs in the chest. To include them with the mixed infection group would, in view of their strikingly different and peculiar clinical manifestations, not give a fair picture of clinical bronchopneumonia, and I have therefore placed them in a separate class, which will be called the Terminal Infection Group.

Age .	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
2 yrs. or under,	100%	83%	28%	100%	60%
Over 2 yrs.,	0%	17%	72%	0%	40%

The only notable point in connection with the age is that in the influenza group the majority of cases occurred in children over two years of age while in the other three groups, the majority occurred in children under two years.

Origin. — All of the cases in the pneumococcus group were primary. Of the influenza cases, 3 followed whooping cough, the others being primary. Of the tubercular cases, 2 followed lobar pneumonia, the others showing no direct relation to any preceding disease. The majority of the cases of the mixed infection group appeared to be secondary to some infection of the upper air passages, such as an ordinary cold, with gradual extension downward into bronchitis, and finally to bronchopneumonia. A certain number of them followed one of the recognized contagious diseases, such as whooping cough or measles, but the small number of such cases does not indicate that this is not a very common origin of bronchopneumonia, because such diseases are not admitted to the hospitals.

Onset.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Gradual,	75%	59%	66%	0%	0%
Sudden,	25%	41%	33%	100%	100%

The percentage figures are not of very great significance as they are based on too small a number of cases, though they give a certain indication of difference in clinical type. The notable point is that in the pneumococcus group the onset was invariably sudden, whereas in the other three groups it was usually gradual. In two of the tubercular cases, classed as having a sudden onset, the disease began with typical lobar pneumonia, which was followed later by the finding of tubercular bronchopneumonia at autopsy.

General condition.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Good,	17%	75%	57%	40%	0%
Poor,	83%	25%	43%	60%	100%

The figures represent the general condition when the patient was first seen. In the fatal cases it grew progressively worse. The notable point is that the tubercular and influenza groups showed a good general condition in the majority of cases, whereas in the other groups this condition is reversed.

Mental condition.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Unaffected,	21%	66%	86%	0%	0%
Apathetic,	42%	14%	100%	100%	0%
Semi-conscious,	26%	0%	0%	0%	0%
Unconscious,	10%	17%	0%	0%	100%

The differences in the mental condition presented, when the patients were first seen, were very striking, as the cases presented themselves clinically. The nervous system was strikingly unaffected in the tubercular and influenza groups, whereas it was affected in the majority of the cases of the other groups. The cases of the tubercular group in which it was affected presented themselves in the later stages of the disease.

Cyanosis.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Present,	13%	41%	29%	20%	20%
Absent,	87%	59%	71%	80%	80%

There were no notable variations in the frequency of occurrence of cyanosis.

Temperature.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
High,	13%	17%	14%	100%	80%
Moderate or low,	87%	83%	86%	0%	20%

The differences found in the temperature curves, characteristic of the different groups, were among the most striking features of the analysis. The above figures represent the main characteristics of the curves. In many of the cases with moderate course of fever, there were at times high exacerbations, while in some cases in which the fever was for the most part high, there were remissions. In general, the mixed infection, tubercular and influenza groups, showed a moderate course of fever, not often exceeding 102°, whereas the pneumococcus and terminal infection groups showed a course of high fever. The fever curves showed further characteristics. In the majority of the cases of the mixed infection group, the fever was moderate, with absolutely irregular exacerbations and remissions, ending by lysis in cases which recovered. The influenza group showed the same characteristics, but high exacerbations occurred more frequently, and the fever was in several cases extremely prolonged, ending by an exceedingly slow lysis. The tubercular group was characterized by regular remissions, and a wide daily variation between minimum and maximum temperature, so that the charts were often strikingly characteristic, although there were several marked exceptions. The pneumococcus group showed also very characteristic temperature charts, differing entirely from those of the other groups. The temperature was in general high, and steadily maintained, without marked remissions, and ended by an abrupt crisis, so that the charts often exactly resembled those of lobar pneumonia. In the terminal infection group, there was usually simply a brief high fever preceding death.

Rate of respiration. — The respiration was accelerated to a varying degree in almost all cases. There was no relation between the rate of respiration and the etiologic group.

Duration.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Under 1 wk.,	4%	0%	0%	60%	100%
,, 2 wks.,	37%	16% ?	14%	100%	100%
Over 2 wks.,	63%	84+%	86%	0%	0%
,, 3 ,,	37%	75+%	71%	0%	0%
,, 4 ,,	13%	42+%	71%	0%	0%
,, 6 ,,	0%	25+%	57%	0%	0%
,, 8 ,,	0%	0%	29%	0%	0%

The differences in the duration found in the different groups are very striking. The figures refer to the duration of the disease from the time of onset until either death occurred, or till the patient was free of symptoms and signs. It will be seen that the tubercular and influenza bronchopneumonias were of long duration, especially the influenza type, where most of the cases ran a course of many weeks. In striking contrast to these cases were the pneumococcus cases, in which the duration was quite brief in all cases. The duration of the mixed infection cases appeared very variable, being in general considerably longer than the purely pneumococcus infections, but not so long as the tubercular and influenza. The cases of mixed infection, which I believe to represent terminal infections, showed a sharp clinical contrast in their very brief duration.

Termination.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Death,	79%	83%	0%	20%	100%
Lysis,	21%	0%	100%	0%	0%
Crisis,	0%	0%	0%	80%	0%
Not relieved,	0%	17%	0%	0%	0%

Here again there are striking differences in the different groups. The tubercular form is the more fatal, but the figures are of no value as bearing on the actual mortality of the various groups, because the studies were made upon selected cases, as many cases as possible which came to autopsy having been selected. Death also occurred in the large majority of the common mixed infection group, and when recovery occurred, the disease terminated by lysis. None of the influenza cases was fatal, and in all the termination was by lysis. The pneumococcus group presented a sharp contrast in that in all the cases which recovered, the disease terminated abruptly by crisis.

Physical signs in chest. — It is difficult to tabulate the physical signs found in a way which satisfactorily brings out the striking differences found in the various groups. There were a number of cases in which signs were more or less generally distributed throughout both lungs, the finding being crackling râles with or without consolidation, and there were cases in which the signs were confined to definite areas. Again, in some cases, only râles were found; in others, small areas of consolidation; in others, large areas of consolidation; and in a number of cases, numerous areas of consolidation appearing and disappearing successively.

	Mixed.	Tubercular.	Influenza.	Pneumococcus.	Terminal.
Diffuse signs,	100%	25%	0%	100%	40%
Localized signs,	0%	75%	100%	0%	0%
Diffuse râles only,	54%	8%	0%	80%	40%
Small areas of consolidation,	46%	8%	15%	20%	0%
Large areas of consolidation,	0%	84%	0%	0%	0%
Shifting areas of consolidation,	0%	0%	85%	0%	0%
Nothing abnormal found,	0%	0%	0%	0%	60%

It appeared that a diffuse distribution of the physical signs throughout the lungs is characteristic of the mixed infection and pneumococcus groups, and may occur in the tubercular group. Localization of the physical signs in definite areas is characteristic of the tubercular and influenza groups, especially of the latter. In the mixed infection and pneumococcus groups the most common finding was diffuse crackling râles only, without the detection of definite areas of consolidation being possible. When such areas occurred, they were usually small. In the tubercular and influenza groups, definite areas of consolidation were always found. In the tubercular group these areas were notably large, and strikingly persistent, the signs of consolidation persisting without much change over long periods of time. In the influenza group, while the areas of consolidation found were both large and small, they showed one characteristic peculiar to this group, in that they appeared and disappeared in succession. One or more areas of consolidation would appear, would last for a few days, and then the signs of consolidation would vanish, leaving behind a lot of crackling râles localized in the same area, which in turn would disappear in a few days more. Meanwhile, from time to time, fresh areas of consolidation would appear and go through the same changes.

The above analysis suggests that there is a certain correspondence between the etiology, or at least the bacteriologic findings, in cover-glass preparations as representing probable etiology, and the clinical manifestations of bronchopneumonia. It thus becomes possible to subdivide the cases into fairly definite clinical types corresponding to the supposed etiology and to describe them separately. The points on which such a subdivision would be based are summarized in the following diagnostic table.

	Age.	Onset.	Mental condition.	Temperature.	Duration.	Termination.	Signs in chest.	Sputum at at Autopsy.
Mixed	Infants	Gradual	Affected	Moderate	Medium	Death or lysis	Diffuse	Mixed Infec.
Tuber.	,,	,,	Clear	,,	Long	Death	Localized	Tuber. Bac.
Influenza	Children	,,	,,	,,	Very long	Lysis	Shifting	Infl. Bac.
Pneumococcus	Infants	Sudden	Affected	High	Short	Crisis	Localized	Pneumococcus
Terminal	All ages	,,	,,	,,	Very short	Death	Diffuse or none	Mixed-Streptococci ?

Following the suggestions given by the comparison between clinical manifestations and etiology, the description of bronchopneumonia would be as follows, including only peculiar features, not symptoms common to all forms.

Bronchopneumonia may be divided into the following types:

1. The commonest type, including most of the cases of so-called secondary bronchopneu-

monia, which is probably caused by mixed infection, and is a disease principally of the first two years of life. It usually follows either one of the recognized specific infections, or upon an infection of the higher air passages, extending downward into bronchitis, and then into bronchopneumonia. The onset is usually gradual, the general condition is usually much impaired, being serious from the start, and the nervous system is often notably affected. The temperature is usually moderate, with irregular exacerbations and remissions. The duration varies, being about one to five weeks. The prognosis is very serious, a great many cases ending fatally. Those cases which recover terminate by lysis. The principal physical sign in the chest is the presence of diffuse, fine, moist râles, having a peculiar crackling quality, and sounding close to the ear. In many cases this is the only sign, while in other cases small areas of consolidation appear in various parts of the lungs. The sputum shows a variety of micro-organisms, and post-mortem examination shows a typical general bronchopneumonia.

2. *Tubercular bronchopneumonia* which is probably second in frequency. It is a disease principally of infancy, though it may occur in older children. My observations lead me to believe that when it occurs in older children, it is usually secondary to some other form of pneumonia. The onset is usually gradual, and the general condition, while it may be serious from the start, is usually good at the beginning, becoming progressively worse. The nervous system is strikingly unaffected during the greater part of the illness, the children often taking a marked interest in their surroundings, even after their general condition becomes serious. The temperature is variable, usually moderate, with a tendency to marked remissions, which usually occur in the morning, but which may occur in the evening, the chart often showing a very characteristic up-and-down curve. The duration is long, about two to six weeks, or even more. The prognosis is very bad. None of the cases in this series recovered, two being discharged not relieved. I believe, however, from cases which I have seen but have not been able to prove tubercular, that recovery is possible. The most characteristic physical sign in the chest is the gradual appearance of rather large areas of consolidation which persist for a long time. The areas may be small, and there may be diffuse crackling râles generally distributed, so that the physical signs may be exactly the same as those seen in the common bronchopneumonias of the preceding type. Tubercle bacilli are often difficult to find in the sputum. At autopsy is found the characteristic caseous pneumonia.

This form of bronchopneumonia is to be distinguished from the common mixed infection form, by the clear mental condition of the patient, by the tendency toward localized large and persistent areas of consolidation in the chest, and more than all by the peculiarities of its temperature curve. Nevertheless, it is often very difficult to make the diagnosis, particularly when the temperature curve is not characteristic, and when the signs in the chest are diffuse.

3. *Influenza bronchopneumonia*, which is not common, except when influenza is generally prevalent. It is a disease principally of childhood and adult life rather than of infancy. It usually follows an influenzal infection of the higher air passages, which finally involves the lungs. The onset may be sudden in the first place, but the symptoms of pneumonia usually come on gradually. The general condition is often serious at the start, but may be good. The nervous system, in children at least, is usually but little affected. The temperature is irregular, for the most part moderate, but with a tendency toward high exacerbations which last from a few hours to several days. Fever is very prolonged, the temperature returning very gradually to the normal. The entire duration of the illness is strikingly long, about 2 to 8 weeks. The prognosis is good, complete recovery being the usual termination. The signs in the chest commonly do not involve all parts of the lungs at once, and diffuse crackling râles are not found. Recognizable areas of consolidation occur successively in various parts of both lungs, persisting only for a few days, and then disappearing, leaving in their place a collection of râles. This shifting appears to be quite characteristic, and can best be understood from the illustrative case given below. Influenza bacilli, both within and without the leucocytes, are found in great numbers in the sputum, which is very purulent in character. I have seen no autopsies of this type.

This form of bronchopneumonia is to be distinguished from the common secondary form by its occurrence later in life, by its generally less serious nature, by the less common affection of the nervous system, by its prolonged duration, and more than all by the peculiarities of the physical signs found in the chest. It is to be distinguished from the tubercular form by the differences in the temperature curves, by the tendency to become progressively better, and by the shifting character of the signs in the chest.

4. *Primary pneumococcus bronchopneumonia.* — This is essentially a disease of the first two years of life. Both its clinical aspect and the findings in the sputum suggest that it is caused by an infection of the pneumococcus only. Like lobar pneumonia, it occurs in well patients, and the onset is sudden. The nervous system is usually affected to some extent, as in lobar pneumonia. The temperature rises rapidly, is high and steadily maintained, and falls by an abrupt crisis. The duration is short, resembling lobar pneumonia. The prognosis is much more favorable than in the common secondary bronchopneumonias. Convalescence is rapid. The physical signs in the chest are diffuse, consisting of crackling râles, with or without small areas of consolidation, and exactly resembling the signs found in the mixed infection type. The sputum resembles that of lobar pneumonia, being tenacious, not purulent, and containing few organisms except the pneumococci, which are found both within

and without the leucocytes. At autopsy the lesions resemble those of the common secondary type.

This form is to be distinguished from the preceding forms by its abrupt onset, high sustained temperature, and termination by crisis. It may be distinguished from lobar pneumonia from the fact that from the start it presents diffusely distributed physical signs.

5. *Terminal bronchopneumonia.* — This form may occur at all ages. It is represented by the rise of temperature, pulse and respiration, which so often occurs as the end picture of various diseases. In such cases a fresh acute bronchopneumonia is found at autopsy. There are sometimes no physical signs found in the chest, or there may be diffuse râles. It is distinguished from the preceding types by its occurrence in the course of some other disease, at a time when the patient's general condition is poor and by the absence of definite clinical characteristics.

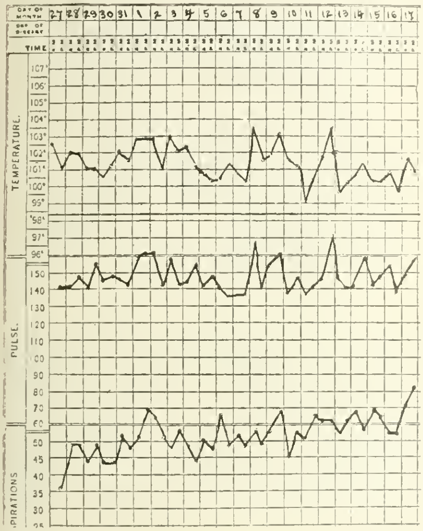

Chart I. Mixed Infection.

The above description represents only typical cases. In practice, cases which conform absolutely to the type are infrequently met with, as every sort of variation may occur. It is notable that in this series the correspondence between etiological type and clinical picture was by no means constant, for in all the groups exceptions occurred where such correspondence was lacking, and where cases belonging to one etiological group presented to a greater or lesser extent the clinical features of another. Nevertheless, similar exceptions occur in most other diseases. In order to determine how far the exceptions would render inaccurate diagnoses based on the diagnostic scheme outlined above, I have taken the same series of cases from a purely clinical point of view, basing the diagnosis of each case upon the clinical data as presented in the first five days of observation, and then comparing the results with the sputum and autopsy findings.

Of the group of mixed infections, in 17 the diagnosis was correct, while in 7 the diagnosis was mixed infection or primary pneumococcus; the only point in favor of the latter being a sudden onset and temporary high temperature. Of the tubercular cases, in 6 the diagnosis was correct, in 3 it was tubercular or mixed infection, in 1 it was tubercular or influenza infection, and in 1, with a sudden onset and high temperature at the start, it was primary pneumococcus infection. In 5 of the influenza cases a correct diagnosis was made, as in them the shifting character of the signs was apparent by the fifth day; 2 cases might be mistaken for the tubercular form. Of the primary pneumococcus cases, 4 were typical and easy to recognize, while in the fifth the diagnosis was pneumococcus or mixed infection. Of the terminal infections, in 3 the diagnosis might possibly have been made correctly.

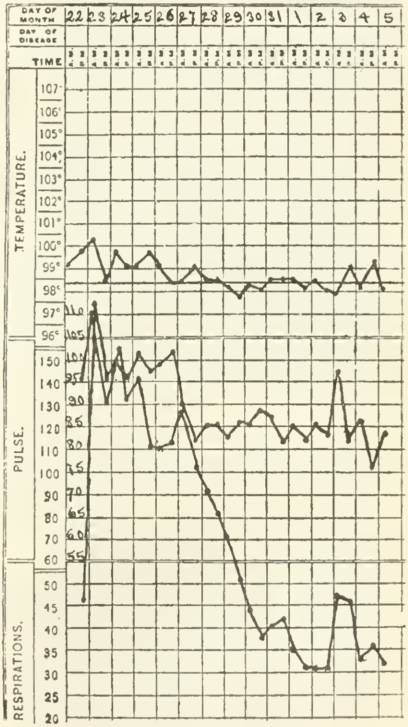

Chart II. Mixed Infection.

I believe this division of the bronchopneu-

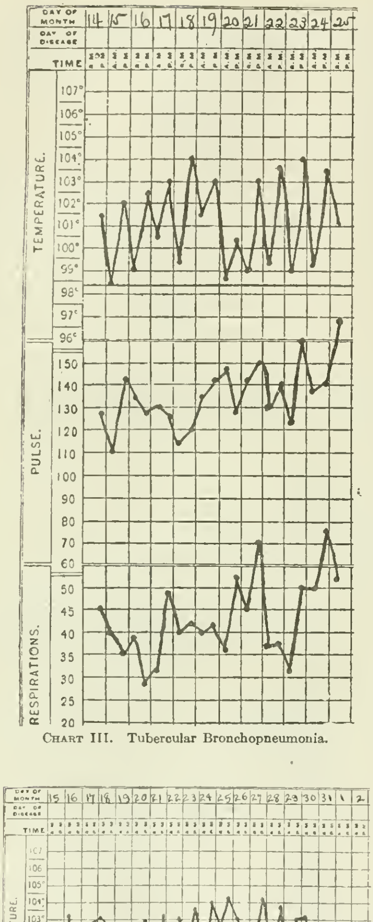

Chart III. Tubercular Bronchopneumonia.

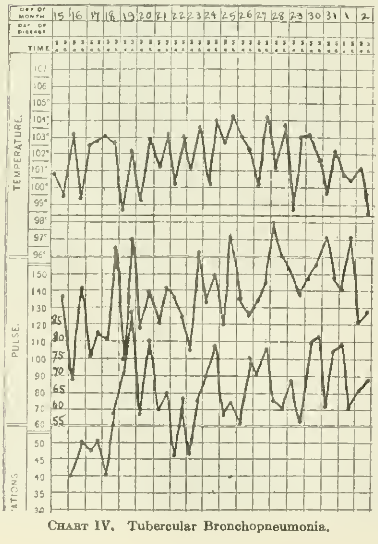

Chart IV. Tubercular Bronchopneumonia.

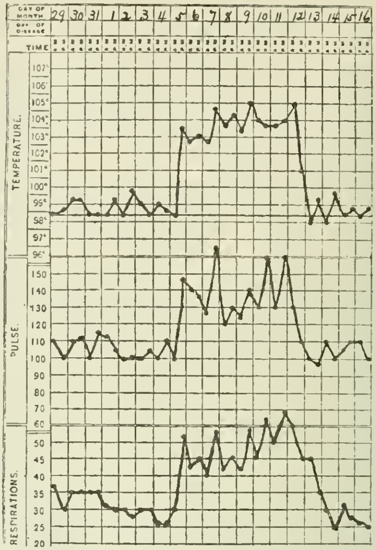

Chart V. Pneumococcus Infection.

monias into etiologic types, each having certain clinical features by which it may be recognized, though necessarily limited in its practical application, will nevertheless enable the physician in very many cases to make a diagnosis which will describe much more closely the real condition present than if it were simply bronchopneumonia without the type being specified. Such a diagnosis, reaching beyond the lesion as far as the probable cause, should be of much greater value in the practical aspects of prognosis and treatment.

The following are illustrative cases of the various groups.

1. *Mixed infection group.* — Joseph M. Doucett, one year old, was admitted to the Children's Hospital, on March 27, 1903. He had had a cough for some time, and the parents had been told by a physician that he had bronchitis. Three days ago he began to seem sicker, began to cough more, and was noticed to be feverish. His breathing has gradually become more rapid. On admission the respiration was found to be accelerated, and the general condition was poor. The child was conscious but apathetic. Medium and fine crackling râles were found throughout the chest, but there was no dullness nor modification of the respiratory murmur.

On March 29, an area the size of a 25-cent piece appeared just outside the left nipple, over which there was dullness and broncho-vesicular breathing.

On April 2, there was in addition a varying degree of broncho-vesicular breathing throughout the chest.

April 4, the child seemed to be improving. The physical signs were unchanged. From this time the general conditions became progressively worse, and the patient died on April 17. [See Chart I, page 635.]

2. *Mixed infection.* — James Henry Davis, two

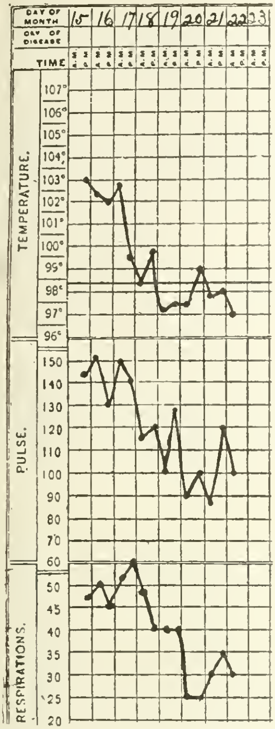

Chart VI. Pneumococcus Infection.

months old, colored, was admitted to the hospital on Oct. 22, 1906. Has had a bad cold with cough and vomiting for several days. No fever has been noted. On admission the respiration was accelerated, the general condition very poor, mental condition apathetic. Numerous medium and fine crackling râles were heard throughout the chest. The temperature was only 99%. On the following day, the pulse went up to 170, and the respiration became extremely accelerated, 110 to the minute. There was no notable rise of temperature.

From this time on the patient improved steadily, and on April 5 was discharged with a few coarse râles in the lungs. There were never any clinical signs of consolidation. [See Chart II, page 635.]

3. *Tubercular bronchopneumonia.* — Hazen Goodwin, eleven months old, was admitted to the Infants' Hospital Jan. 14, 1905. He had had a cough for some time, but the onset of symptoms had been gradual, and the history was unsatisfactory. Physical examination showed an emaciated infant. He took food well, and noticed his surroundings. The respiration was accelerated. There was dullness over both the lower and upper lobes posteriorly on the right, with bronchial breathing and crackling râles. On Jan. 20, the same signs were present on the right, and there were crackling râles in the left upper lobes in front. Tubercle bacilli were found in the sputum.

The signs persisted till the patient's death on Jan. 25. [See Chart III, page 636.]

4. *Tubercular bronchopneumonia.* — Elsie Forskind, six months old, was admitted to the Children's Hospital March 18, 1904. She had had a cough for some time and had gradually become sicker and more feverish. There was slight dullness near the left anterior axillary line, with coarse moist râles.

March 24, there was dullness throughout the left axilla, with bronchial breathing, and fine moist râles, and slight dullness appeared in the middle of the right back, with bronchial breathing and moist râles.

March 30, marked cyanosis appeared. The signs remained unchanged, except that the dullness in the left axilla had spread posteriorly.

April 1, the dullness had spread further over the front of the left chest.

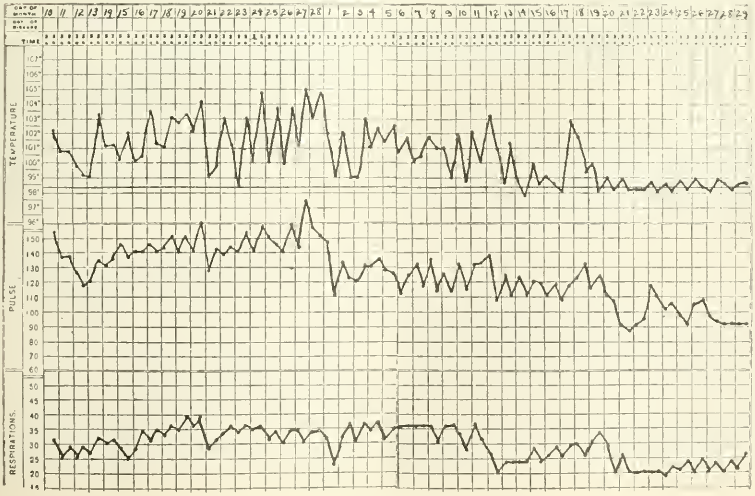

Chart VII. Influenza Bronchopneumonia.

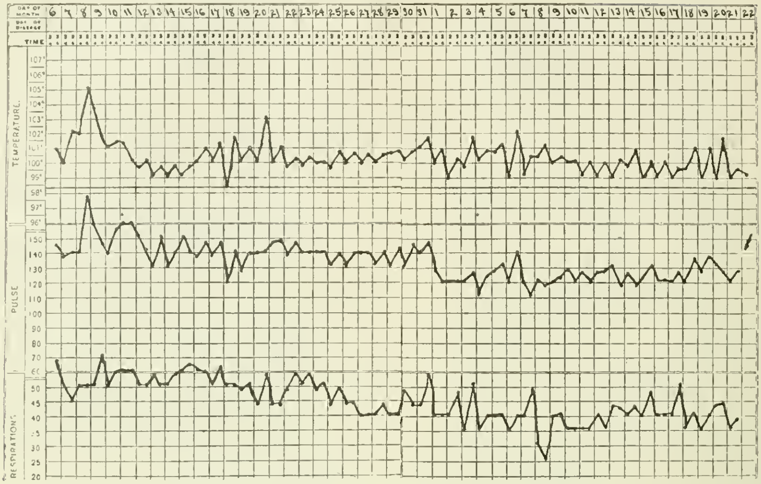

CHART VIII. INFLUENZA BRONCHOPNEUMONIA.

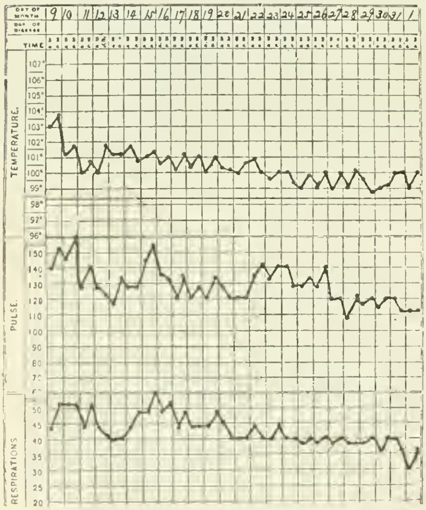

CHART IX. INFLUENZA BRONCHOPNEUMONIA.

April 3, died. Autopsy showed caseous pneumonia throughout both lungs. [See Chart IV, page 636.]

5. *Primary pneumococcus bronchopneumonia.* — Charlotte McHugh, two years old, had been treated for indigestion, and was under observation when the present illness occurred. On Feb. 5, 1903, she suddenly became very feverish, with cough and rapid breathing. Numerous fine crackling râles were found scattered throughout the chest, and the respiration became accelerated.

Feb. 8, a small area of dullness and bronchial breathing appeared in the right back at the level of the sixth rib.

Feb 10, a similar area appeared on the left, near the anterior axillary line.

Feb. 12, an abrupt crisis occurred, which was rapidly followed by disappearance of all signs. [See Chart V, page 636.]

6. *Primary pneumococcus bronchopneumonia.* — Alfred Conroy, twenty-two months old, was admitted to the Infants' Hospital Oct. 15, 1907. Three days previously he became feverish, began to cough and seemed quite sick. On admission the general condition was poor, the expression dull and distressed, and the respiration accelerated. Numerous fine and medium crackling râles and a few dry râles were found throughout the chest. There was a critical fall of temperature on Oct. 17, followed by rapid disappearance of the râles. [See Chart VI, page 637.]

7. *Influenza bronchopneumonia.* — Florence Thompson, two years old, was admitted to the Children's Hospital Feb. 10, 1903. Two weeks previously she began to have a short, dry cough. Four days ago fever was noted, but the respiration was not accelerated.

On admission, the general condition was good, and the mind clear. In the lower part of the left lobe behind was a small area of dullness, with coarse moist râles. There were a few moist râles in various other parts of the lungs. Influenza bacilli were found in great numbers in the sputum.

Feb. 14, the patch of dullness in the left back had disappeared, and was replaced by a collection of fine moist râles. A patch of dullness with bronchial breathing appeared in the right back near the spine.

Feb. 17. The signs of consolidation near the spine on the right back had disappeared, being replaced by a collection of medium moist râles.

Feb. 22. No notable change.

Feb. 28. An area of dullness has appeared under the angle of the right scapula, with bronchial breathing and crackling râles. Child is very apathetic.

March 9. The signs of consolidation have disappeared, being replaced by a collection of medium moist râles.

March 9. Child is very apathetic; seems to be failing rapidly. Many râles in localized areas in both lungs.

March 23. Improvement for last three days. This continued steadily, and the patient was discharged relieved on April 1. [See Chart VII, page 637.]

The other cases of influenza bronchopneumonia were similar to the above. [See Charts VIII and IX, page 638.]

8. *Terminal infection.* — William McDonald, eleven years, was admitted to the Children's Hospital May 22, 1907, with tubercular meningitis of ten days' duration. In the last twenty-four hours the respiration became very rapid and the temperature rose before death, and acute bronchopneumonia was found at autopsy, and cover-glass preparations from the lungs showed pneumococci and many streptococci.

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THE DIAGNOSIS OF CIRCULATORY CONDITIONS BY TEMPERATURE MEASUREMENTS.

BY THEODORE JEWETT EASTMAN, M.D., BOSTON,

Medical House Pupil, Massachusetts General Hospital, 1907.

Attention has long been paid by physiologists to measurements of the temperature of the skin in various parts of the body under varying degrees of warmth of the surrounding air; and the effect of exercise on the superficial temperature has been studied, particularly by Kunkel.[1] No observations, however, so far as I can find, have been published regarding the relation of body temperature to that of the extremities in disease.

This question was suggested to me by Privat Docent Dr. Ludwig Braun, of Vienna, to whom I take this opportunity of expressing my gratitude for his constant aid and suggestion during the course of my investigation. I wish also to express my thanks to Primarius Dr. Ritter von Frisch, through whose kindness I was enabled to carry on the work in his Abteilung in the K. K. Allgemeines Krankenhaus, in Vienna, and to his assistant, Dr. Hawdek, for many kindnesses.

When we measure the temperature of the skin in different parts of our extremities, we find that the nearer to the heart we measure, the higher the temperature. Davy,[2] using a mercury thermometer, found that, with a room temperature of 20° C.,* the temperature of the sole of the foot was 32.2° over the rectus femoris, 32.78°, and in the inguinal fold, 35.84°; and Kunkel,[3] using the more accurate thermo-electric measurement apparatus, found at the same room temperature the following values: dorsum of hand, 32.5° to 33.2°, forearm 33.7°, upper arm 34.3°, calf of leg 33.6°, thigh 34.2°.

The temperature of a part is dependent upon its chemical heat production, and upon the quantity of blood flowing through the part in a unit of time; that is, upon the rate of flow of the blood. Since the chemical heat production in the extremities in a state of muscle-rest is of extremely slight importance, the above mentioned differences in temperature can be caused only by the cooling which the blood undergoes on its way from the heart to the periphery. The farther a part is from the axis of the body, the lower its temperature.

It is, from the physiological point of view, of great interest that from the temperature of the skin surface we can judge of the circulation in the underlying tissues, although, as we shall see later, in varying degree in different parts of the body. In this regard, Tigerstedt[4] says: "The metabolism of the skin is slight, and the warmth of the skin is therefore derived principally from the heat radiated to it directly, particularly from the blood flowing in the deeper vessels. The greater the quantity of this blood, the warmer the skin. During its circulation through the cutaneous vessels, the blood is cooled, and the quantity of heat radiated to the surrounding tissues must be in direct proportion to the amount of blood supplied."

Klapp[5] has shown that hyperemia artificially produced on the surface of the body extended even to the viscera, and from this we must assume the presence of hyperemia in the deep portions of a limb when we find an increase in its surface temperature,[6] and Bier[7] shows that even a moderate degree of passive congestion is not confined to the skin, but extends even into the bone-marrow, and says further: "In deep-lying inflammatory processes the skin contains much more blood than it normally does; such is the case even with the skin of the abdominal wall in deep inflammations."

O. Müller[8] found that cold diminishes the volume of the forearm, heat slowly increases it, and also causes it slowly to diminish.

Finally, we find the same idea in an article by Exner[9] who says: "For the understanding of the phenomenon of erection, it is important to note the very striking increase of temperature of the penis. Wherever we observe in the body of a warm-blooded animal such a rise in temperature, it means, in the first place, an increase in the amount of blood which enters the organ in a unit of time. There is no reason to believe — indeed, under the existing anatomical relations it is very unlikely — that the increase in the blood supply takes place simply in the skin of the penis; rather does a greater quantity of blood flow through the entire penis during erection than during relaxation. Since also the rise in temperature of the penis remains unchanged during a long-continued erection, it cannot be explained by the blood which flowed into the penis at the beginning of the erection, for this would in a few minutes become cooled, just as a finger, in which blood has been collected and retained by means of a tourniquet soon becomes cooler. The lasting rise in temperature during a long-continued erection shows that more, and presumably much more, blood per second flows through the penis then than when it is in a condition of relaxation."

It is then evident that by measuring the temperature of the skin in any place on a limb we can to a certain degree inform ourselves regarding the blood-content of the extremity, or, at least, of that particular portion (cross section) lying beneath the place of measurement.

The following investigations were made in order to find if possible whether, by temperature measurements on the body surface, one could gain information regarding the rapidity of flow of the blood under some pathological conditions of the circulatory apparatus, and thus obtain some light upon this important question. B. Lewy says [10]: "The rate of flow of the blood is the best indicator of the condition of the circulatory apparatus, for upon the amount of blood flowing through the aorta in a unit of time depends the quantity of oxygen and of nutrient material carried to the periphery, if we disregard the respiration and absorption."

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* Throughout this article the temperature used is Centigrade.

It is but natural to think that by measurements, such as the above mentioned, one could gain information only regarding the blood-content of the periphery, but our results show that the method is of value in judging the whole circulation and the cardiac condition as well.

The work was begun on normal persons and on patients suffering from heart lesions, the temperature measurements being at first made in the axilla (as is the usual custom in the Vienna hospitals) and in the closed hand, but it was soon found that the axillary measurements were unreliable, and so this method and the figures obtained by it were discarded, and all further measurements were made in the rectum and in the closed hand.

Some observers have used mercury thermometers in measuring superficial temperatures, the flattened bulbs, coils, etc., being applied to flat surfaces, but this method is open to the objection that the temperature of the surrounding air cannot be prevented from exercising an influence on the result. Kunkel [11] used an electrometer with two contact points a few millimeters in diameter which he applied to the skin under conditions of good insulation, but the measurement of such a small surface seems to me unreliable.

To avoid as far as possible these objections my measurements were made with special thermometers with a cylindrical bulb 4.5 cm. long and 1.0 cm. in diameter, a size conveniently grasped in the hand, and presenting a large surface to the skin. This thermometer was laid in the palm of the hand and the fingers closed lightly over it, and then the fist and wrist were thickly and not too tightly bound up in several layers of thick sheet wadding, to exclude as far as possible the outer air and to prevent evaporation of perspiration and a resultant lowering of temperature. After many experiments it was found that the maximum temperature in the hand was reached in about twenty minutes, but nearly all measurements were made during thirty-five to fifty minutes for the sake of certainty.

To keep as nearly constant as possible the effect of digestion on the distribution and temperature of the blood [12] the measurements were made at the same time daily, and to rule out as much as possible the effect of the muscular exertion [13] the patients were required to lie well covered up in bed for an hour before the measurements were made, and to remain in bed during the measurements, except in the case of the exercise experiments.

The patients whom we regarded as "normal" for our purposes were those ambulatory convalescents so much more numerous in Vienna hospitals than in ours, who had slight gastric catarrh, convalescents after slight attacks of tonsillitis, a patient with a dislocated semilunar cartilage, a scar at one apex and slight emphysema, a patient with a moderate degree of chlorosis and a patient perfectly recovered from gas-poisoning. In all cases were the patients without fever, for it was found that the temperature relations in febrile cases were too complicated to be clinically useful, and in no case was arteriosclerosis clinically determinable. In practically every case at least ten measurements were made, and in many cases twenty, but in either case the averages were practically identical.

Our first measurements were made with the purpose of finding out whether the temperature difference in health and in cases of cardiac insufficiency was a true one, since most patients with insufficiency have cool hands and feet, and, frequently and on slight provocation, complain of cold.

It should be noted that before making the measurements the patients' hands were warmed by being kept beneath the bedclothes, as mentioned above, and the patients with vasomotor neuroses, whose extremities are frequently livid or "marbled" and cold, were not used in these estimations. These patients have temperature differences between hand and rectum, sometimes as great as 4°, and we avoided, by thorough investigation of the heart and the nervous system, the mistake of regarding these differences as evidence of an organic circulatory disturbance. The results obtained are naturally not to be considered as illustrating a diagnostic method complete in itself, but rather only as a part of the whole clinical procedure, in the same way that measurement of the body temperature (axillary, rectal or oral) in febrile cases is only a part of our routine examination.

The action of the circulation, especially of the vasomotors, is so extremely complicated and variable, and to such a degree reciprocal, that we can scarcely expect to determine an exact, fixed relation between the variations in the circulation of central (cardiac) origin, and the temperature differences.

In 350 measurements made in rectum and hand as described above, the following facts were presented:

The differences between rectal and hand temperatures in normal individuals varied from 0.6° to 1.3°, and in rare instances to 1.5°.

The value of these averages may be shown by quoting the variations in some cases taken at random:

A mild chlorosis, in which the temperature differences between rectum and hand were, in ten measurements, eight times less than 1°, once 1° and once 1.45°.

The recovered case of gas-poisoning in ten measurements, five times less than 1°, four times less than 1.5°, and only once 2.5°, in which case the hands were noticeably very cold before the measurement was made.

A case of slight gastric catarrh, in ten measurements, nine times less than 1°, and once 1°.

A similar case, in seven measurements † four times less than 1°, the other three, 1.1°, 1.2° and 1.5°.

Case of slight emphysema, in twenty measurements eight times less than 1°, ten times between 1° and 1.5°, once 1.9°, and once — hands very cold — 2.1°.

We turn now to figures obtained in cases of various forms and grades of cardiac insufficiency, primary and secondary.

Thus, 2 cases of nephritis with much edema and cardiac insufficiency showed differences between rectal and hand temperatures of from 1.8° to 3.4°. The large differences of more than 2° (even after an hour's measurement in the hand) were, in one of these cases, found in ten measurements nine times, and twice the difference was more than 3°. In the second case there was found, in twenty measurements, fourteen times a difference of more than 2°, and of these, six were of 3° and more.

One of these patients showed at one time a decided improvement, with. increased diuresis and a diminished absolute albumin excretion; and during this time differences of 1.25°, 1.1°, 1.05° and 1° were found, while at a time when the opposite conditions prevailed the consecutive differences found were 3.2°, 2.0°, 2.3°, 1.5°, 2.8°, 1.6°, 2.9°, 3.4°, 2.7° and 3.4°.

In contrast to these cases a case of subacute nephritis without any symptoms of cardiac insufficiency showed in seven measurements, six under 1°, and only once as high as 1.1°, showing that it is cardiac insufficiency and not the nephritis (with easily determinable edema of the skin) which causes the large temperature differences.

In a fever-free case of acute endo-myo-pericarditis with hydrothorax, ascites, and edema of the feet and lower legs, were found in twenty measurements, six times a difference of 3° and over, seven times more than 2°, and three times 1.8°, the other differences being 1°, 0.9°, 0.8°, and 0.65°. At the same time the twenty-four-hour amount of urine varied from 400 ccm. to 2,500 ccm., the highest diuresis taking place on the days when the temperature differences were least, and *vice versa*.

We turn now to the findings in cases of chronic cardiac insufficiency of various sorts — simple and multiple valvular lesions, as well as myocardial affections.

1. Mitral stenosis and insufficiency, slight aortic insufficiency, twenty-two measurements:

12 differences of more than 2°, of which 2 were 2.9°.
4 ,, ,, ,, ,, 1.8°
3 ,, ,, 1.7°
The others 1.1°, 1.0°, 0.7°

2. Same diagnosis, but patient not as well as the preceding one; ten measurements:

3 differences of 3° and over
4 ,, ,, 2° ,, ,,
2 ,, ,, 1.6°
1 difference ,, 1°

3. The same diagnosis, eight measurements:

5 differences of more than 2°
2 ,, ,, 1.8°
1 difference ,, 0.9

In contrast to these figures, a case of pure aortic insufficiency showed in ten measurements: nine differences of less than 1° and only one difference of 1°.

This result is undoubtedly to be accounted for by the dilatation of all the vessels (shown by increased pulse volume, marked increase in the difference between systolic and diastolic blood pressure, and flabby vessels) which is peculiar to this heart lesion.

We find then: *in cardiac insufficiency (except pure aortic insufficiency) greater temperature differences than under normal conditions.*

Finally, we determined, by means of muscular exertion carried to the limit of endurance, the effect upon the temperature differences of exhaustion with a normal heart and in cases of cardiac disease. For this purpose, after ascertaining my rectal temperature, diastolic and systolic blood pressure ‡ and pulse rate and having held a delicately reacting thermometer in my bound-up fist until a constant temperature was reached, I exercised as vigorously and rapidly as possible with an 8 kg. iron weight held in the free hand, using not only the arm in the exercise, but bending the knees and back also, in order to produce fatigue in general, and not in the muscles of the arm alone. The temperature in the hand was noted during the exercise, and as soon as I was obliged to stop on account of exhaustion and inability to carry it further the above mentioned measurements were repeated. The results obtained are shown in the following tables:

Dec. 18.

Time.	Rectal temperature.	Hand temperature.	Blood pressure.	Pulse rate.
11:10	37.4°	34.4°	Sys. 110 Diast. 83	88
11:30		35.1°		120
11:35		36.0°	Sys. 120 Diast. 90	
11:40		36.2°		90
11:50	37.5°	36.2°		

Exercise began at 11:15
,, ended at 11:35

Dec. 30.

Time.	Rectal temperature.	Hand temperature.	Blood pressure.	Pulse rate.
3:45	37.5°	34.1°	Sys. 115 Diast. 85	94
3:50		34.8°		129
3:55		35.6°		132
3:58	37.5°	36.6°	Sys. 120 Diast. 92	128
4:05		36.5°		
4:10		36.5°		100

Exercise began, 3:45
,, ended, 3:58

Jan. 29.

Time.	Rectal temperature.	Hand temperature.	Blood pressure.	Pulse rate.
6:50	37.4°	33.9°	Sys. 115 Diast. 90	80
6:58		35.0°		129
7:02		35.9°	Sys. 125 Diast. 98	135
7:07	37.6°	36.2°		
7:12		36.4°		86

Exercise began, 6:50
,, ended, 7:02

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† Patient " discharged well " before our series was finished.

‡ Riva-Rocci instrument.

We see here that the temperatures in the rectum are practically unchanged, whereas the temperature in the hand rose in the first experiment 1.8°, and in the other two, 2.5°. That these rises in temperature are not due to a rise in blood temperature, but simply to a greater amount of blood at body temperature sent to the periphery, is shown by the practically unchanged rectal temperature.

Vastly different were the results obtained in 2 cases of cardiac disease of such a degree that the patients were comfortable only when exercise was avoided. In these patients moderate exertion (walking up and down the ward a few times) was sufficient to produce severe fatigue, increase of the cardiac arrhythmia, palpitation, cyanosis, and marked depression of spirits. The patients, it may be said, were intelligent, were thoroughly interested in the experiments, and assented gladly to repeated performances of them.

In order to keep as uniform as possible the conditions under which these experiments were made, the patients remained in bed for two days before the experiments were begun, and during the days of the experiments, getting up only for the exercise to be mentioned, and during all these days they received the same diet.

For the test, the patient's rectal temperature and that of the hand were taken, the patient being in bed. The patient then walked up and down the ward until exhausted, the quickly-registering thermometer remaining in the bound-up hand all the time. When exhausted the patient's rectal temperature was again measured.

The investigations on these patients gave results which agree in both cases, and in which there is little room for doubt, as in each case the measurements were made four times. They showed that the rectal temperatures in each case remained unchanged by the exercise or showed only a very slight rise or fall; whereas the temperature of the hand in the first case showed a drop of 1.9°, 1.6°, 1.25° and 1.2°, and in the second case, drops of 1.2°, 0.8°, 2.5° and 0.4°.

This is shown more fully in the following tables:

I. Kop.

Moderate degree of cardiac insufficiency without edema.

Date.	Rectal temperature.	Hand temperature.	
Dec. 19			
A.M.	37°	35.2°	Before exercise
	36.9°	33.3°	After ,,
P.M.	37.4°	34.9°	Before ,,
	37.5°	33.6°	After ,,
Dec. 20.			
A.M.	36.8°	34.85°	Before exercise
	36.8°	33.6°	After ,,
P.M.	36.8°	35.7°	Before ,,
	36.8°	34.5°	After ,,

II. Bl.

Greater degree of insufficiency, slight edema, dyspnea.

Date.	Rectal temperature.	Hand temperature.	
Dec. 19			
A.M.	36.9°	35.1°	Before exercise
	36.5°	33.9°	After ,,
P.M.	37°	35.8°	Before ,,
	37.25°	34.9°	After ,,
Dec. 20.			
A.M.	37°	34.3°	Before exercise
	37°	31.8°	After ,,
P.M.	37.4°	36°	Before ,,
	37.4°	35.6°	After ,,

Patients with cardiac insufficiency show, then, after physical exertion, which in such cases, on account of the diminished reserve strength, can only be slight, no diminution, but often on the other hand marked *increase* in the temperature difference between rectum and hand as evidence of the insufficiency of the affected heart, for the cooling of the extremities means nothing other than an insufficiency of the circulation; that is to say, a diminution in the blood supply to the part in question.

Since this reaction seems to increase with the severity of the cardiac insufficiency, we may, other things being equal, determine from the temperature differences the degree of cardiac impairment present, either with the patient at rest or after exercise.

Finally, to show the effects upon the circulation of treatment of a broken compensation, the following case is quoted. The measurements were made morning and afternoon from the day of entrance until the day of discharge (with recovered compensation) and prove the recognized fact that improvement in the cardiac power results in an improvement in the peripheral circulation. The patient was given digitalis beginning after the first measurement, and was kept quiet in bed.

Stein, age 34.

Mitral stenosis and insufficiency. Broken compensation.

Meas.	Rectal temperature.	Hand temperature.	Difference.	Duration of measurement.
I	37.2°	33.8°	3.4°	35 minutes
II	37.7°	34.7°	3°	35 ,,
III	37.2°	34.2°	3°	60 ,,
IV	37.7°	34.6°	3.1°	35 ,,
V	37.6°	35.2°	2.4°	45 ,,
VI	37.1°	34.3°	2.8°	50 ,,
VII	37.5°	35.7°	1.8°	30 ,,
VIII	36.8°	35.7°	1.1°	50 ,,
IX	36.5°	35°	1.5°	40 ,,
X	37.2°	35.4°	1.8°	60 ,,
XI	37.15°	35.6°	1.55°	60 ,,
XII	37.2°	35.7°	1.5°	45 ,,
XIII	37.4°	36.1°	1.3°	45 ,,
XIV	37.6°	35.8°	1.8°	40 ,,
XV	37.3°	35.5°	1.8°	30 ,,
XVI	37.7°	36.5°	1.2°	45 ,,
XVII	37.3°	35.6°	1.7°	60 ,,
XVIII	37.8°	36.3°	1.5°	45 ,,

As will be noted, the temperature differences on entrance were 3° and above, this difference decreasing steadily as the heart recovered strength.

CONCLUSIONS.

(1) The variation in temperature between rectum and hand in healthy persons averages 0.6° to 1.3° C.

(2) The variation in cases of cardiac disease is greater, except in aortic insufficiency.

(3) There is a characteristic difference in the peripherial circulation in aortic insufficiency as contrasted with other heart lesions.

(4) Muscular exertion, even to fatigue, in a person with a normal heart causes a rise in temperature in the extremities.

(5) Fatigue in a case of cardiac decompensation causes a fall in the peripheral temperature.

(6) Therefore, this method of temperature measurement is a simple and useful addition to the other methods in use for the examination of cardiac cases, and for the differentiation of cardiac sufficiency or insufficiency.

(7) It is a means of determining the effect of exercise, either active or passive, upon cardiac cases.

(8) It furnishes us with a method of distinguishing the edema arising from passive congestion from that due to nephritis.

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ON THE TRANSLATION OF CLINICAL DESCRIPTIVE TERMS INTO THEIR HISTOLOGICAL EQUIVALENTS IN DISEASES OF THE NOSE AND THROAT.

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The mucous membrane of the upper air passages offers peculiar advantages for study, since within certain limits clinical deviations from the normal may be brought into direct correspondence with their histological phenomena. It is advantageous for the student to learn to associate the macroscopic with the microscopic appearances, as this practice not only gives added interest to his examination, but is of very direct value in the recognition and interpretation of the slighter departures from the normal.

The object of the following paper is to present a working scheme for the student, by aid of which he will be enabled to carry more readily in his mind this translation of terms. In such a scheme it would be found advantageous to omit consideration of new growths, since for obvious reasons, where such alterations are present, the most direct method is to excise a portion of the tissue, and examine it histologically. Such conditions as tuberculosis and syphilis are also omitted. In the larger proportion, however, of diseases of the upper air passages, recourse to microscopic examination is not justifiable. If the student has clearly fixed in his mind the definite relation of clinical deviations from the normal with the histological changes, he will be enabled, on inspection, to approximate within narrow limits the more direct results of histological study. Inasmuch as the majority of the alterations which come under the observation of the laryngologist are superficial and displayed in the mucous membrane, a direct translation of clinical into histological terms would appear frequently possible. Where the alterations are more deeply seated, such a translation may be obtainable chiefly by inference.

The practical application of his method demands a clear knowledge of normal histology. The student should have readily available in his mind the salient features of the normal structure which he is inspecting. With this requirement presupposed, we may proceed to consider the scheme for study which it is proposed to offer. For convenience, we shall make the following division of the subject:

1. The visual details of the nose and throat.
2. The deeper structures invisible to the eye by reflected light.

1. The visual image of a given surface in the nose and throat is formed by the association of the structural units of the part. With an opaque surface, the image will be flat and in one plane, or it may possess relative depth, dependent upon the degree of penetration of light rays below the surface.

The elements of the visual image are color, including translucence, shape or physical character of the surface, and presence of extraneous material which may be fluid, cellular or amorphous solid.

The color depends both upon the number, size and degree of distention of the blood vessels, and upon the ratio existing between the interstitial fluid and component cells. The translucence of the part depends upon the structure of the epithelium, and upon the amount of interstitial fluid near the surface. The shape or physical character of the surface depends upon the type and condition of the epithelial structures.

2. The deeper structures, invisible to the eye by reflected light, manifest their alterations by changes in shape, size and consistence. The shape depends upon the disposition of the subepithelial elements. The size is determined by the quantity of the various component units of the structure, both fluid and cellular. Consistence, recognized by probing, varies both in proportion to the quantitative ratio existing between the fluid and cellular elements, and according to the relative disposition of these to each other. The association of these different units in a definite fashion gives rise to the normal clinical picture, and by their variation are produced the various pathological alterations.

For purposes of space we shall restrict our examination in the present paper to the nose and faucial region.

THE NOSE.

Let us now take up some of the more common alterations of the nose and endeavor to interpret them histologically. We will consider, first, the normal histology of the tissue in question. Taking, for example, a section of the nasal tissues and examining it under the microscope, we find columnar ciliated epithelium, covering a thin mucous layer perforated by canaliculi through which there is a continual exosmosis of serous fluid to the surface. Below the mucous layer is a fibrous tissue of a varying degree of vascularity, containing mucous and serous glands, discharging their contents upon the epithelial surface. Between the fibrous tissue elements of this region is fluid in varying quantity, together with free cells, aggregated chiefly about the glands, and immediately below the mucous layer where it is disposed to form the lymphoid layer. We see thus that the normal appearances depend upon the association of a certain type of epithelium and of the mucous layer, upon the size, number and degree of distention of the blood vessels, upon the amount of interstitial fluid, the number and character of adventitious cells, and upon the character, degree of activity and number of the glands. Extraneous material is fluid and perceptible only as it lends a moist appearance to the surface.

Passing now to pathological alterations of the visible tissues within the nose, we may proceed to enumerate the various factors in the order already given.

Color may be increased diffusely or locally. If diffusely, and associated with increase in size, we may infer distention of the blood vessels; if with diminution in size we may believe that less interstitial fluid is present or fewer cellular elements, the blood vessels, therefore, relatively preponderating. The first condition is found in acute rhinitis, the second in atrophic rhinitis. Local heightening of color would denote the existence of circumscribed irritation as from previous trauma.

Diminution of color may occur from general anemia, or as the result of contraction of the blood vessels or from a relative increase in the other tissue elements. In pallor from anemia we find normal translucence, indicating that there has has been no change in the tissue cells or in the amount of interstitial fluid. If the blood vessels are contracted, symmetrical diminution in size is found, as after the application of cocaine or adrenalin. In pallor, without changes in translucence, and with increased size, we should expect increase either in the amount of the interstitial tissue or in the number of the glands or of the cells of the lymphoid layer. The character and amount of the surface fluid will here throw light upon the condition of the glands. In adults with increased resistance to the probe, fibrous tissue hyperplasia is probable, while in children with normal consistence of the part, we should expect increased infiltration in the lymphoid layer below the mucosa. In pallor with heightened translucence, we infer increase in the amount of interstitial fluid. If the amount of surface fluid is little or not at all increased, true edema is present without heightened exosmosis or glandular activity, as in nasal polypi. If the surface fluid is increased in quantity and thin or fails to coagulate on heating or treating with acid, we may infer widening of the canaliculi in the basement membrane and an increase in the interstitial fluid, as is found in vasomotor rhinitis. Such conditions may be either diffuse or local, and in the latter case their recognition may often be the chief clew to a correct diagnosis.

Loss of translucence of the epithelium, denoting disappearance of the columnar epithelium, occurs in various forms of atrophy, such as simple localized atrophy of the septal mucous membrane, in diffuse atrophy of ozena, and that occurring as the final result of syphilitic infiltrations. This loss of translucence is a factor of great importance in differentiating the atrophy of ozena from undeveloped turbinates, such as occurs in young women with associated arterial and uterine hypoplasia. In the latter case, the undeveloped turbinates give rise to the impression of atrophy, but inspection of their still translucent surface demonstrates the preservation of the columnar ciliated epithelium and excludes ozena.

By shape is denoted not only contour of the part as a whole, but also the texture of the surface. The contour may be changed as the result of irregular vascular dilatation, as in trauma or beginning abscess-formation, and is naturally associated with localized cellular infiltration. In the absence of hyperemia, it is found in localized hypertrophy of the various tissue elements, both in the mucous membrane and below as in the forms of hypertrophic rhinitis. Consideration of the factors of color, translucence, consistence and surface fluid will lead to a recognition of the special changes involved.

The texture of the surface depends upon the character and state of the epithelium.

Simple exfoliation of the epithelium may occur upon the mucous membrane of the septum as the result of trauma, but is practically not found in other regions. It may occur in association with increased vascularity as the result of a general inflammation characterized by desquamation. Such a condition is found particularly in the acute infectious diseases of the nose, and is recognizable by acute reddening and swelling of the mucous membrane with loss of translucence.

If the exfoliation of the columnar epithelium is of long duration or as the result of certain traumata, regeneration may occur by squamous epithelium. Under these circumstances certain clinical pictures are produced. In the first place, the loss of the cilia and the diminution in the number of the canaliculi, through which exosmosis takes place, leads to the adhesion of mucus upon the spot involved. The loss of the motile cilia results in the failure of mucus to be transferred to other regions, and diminution in the normal quantity of fluid transuded to the surface permits the mucus to dry upon the parts. This alteration is found pre-eminently upon the septal mucous membrane and is also the direct result of extensive cauterizations or operations within the nose. The adhesion of tough mucus to a given region should lead immediately to the supposition that cilia and canaliculi have been destroyed.

Extraneous material upon the surface of the nasal tissues may be composed of nasal fluid or of cellular elements or of solidified material.

The nasal fluid is derived from several sources; first, from the mucous glands; secondly, from the columnar epithelium, which has undergone mucous degeneration; third, from the serous glands; fourth, from the canaliculi of the mucous membrane; fifth, from leucocytes which have escaped from the blood vessels to the surface; sixth, from condensation during expiration of aqueous vapor, exhaled from the lower air passages; seventh, from the lachrymal secretion.

Owing to the constant evaporation of water from the surface of the membrane, certain of these constituents, namely, the mucous and the cellular elements, would soon dry into crusts, if a constant supply of fresh moisture were not forthcoming. This replacement of water is known to pass through the canaliculi of the mucous membrane. If these are contracted or obliterated, as in atrophic rhinitis, crusts form, while if a marked increase in transudation occurs as in vasomotor rhinitis, corresponding dilatation of these canaliculi is observed. In simple, chronic rhinitis, characterized by intermittent congestion and increased mucous secretion, there is a heightened proliferation, and mucous degeneration of the cells of the epithelium and of the mucous glands. In chronic hypertrophic rhinitis, and its various forms, papillary hypertrophy, edematous hypertrophy, there is an increase in the activity of the glands or the number of the canaliculi, but not proportionate to the increase in tissue.

In atrophic rhinitis, the glands are somewhat diminished in number and size, but the most striking alteration is the compact pavement epithelium and the absence of canals. In vasomotor rhinitis, we find an increase in the number and size of the canaliculi in proportion to the severity of the symptoms. The serous glands show, possibly, a heightened secretion, but the mucous glands show no evident increase in activity.

Bearing these facts in mind, we may now ask ourselves, in the examination of a given case, characterized by abnormal nasal secretion, does the condition represent excessive or diminished activity on the part of the mucous glands, or is there mucous degeneration in the surface epithelium, or transformation of the latter into squamous cells? Is there abnormal patency or contraction or obliteration of the canaliculi; is there increased migration of leucocytes to the surface or abnormal condensation of moisture exhaled from the lower air passages? These questions must be supplemented by an inquiry into the remaining elements of the clinical picture, and the answer will be forthcoming by a consideration in the manner above described of all the factors involved. Other extraneous material upon the surface as blood or fibrinous exudate needs only passing mention.

THE FAUCES.

We may proceed in a similar way to examine the faucial region. For brevity, the posterior pharyngeal wall and tonsils will be alone considered.

On the posterior pharyngeal wall, we find histologically epithelium of the pavement type, overlying a stout, compact mucous layer, which is united by layers of fibrous and yellow elastic tissue to the muscular bands below. Imbedded immediately below the mucous membrane are aggregations of lymphoid cells of varying size and number, the follicles of early life, which pass, with increase in age, into masses of vascular and fibrous tissue, and covered by thinner mucous membrane, the so-called granules of the pharynx.

In the tonsil the unit of structure is the follicle, a collection of lymphoid cells inclosing a central endothelial reticulum. These units are separated from each other by an endothelial network containing lymphoid cells, plasma cells, and cells of a type intermediate between these two. The surface of this tissue is formed by mucous membrane, squamous or columnar, of considerable density, equaling, at least in compactness, the mucous membrane of the vicinity. The stout mucous membrane of the free surface forms invaginations, which are lined with comparatively loose mucous membrane.

Increased reddening of the parts may be the result of acute hyperemia or passive congestion. In the former instance, if there is associated swelling, we shall expect histologically either increase of interstitial fluid or cellular infiltration, the two conditions being differentiated by the relative translucence or opacity of the enlargement. In the passive congestion of chronic inflammation or of systemic disease, there is symmetrical thickening with diminished or unaltered translucence. While it may be difficult on the posterior pharyngeal wall to recognize thickening of the mucous membrane, we may often infer its existence from an examination of the uvula, at the tip of which it can be more readily perceived.

Pallor of the pharynx and tonsils denotes usually general anemia, as we do not find here the various other causes which are present in the nose.

Changes in shape and size may be advantageously considered together. On the posterior pharyngeal wall, the mucous membrane may be thickened, with or without associated enlargement of the follicles or granules. In this case there is generally concomitant reddening as already described, denoting chronic inflammation. Enlargement of the follicles alone is the common change found in early life and indicates simply proliferation of the lymphoid elements. Enlargement of the granules is usually associated with reddening, and evidence of fibrous tissue hyperplasia in the vicinity.

In the tonsils, increased size may or may not be symmetrical. With unchanged color a symmetrical increase denotes proliferation of all the tissue elements in essentially normal proportion. Irregularity of the surface in the form of mamillations or digitations, particularly about the lacunæ, especially if associated with heightened translucence, may denote rapid proliferation of the lymphoid elements out of proportion to the relatively slower rate of increase in the fibrous tissue.

Diminution in the size of the tonsils suggests naturally the disappearance of a definite number of the lymphoid elements, with preservation of the fibrous tissue, the organ becoming simultaneously more opaque and dense.

In the faucial region, consistence is relatively seldom a diagnostic factor, but in localized swellings may help to differentiate between an abscess and a new growth.

Extraneous material in this region demands only brief consideration. Except for the presence of detritus in the lacunæ of the tonsils, and of fibrinous exudate upon the mucous membrane, the material found here is fluid and has come from other regions.

A test of the above necessarily incomplete suggestions for clinical examination will show in practice many directions in which additions and expansions can be made. The writer has found the plan of distinct service in his teaching, and is encouraged to offer it for the consideration of other instructors. While it may not be necessary for the student to consult or follow absolutely this plan in the examination of a given case, yet it is believed that approximate adherence to it will prove of distinct value, both in encouraging a more painstaking clinical examination, and in facilitating the deductions to be drawn from his inspection.

THE CLINICAL VALUE OF THE ESTIMATION OF AMMONIA IN DIABETES.

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THE large quantity of ammonia in the urine of diabetic patients has attracted attention since Hallerworden first discovered its presence in 1880, but its value in the clinical estimation of the degree of acidosis has not been generally appreciated. Various observers working especially along diabetic lines emphasized its importance, yet the test has not been widely adopted by the profession. This has been due in part to the length of time consumed in the performance of the test by the Schlösing method, and in part to the attempt to judge of the degree of acid poisoning by other methods, such as the estimation of acetone and diacetic acid or B-oxybutyric acid. Folin's recently devised method [1] for the determination of ammonia has shortened the time required for the test from three days to one to three hours, and has thus made it clinically practicable. On the other hand many investigators have shown how little reliance can be placed upon determinations of acetone and diacetic acid as expressions of the total acidosis; and finally a simple method for the determination of the chief acid factor, B-oxybutyric acid, still lacks a discoverer. Moreover, even if ready methods for the estimation of these three acid bodies were known, their employment would only show the total amount of these bodies removed from the organism; they would give no hint of the quantity of acid which was left behind. This objection does not hold against ammonia, because it registers the effort which the body is making to protect itself from acid poisoning. At the present time it appears safe to regard ammonia in this light, although it is not justifiable to use the ammonia as such a criterion in the last hours of life, when Nature loses, one by one, all her powers of self-preservation.

Ammonia may be a very good index of acid production in the body and perhaps is the most accurate method we have for this purpose, but it is not claimed that ammonia is the best or only good test of the severity of a case of diabetes. Pancreatic diabetes certainly runs its course without markedly influencing the ammonia production.[2] It is a question for further study as to whether the carbohydrate balance may not be just as good a guide for prognosis as the ammonia. It is indeed true that the determination of the severity of a case of diabetes by the estimation of ammonia is less subject to error than the determination of the carbohydrate balance, and for the following reasons. The quantity of ammonia excreted in twenty-four hours is an easily attainable fact like the total output of sugar, but the quantity of carbohydrates ingested by the patient during the same period lacks control. It is not possible to be sure of the extent of a positive or negative carbohydrate balance unless the patient is isolated. This is rarely practicable. One of our patients who contributed $100 to the Fund for Diabetic Research at the Harvard Medical School confessed that during the very period we were trying to influence his acidosis in a most painstaking and expensive experiment, he was surreptitiously eating freely of carbohydrates.

The normal quantity of ammonia excreted in health varies between 0.4 gm. and 1.5 gm. in twenty-four hours, and the per cent of nitrogen in the form of ammonia to the total nitrogen of the urine (ammonia-nitrogen ratio) varies in health between three and five per cent. It is directly dependent upon the quantity of nitrogenous food in the diet. Schittenhelm and Katzenstein[3] were able to show that these figures were practically constant, even though the quantity of nitrogenous food varied greatly. This fact is of importance, because otherwise it would be unjustifiable to conclude that an increase in the ammonia nitrogen ratio was an expression of increasing acidosis. Schittenhelm's work would appear to answer the objection raised by Fr. Müller [4] upon this point.

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* Aided by the Proctor Fund for the Care and Study of Patients with Chronic Disease. The cases upon which this article was based occurred in the practice of E. P. Joslin. A portion of the chemical work was done by Elsie H. Newman and E. P. Joslin, but by far the greater part of the analyses were made by H. W. Goodall.

[1] Hoppe-Seyler's Zeitschr. für Phys. Chemie, Bd. 37, Heft 2, Nr. 11, 1902.

[2] Brügsch: Die Therapie der Gegenwart, Bd. xlvii, 337, 384, 1906.

[3] Zeitschr. für exp. Path. Therapie, Bd. 2, S. 542, 1906.

The quantity of ammonia in cases of diabetes mellitus is generally high on account of the excess of albuminous food which such patients consume when their choice of diet is left to themselves. Conclusions as to the value of reported quantities of ammonia in the urine should only be reached when this has been taken into account. Thus, an amount of ammonia is abnormal which reaches 1.5 to 2.0 gm. with a metabolism of 100 gm. albumin, and suggests acidosis, but it would be perfectly normal with a metabolism of 200 gm. albumin. Contrary to our preconceived ideas and to commonly accepted opinion, we found that although diabetic patients often take rather large quantities of albumin, they seldom eat excessive amounts. For example, of 13 patients only 8 excreted more than twenty grams of nitrogen (20 x 6.25 = 125 gm. albumin) in the urine in twenty-four hours, and only four patients more than twenty-five grams. The total number of analyses made was 146, but only fifteen times was Atwater's standard quantity of daily albumin (125 gm.) exceeded. When once the attention of a patient was directed to the importance of eating vegetables and fat, it was rare that the quantity of albumin in the diet reached as much as one hundred and twenty-five grams. Mild cases of diabetes produce no more ammonia than ordinary individuals, but the advanced cases show amounts of ammonia and an ammonia-nitrogen ratio which are reached in no other condition.

Case No. 163, referred to us by Professor Mendel, is an illustration of a mild case of diabetes with normal ammonia. The patient, a woman, developed diabetes at the age of forty-five, August, 1905, and on Aug. 21, 1907, showed 5.8% sugar, 59 gm., in twenty-four hours. She became sugar-free eight days later, and by Jan. 16, 1908, had acquired a positive carbohydrate balance of 94 gm. On Oct. 10, 1907, the quantity of nitrogen in the urine was 19.3 gm. and the ammonia 1.2 gm., giving an ammonia-nitrogen ratio of 5%.

Examples of the excretion of large quantities of ammonia in severe cases of diabetes will later be mentioned.

If ammonia is to be used as an index of acidosis, it is, therefore, necessary to know the amount of albumin in the diet, as has been above mentioned. The quantity of albumin which the patient is eating can roughly be determined by estimating the nitrogen in the urine, but the ordinary tests for urea,[5] as a rule, in diabetic urines are inaccurate. On the other hand, if the patient is willing to weigh the food it is easy to calculate the quantity of albumin in the diet.[6] If great accuracy is desired it would, of course, be necessary to prescribe the special form of albumin, because considerable and varying quantities of carbohydrates may be formed in the body from albumin, and the oxidation of carbohydrates influences the acidosis and thus the ammonia. In clinical work this is not necessary, and one will not go far wrong if a diet containing 100 gm. albumin is prescribed of which 75 gm. are to be taken in the form of meat or fish (300 gm.) and the remaining 25 gm. left to the choice of the patient.

A knowledge of the approximate quantity of carbohydrates in the diet is essential, or at least of advantage, in the interpretation of the ammonia, because even a normal individual without carbohydrates develops acidosis, and the diabetic does this even to a greater degree. On the other hand, diabetic patients of known severity may at times excrete enormous quantities of carbohydrate, and yet have little ammonia in the urine. This is explained by the fact that all diabetics, no matter their severity, are capable of assimilating some of the carbohydrates ingested. Great quantities of carbohydrate may thus temporarily mask an acidosis. For these two reasons, therefore, it would be helpful if the test for ammonia was made when the patient took a standard quantity of carbohydrate, but just what this quantity should be, it is not such an easy matter to decide. One would not wish to give a patient, who has become sugar-free only after laborious and painstaking treatment, a quantity of carbohydrates in excess of what he can assimilate. A break in his upward course would be established from which it would take much time to recover; on the other hand, it is equally poor dietetic management of a case of diabetes to suddenly restrict the carbohydrates to a low level. In this dilemma one naturally turns to the carbohydrate balance, but its capability for error has been pointed out. It would be interesting to know whether with the same negative and positive carbohydrate balance different patients on similar diets excreted the same amount of ammonia. On this question we have not as yet sufficient data. So far as we are able to judge most of our patients were using fifty to one hundred grams carbohydrate daily, and it is most probable that all those about to be reported had a minus carbohydrate balance.

The administration of an alkali to a diabetic patient with acidosis directly affects the ammonia in the urine. Theoretically, 1 gm. of ammonia manufactured by the patient is equivalent in neutralizing power to 5 gm. sodium bicarbonate, but practically much more extraneous alkali is necessary. Thus, v. Noorden found that in 10 cases, where the ammonia excreted was 4 to 6 gm. the taking of 30 gm. sodium bicarbonate daily was followed by a diminution of only ten to twenty-two per cent in the ammonia.[7] We can record a similar instance. Case No. 135 excreted 5.1, 5.2, 5.3, and 5.0 gm. ammonia on four successive days without taking alkali; on the following two days 25 gm. sodium bicarbonate were given and the ammonia changed to 4.2 and 5.2 gm.; on the next two days 37 gm. sodium bicarbonate were daily administered and 15 gm. additional were introduced by enema on the second day, yet the ammonia was 5.2 and 4.7 gm. respectively. It is only fair to say that upon these last two days the diet was not quite constant and coma was approaching. It is, therefore, best to estimate the ammonia when alkali has not been used for some days, but, at any rate, if an alkali is coincidentally given this amount should be stated. The error introduced by alkali, however, is seldom over twenty per cent.

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[4] v. Leyden's Handbuchder Ernährungstherapie, 2 Aufl., S. 261, 1903.

[5] Joslin: Jour. Med. Res., vol. vi, p. 319, 1901.

[6] Joslin and Goodall: A Diabetic Chart, Boston Med. and Surg. Jour., vol. clviii, p. 248, 1908.

[7] v. Noorden: Handbuch der Path. d. Stoffwechsel, Bd. II, S. 83, 1907.

During the last year and a half we have studied the quantity of ammonia excreted in the urines of most of the severe cases of diabetes which have come under our observation. They all represent advanced types of the disease; and except in one or two instances, which are cited for special reasons, they had a considerable minus carbohydrate balance. Most of these patients have already died. The cases fall naturally into two groups and can best be classified according to age. We will first report seven cases occurring in patients under forty years of age and, later, six cases between the ages of fifty and sixty years.

The first case will be reported in detail, because the patient was under observation for several weeks at the House of the Good Samaritan and the diet was under control.

No. 94, a dressmaker, unmarried, who had lost a sister of diabetes in diabetic coma and one brother and two sisters of tuberculosis, developed symptoms of diabetes during the summer of 1902, at the age of thirty-nine years. She came under our observation in July, 1905. Weight, 116 lb.; previous best weight 150 lb., weight in 1904, 145 lb. Urine, 3,580 ccm., 279 gm. sugar, diacetic acid + +.‡ Under treatment the

Chart I. Case No. 94.

Period.	Date.	Vol.	Nitrogen.	Ammonia.		Urine, total sugar.	Total carb. in diet.	Carbohydrate, balance.	Weight of Patient.	In addition to "A Strict Diet."				
				Total.*	Per cent of nitrogen.					Milk.	Oatmeal.	Cream	Potato	Oranges.
	1906	ccm.	gm.	gm.		gm.	gm.	gm.	lb.	ccm.	gm.	ccm.	gm.	gm.
I.	Nov. 7	3,470	13.3	5.2	32.	190	60	—130	118	500	10	250	15	150
	,, 8	2,300	11.2	4.2	31	125	60	—65						
	,, 9	2,300	15.5	4.8	26	112	60	—50						
	,, 10	2,080				104	60	—45						
	,, 11	1,940	10.5	3.9	31	89	60	—30	119	†				
	,, 12	1,940	9.5	3.5	31	97	60	—40						
	,, 13	1,940	9.1	3.5	32	94	60	—35						
II.	,, 14	1,970				104	80	—25		250	30	500		300
	,, 15	1,680	10.0	3.2	26	77	80	+5(?)	120					
	,, 16	2,050	10.0	3.2	27	105	80	—25						
	,, 17	2,110				113	70	—45						150
	,, 18	1,930	11.7	3.9	27	100	70	—30	122					
III.	,, 20	2,220	10.9	4.2	32	117	70	—45		250	30	500		300
	,, 21	2,200				103	70	—35	124					
	,, 22	1,980	10.0	4.0	33	89	70	—20						
IV.	,, 23	2,130				107	70	—35		250	10	500		300
	,, 24	2,250				104	70	—35						
	,, 25	2,460	11.0	4.4	33	103	70	—35	121					
	,, 26	2,550				106	70	—35						
V.	,, 27	2,260				80	55	—25			10	500		300
	,, 28	2,530				68	55	—15						
	,, 29	2,360	10.8	4.6	28	94	55	—40						
	,, 30	2,430	11.1	4.7	35	95	55	—40						
VI.	Dec. 1	2,360				81	55	—25	117		25	250		300
	,, 2	2,340				81	55	—25						
	,, 3	2,340	11.2	4.6	34	87	55	—30						
	,, 4	2,500				89	55	—35						
VII.	,, 5	2,850	11.7	5.2	37	84	64	—20	115		71	250		
	,, 6	2,620				72	64	—10						
	,, 7	2,660	11.4	4.7	34	86	70	—15		120				
	,, 8	2,430	9.8	4.6	39	63	64	0(?)						
VIII.	,, 9	2,410				60	40	—20	114		25	250		150
	,, 10	2,440				67	40	—25						
	,, 11	2,370	8.8	3.6	34	67	40	—25					Rice	
IX.	,, 12	2,400	10.2	3.5	29	62	60	—2			25	250	10	300
	,, 13	2,380				78	60	—20						
	,, 14	2,670				88	60	—30						
	,, 15	2,300	9.3	3.7	34	71	60	—10						
	,, 17	2,400				73	60	—15						
	,, 18	2,820				89	60	—30	117					

*Twelve grams of sodium bicarbonate were taken daily.

† Milk changed to 250 ccm., and cream to 500 ccm.

In these observations the carbohydrates in the food were reckoned as follows: *Milk 5%; Cream 4%; Oatmeal 66%; Potato 20%; Oranges 10%; Rice 80%.*

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‡ It is our custom to record the result of Gerhardt's ferric Chloride test for diacetic acid with one to four + signs, according to the strength of the reaction.

sugar fell in August, 1905, to a minimum of 21 gm. and the weight rose to 121 lb. In the autumn the sugar was 100 gm., and remained at about that level until a year later, Nov. 7, 1906, when the patient entered the House of the Good Samaritan. Her weight was then 118 lb. While at the hospital her diet was modified in many ways as shown by Chart I, (page 648), in order to determine the character of the carbohydrate which she would bear best. Twelve grams of sodium bicarbonate were taken daily throughout the stay in the hospital.

The quantity of carbohydrates in the diet between Nov. 7, 1907, and Dec. 15, varied only between 55 gm. (Period V) and 80 gm. (Period II), although there was much alteration in the sort of carbohydrate administered. The assimilation of carbohydrate generally improved with the stay of the patient in the hospital and was best in the period in which oatmeal formed the chief proportion of carbohydrate (Period VII), perhaps due to the slow excretion of carbohydrate in oatmeal,[8] and when the total carbohydrate administered was lowest (Period VIII). This is proven by a comparison of the carbohydrate balance. This was minus throughout the stay in the hospital and well exemplifies the severity of the disease in this patient. There were two exceptions to this rule: the first, the last day of the oatmeal period, Dec. 8, when the balance was zero. Investigation showed that this figure represented a false showing as the patient became so nauseated by the oatmeal that she vomited some of it — a not exceptional occurrence if such a diet is given. The carbohydrate balance was positive on Nov. 15. Evidently, an error occurred in the collection of urine or in the record of urine, or the patient did not eat all allowed carbohydrates, for it is impossible to believe that a minus carbohydrate balance would change to a positive balance on one day alone in a series of thirty-eight days. This illustrates the advantage of recording a carbohydrate balance if one wishes to know what is actually taking place in a case of diabetes.

The carbohydrate balance of minus one hundred and thirty grams on Nov. 7, the first day after entrance, is obviously wrong. This is easily shown because the total nitrogen for the day was but 13.3 gm. (13.3 x 6.25 =83 gm. albumin), and from this quantity only 50 gm. carbohydrate (83 x 60% = 50 gm. amount carbohydrates formed out of albumin in the diet) could be formed. This is easily explained. The patient's diet before entrance to the hospital was undoubtedly much more liberal in carbohydrate. The following four days showed a steady drop in the sugar of the urine, although the carbohydrates in the diet remained the same. This is a common occurrence when diabetic patients are placed on a measured diet.

The absolute amount of ammonia which was excreted varied but little with the various changes in diet made. No constant relation can be noticed between it and the carbohydrates in the diet or urine or the carbohydrate balance, because the ammonia was both at its lowest (Period II) and highest (Period VII) levels when the carbohydrate balance was low. In other words, variations amounting to 25 gm. of carbohydrate in the diet of a severe case of diabetes with a minus carbohydrate balance of 20 to 40 gm. show no effect on the acidosis as measured in terms of ammonia. Further, it would appear that the restrictions of diet to 100 gm. carbohydrate, when a patient has been taking double that amount, is a perfectly safe procedure. The constancy of the amount of ammonia excreted on successive days is reassuring. This is notable in Period I and Period II, also in periods III, IV, V, VI, and again in periods VIII and IX. The large amount of ammonia in the oatmeal Period VIII is not what we should have expected.

The closeness with which the ammonia-nitrogen ratio follows the total ammonia is at once striking. On Nov. 9, the total ammonia was 4.8 gm., one of the highest limits reached in this case. Without a knowledge of the total nitrogen on that date, an erroneous impression of the severity of the case would have been gained. The great increase of total nitrogen, however, accounts for it, as the change in the ammonia is but little greater than would be expected with the increase of nitrogen. The ammonia-nitrogen ratio in this instance is probably a safer guide to the true acidosis than is the total ammonia. This would also seem apparent by a comparison of the total ammonia and the per cent of nitrogen in the form of ammonia on the following days:

Date.	Total ammonia grams.	Ammonia-nitrogen ratio.	Total nitrogen gram.
Nov. 9	4.8	26%	15.5
Dec. 5	5.2	37%	11.7
,, 7	4.7	34%	11.4
,, 8	4.6	39%	9.8

The quantity of ammonia remains practically constant on these four days. Without a knowledge of the total nitrogen and by its means the determination of the ammonia-nitrogen ratio the change in degree of acidosis on Dec. 5, 7, and 8, as compared with Nov. 9, would be entirely overlooked, but the change in the ratio makes it apparent.

The patient gradually failed after discharge from the hospital and died March 24, 1907. It is noteworthy that the ammonia reached its maximum, 5.2 gm. (nitrogen 11.7g m., ammonia-nitrogen ratio 37%), on March 23, 1907, the day preceding coma, but that on the day of coma the ammonia-nitrogen ratio and the total ammonia were not particularly great. Two factors may account for this circumstance, — the small quantity of urine voided and the failure of the organism to react to the demand for alkali. The former explanation would appear to be more correct, if one compares other cases of coma in which the ammonia-nitrogen ratio constantly rose as coma advanced, despite the administration of enormous doses of sodium bicarbonate.

A similar case (No. 139) is that of a girl, a patient of Dr. H. O. Smith, Hudson, N. H., who first noticed polyuria in February, 1906, at the age of nineteen, and came under my observation in October, 1906. The course of the disease is shown by the accompanying Chart II.

This patient also received 12 gm. sodium bicarbonate Oct. 30, 1906, until death, Dec. 23, 1907. The progressive character of the acidosis is significant. The first obvious change in the ammonia was the well-known increase following the preliminary restriction of carbohydrates. In consequence, the total ammonia rose from 4.2 gm. to an average of 5.5 to 6.1 gm. during the following two months in which the carbohydrates were lowered from approximately two hundred grams to one hundred grams in twenty-four hours. In cases of diabetes which are not of unusual severity this preliminary increase in ammonia may pass away with improvement in the general condition. Its persistence is of ominous significance.[9] There is no doubt about the increase of ammonia representing a real acidosis, because the total nitrogen was reduced nearly one half during these two months. This is strikingly evident if one compasses the figures for Oct. 30 and Dec. 23. The total nitrogen on the latter day is one half of the former, but the ammonia increased 40%. The per cent of ammonia in this instance is certainly a more valuable index of the total acidosis than the total quantity of ammonia. The well-being of the patient up to the very onset of coma was striking, and in conformity with clinical experience. On Nov. 29 the ammonia excretion reached 7.3 gm., the highest amount which we have noted in any of our patients. It is most unfortunate that the total nitrogen was not done on this day. The appearance of the patient in no wise indicated the gravity of the disease, but the high amount of ammonia showed the rapidly approaching fatal acid poisoning and allowed an accurate prognosis. Yet it is noteworthy that the ammonia amounted to 6 gm. even one year before. The extent of the minus carbohydrate balance well illustrates the intensity which the disease had reached.

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[8] Falta and Gigon: Zent. für ges. Phys. u. Path. des Stoff. N. F. ii., s. 241, 1907.

[9] v. Noorden: Handbuch der Path. d. Stoffwechsel, Bd. ii, S. 55, 1907.

Case No. 135 is that of a man who developed the first obvious symptoms of diabetes in the spring of 1903, at the age of twenty-nine. The total quantity of urine at that time was seven qts. and the amount of sugar excreted about one pound a day. He was referred to me by Dr. George C. Shattuck, in September, 1906. In the spring of 1907 he entered the New England Deaconess Hospital for two weeks, where he regained some of his strength. The previous summer and the following summer he improved much while at the Massachusetts General Hospital. Finally, in a most exhausted condition, in January, 1908, he again entered the New England Deaconess Hospital, having lost 50 lb., and after nine days died of coma.

Chart II. Case No. 139.

Best weight 138; weight Oct. 13, 1906, 123¾; Dec. 16, 1907, 120¼.

Date.	Vol.	Nitrogen.	Ammonia.		Urine, total sugar.	Total carb.	NaHCO$_3$.	Carbohydrate balance.
			Total.	Per cent of nitrogen.				
1906	ccm.	gm.	gm.		gm.	gm.	gm.	gm.
Oct. 30	3,125	24	4.2	15	198		12	
Nov. 14	3,500	32	5.2	13	176		12	
Dec. 5	3,510	20	5.8	23	129	70	12	—50
,, 6	3,285	18	5.7	26			12	
,, 9	2,625+	16	4.8	26	109	63	12	—45
,, 11	2,400	15	5.6	31	96		12	
,, 14	2,850	16	6.1	31	95		12	
,, 18	2,370	13	6.4	41	68		12	
,, 21	2,040	11	5.3	41			12	
,, 23	2,340	13	6.1	40	86		12	
,, 24	2,430	10	4.7	40	97		12	
1907								
Jan. 10	3,000		6.1		138		12	
April 21	2,750		5.7		86		12	
Aug. 13	3,000				108	44	12	—65
Oct. 21	3,250		4.8		120	62	12	—60
Nov. 29	4,000		7.3		128	68	12	—60
Dec. 16	4,500				90	50	12	—40
,, 23			Diabetic	coma; death				

Chart III. Case No. 135.

Date.	Vol.	Diacetic acid.	Acetone and diacetic acid.	Nitrogen.	Ammonia.		Urine, total sugar.	Total carbohydrates.	NaHCO$_3$	Weight of patient.
					Total.	Per cent of nitrogen.				
1903	ccm.		gm.	gm.	gm.		gm.	gm.	gm.	lb.
Spring	7,000						490			
1906										
Sept. 27	4,000	+ + +					188			127¼
Oct 11	4,250	+ + +		25.0	3.2	11	173		20	128¾
Nov. 6		+ + +		23.9	2.7	11			16	130½
Dec. 4		+ + +		22.8	3.2	12			12	132⅞
1907										
March 12	5,000	+ + + +			6.8		192		12	
,, 14	4,000	+ + + +			6.1		171		12	
,, 18	4,750	+ + + +			6.9		246		12	
May 10	5,250	+ + +			6.1		212		12	
July 5	7,000	+ + + +					386			121
Nov. 27	5,750						288			
1908										
Jan. 26	3,720		7.9	21.8	5.1	19		135	0	88¼
,, 27	3,940		7.8	19.6	5.2	22		135	0	89¼
,, 28	3,210		7.3	20.5	5.3	21		135	0	86¾
,, 29	3,210		7.3	19.2	5.0	21		135	0	85¾
,, 30	3,190		8.7	16.3	4.2	21		135	25	85
,, 31	4,600		12.6	19.1	5.2	23		120	25	83¼
Feb. 1	4,050		10.7	18.7	4.0	18		130	37	82¼
,, 2	3,610		10.2	16.0	4.2	21		70	52	81¾
,, 3	360			15.0	3.0	17		15		
,, 4					Death in	coma.				

The increase in ammonia from the fall of 1906 to the spring of 1907 was striking and showed the severity of the disease still more than did the loss of weight. In these latter months the diet was certainly far less restricted than before, but an accurate idea of it cannot be formed because the patient was outside of the hospital. Despite the high amount of ammonia, however, the patient, like the previous one, was able to work for the greater part of the time while under observation. In January, 1908, he was in a pitiable condition, voiding large quantities of urine. He had given up on his own account the sodium bicarbonate which he had taken intermittently for nearly two years. His weight was 88 lb. For the four days, Jan. 26 to 29, inclusive, he continued without soda on a diet consisting of 110 gm. albumin, 185 gm. fat and 135 gm. carbohydrates. He was then given 25 gm. of sodium bicarbonate daily. The diet remained unchanged, but two days later distinct drowsiness appeared, accompanied by increasing weakness, and on Feb. 2 coma developed. The average amount of ammonia excreted during the first four days was 5.2 gm., and for the last four days 4.5 gm., despite the fact that considerable quantities of sodium bicarbonate were given in this period. Presumably the acidosis greatly increased during that time, but the ammonia unfortunately gave no signal of increasing danger during the period the patient was in the hospital.

Case No. 4 is of interest in this connection because the patient was under close observation during coma. A boy, fifteen years of age, developed symptoms of diabetes in 1897. In August, 1898, he consulted Dr. J. J. Putnam, who kindly transferred the case to me. The course of the disease is shown by the following chart:

Chart IV. Case No. 4.

Date.	Vol.	Acetone Diacetic acid.	B-oxybutyric acid extracted.	Nitrogen.	Ammonia.		Urine, total sugar.	NaHCO$_3$.	Weight of Patient	Remarks.
					Total.	% of nitrogen.				
1898	ccm.	gm.	gm.	gm.	gm.		gm.	gm.	lb.	
Aug. 18	8,000	0					520	10–20		
,, 22	2,000	+ +					76	10–20	92	
Sept. 6	4,000	0					312	10–20	100	
Nov. 21	3,000						170	10–20		
1899										
Oct. 10	3,000	+ + +					165	10–20	108	
1900										
July 31	3,500	0					144	10–20		
Sept. 10	5,000	0					357	10–20	105	
Oct. 15	4,000 ±			18.5	2.4	14	276 ±			Coma began during last six hours.
,, 16	6,050	30	56	23.8	3.7	11	167	113		Coma relieved 2 hours after onset.
,, 17	9,700	57	96	18.7	3.7	20	233	140		Coma relieved.
,, 18	7,600	47	70	2.1	5.3	25	61	92		Coma returns.
,, 19	800				0.8		10	6		Coma deepens; death.

It will be seen that the ammonia rose as coma progressed, despite enormous doses of sodium bicarbonate. The ammonia-nitrogen ratio rose even more steadily than the total quantity.

Case No. 74 also illustrates the progressive upward trend of the ammonia in severe diabetes. A boy of fifteen developed symptoms of diabetes in January, 1904; a month later sugar was found in the urine, and treatment was begun by Dr. F. H. Thompson, of Fitchburg, for whom I occasionally saw the patient. The boy remained in comparatively good health up to a very short time before his death in December, 1907, just one month lacking four years of proven diabetes. No other case of a child living so long has come under our care. It would interest us much to learn of other such cases. This patient does not show a progressive acidosis so well. It may well be that some error existed in the diet or in the collection of the urine. At any rate these are the uncertain data with which one is often compelled to work in private practice. It must be conceded that the ammonia failed to adequately warn of imminent danger. It was higher eight months than one month before death. The course of the disease is shown by Chart V.

Case No. 162 was that of a man who developed diabetes in the spring of 1904, at the age of twenty-seven years. Sugar was not found until October, 1905. He first came under our observation in May, 1907, when the urine showed 5.7 gm. of ammonia in twenty-four hours. He barely held his own during the summer and died in November, 1907. The large amount of ammonia was suggestive at the start, but not more suggestive of impending trouble than the appearance of the patient. It is instructive to compare this case with the

Chart V. Case No. 74.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen. grams.	Ammonia. Total, grams.	Ammonia. Per cent of nitrogen.	Urine, total sugar, grams.	NaHCO$_3$, grams.	Carbohydrate, balance.	Weight of patient, pounds.
1904.									
April 20,	1,080	0				30			92
May 22,	1,290	+				0			
1905.									
Feb. 9,	1,470	+ + +				21			
Oct. 24,	1,860 ±	+ + +				69			
1906.									
July 15,	Spec.	+ +							
Nov. 27,	2,130	+ + +				107			
Dec. 5,	1,890	+ + + + +	12.2	3.2	22	77	8		
1907.									
Jan. 10,	1,920	+ + + +		3.5		65	8		106
April 30	2,640	+ + + +		5.8		103	8		104
Nov. 13,	2,520			4.0		98	12	—32	

Death in coma, Dec. 16, 1907.

former one just reported as an example of the advantage of careful treatment. In the former instance, a boy of fourteen years came under the care of Dr. Thompson soon after the appearance of the disease, and lived approximately four years; in the latter, a man of twenty-seven years did not begin treatment until eighteen months elapsed from the onset of the disease, and lived but three and a half years. Treatment in the case of the boy more than counterbalanced the advantage that usually goes with advancing age in diabetes. The following chart shows the course of the disease:

Chart VI. Case No. 162.

Best weight, 154.

Date	Vol.	Total Ammonia	Urine. total sugar.	NaHCO$_3$.	Weight of patient.
1907.	c. cm.	gm.	gm.	gm.	lb.
May 20,	6,000	5.7	345	12	114¼
Sept. 2,					119⅝
,, 27,	4,750		152	16	

Death in coma, Nov. 28, 1907.

Case No. 146 is another instance in which the ammonia suggested an early fatal issue. The patient was a colored railway porter who developed the first symptoms of diabetes at the age of twenty-nine, and was seen in consultation with Dr. Dewis a year and nine months later. His physical appearance did not warrant an immediately serious prognosis, but the urine showed 6.7 gm. ammonia. Death occurred in coma two months later. This quantity of ammonia has been exceeded only three times in our experience, namely, in cases No. 135 and No. 139, of whom the former died in eleven months and the latter in one month after the observation was made, and in Case No. 147 who had 7.0 gm. ammonia on March 8, 1908, and is alive at the present time, April 20, 1908. This last patient had 3.0 gm. ammonia one year ago.

SEVERE DIABETES BETWEEN FIFTY AND SIXTY YEARS OF AGE INCLUSIVE.

The following six cases represent our second group. They have various points of similarity to one another and present a distinct contrast to the seven cases just reported. They all came under our observation between the ages of fifty and sixty years inclusive. All showed quantities of ammonia far less than those of the preceding group, and although there was a marked minus carbohydrate balance, it was of less extent. All died within a comparatively short time after a moderate acidosis developed. Until this point occurred they had lived in comparative comfort for many years. These cases will be briefly summarized, but the following table, Chart VIII, will show some of the facts. For contrast the two groups of cases are presented together.

Case No. 42, male, was referred to me by Dr. William Bolton, of Athol, in December, 1902. Sugar was first discovered in 1884 during an examination for life insurance, but it later disappeared. By 1892 it had returned in sufficient amount to demand active treatment. The past history was negative except for an attack of rheumatic fever. Arteriosclerosis was noted at my first examination. Four years later an attack of hemiplegia occurred, and death followed six months later, July, 1907, in coma. The course of the disease is shown by Chart IX.

Chart VII. Case No. 146.

Best weight, 142 lb. in 1904.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen, grams.	Ammonia. Total, grams.	Ammonia. Per cent of nitrogen.	Urine, total sugar, grams.	Weight of patient, pounds.
1906.							
Dec. 27,	6,000	+ + +	28	6.7	19.0	274	118

Death in coma, Feb. 28, 1907.

Chart VIII.

Diabetes under forty years of age.

Number.	Onset. Date.	Onset. Age.	Ammonia. Date of analysis.	Ammonia. Quantity in 24 hours, grams.	Urine total sugar, grams.	Date of fatal coma.	Duration of disease.	
94	1902	39	Dec. 5, 1906,	5.2	84	March, 1907,	5	years
139	1906	19	Nov. 29, 1907,	7.3	128	December, 1907,	2	,,
135	1903	29	March 12, 1907,	6.8	192	February, 1908,	5	,,
4‡	1897	15	Oct. 17, 1900,	3.7	233	October, 1900,	3⅙	..
74	1904	14	April 30, 1907,	5.8	103	December, 1907,	$3\frac{11}{12}$	..
162	1904	27	May 20, 1907,	5.7	345	November, 1907,	3½	,,
146	1905	29	Dec. 27, 1906,	6.7	274	February, 1907,	$1\frac{11}{12}$	,,
			Diabetes between fifty and sixty years of age, inclusive.					
42	1884	29	Dec. 7, 1906,	1.8	80	July, 1907,	23	,,
101	1903	55	Oct. 10, 1906,	3.5	80	February, 1907,	3½	,,
108	1903	47	July 16, 1906,	2.8	70	August, 1906,	3½	,,
138	1905	58	April 21, 1907,	3.2	77	July, 1907	2¼	,,
145	1905	53	May 23, 1907,	2.4	79	September, 1907,	2½	,,
137	1904	53	Oct. 23, 1906,	5.8	124	December, 1907,	3½	,,

‡Analysis made during coma.

CHART IX. CASE NO. 42.

Diabetes first observed in 1884.

Date.	Vol.	Diacetic acid.	Nitrogen.	Ammonia. Total.	Ammonia. Per cent of Nitrogen.	Urine, total sugar.	NaHCO$_3$.	Weight of patient.	
	ccm.		gm.	gm.		gm.	gm.	lb.	
Dec. 10, 1902	1,360	0				38		159	
Feb. 25, 1903	1,250	+(?)				0	4	159	
Sept. 13, 1903		+				0.2%	5	157	
May 23, 1904	1,750					0			
June 9, 1905	2,000	++				50	4	156	
Aug. 10, 1906	2,000	+++				39			48 hyaline and 16 fine granular casts found in two cover glasses of centrifugalized sediment.
Dec. 7, 1906	2,000+	+	20.9	1.8	7	80		147	Partial hemiplegia (Nov. 27).
June 25, 1907	3,500	+				112	April, 1907	153	
						Death in Coma.	July, 1907.		

Case No. 101, male, was referred to me by Dr. George G. Sears. He was later under the care of Dr. Thomas Walker, in St. John, N. B. Diabetes was discovered in September, 1903, at the age of fifty-five years, at which time 175 gm. of sugar were excreted in twenty-four hours. Arteriosclerosis was noted on the date of the first examination, Nov. 19, 1905. The gain in weight in December, 1906, was probably in great part due to dropsy and in another paper we expect to report observations on this subject. The course of the disease is shown by Chart X.

Case No. 138, sister of No. 101, came under my observation in October, 1906, having had diabetes since the spring of 1905, when she was fifty-eight years of age. Arteriosclerosis was not present, but the urine showed hyaline and fine granular casts. The course of the disease is shown by Chart XII on the following page.

Case No. 145, male, was referred to me by Dr. Mortimer Warren, of New York City. Symptoms of diabetes were first noticed in February, 1905, at the age of fifty-three years. The patient came under my observation in December, 1906. Arterioscleros was present, together with mitral insufficiency of moderate degree. The course of the case is shown by Chart XIII for a portion of which we are indebted to Dr. Warren.

CHART X. CASE NO. 101.

Diabetes first observed in 1903. Best weight, 175 lb. Summer, 1905, 140 lb.

Date.	Vol. ccm.	Albumin.	Diacetic Acid.	Nitrogen. grams.	Ammonia. Total, grams.	Ammonia. Per cent of nitrogen.	Urine, total sugar, grams.	NaHCO$_3$, grams.	Weight of patient, pounds.	
1905.										
Nov. 15,	3,840	Slight trace	++				154	12	132	
Dec. 6,	2,520	,, ,,	++				25		145	
1906.										
Feb. 7,								8	152	
Oct. 6,	2,070	,, ,,	+++				64		143	Few casts.
,, 10,	3,180	,, ,,	+++	19	3.5	15	80			
,, 12,	2,640		+	14	2.7	16	73	12		
Nov. 30,	.....	,, ,,	++					12		

Death in coma, February, 1907.

Case No. 108, male, was referred to me by Prof. R. H. Chittenden, December, 1905. Diabetes was first discovered in March, 1903, when the patient was forty-seven years of age. No arteriosclerosis was noted. Albumin was absent from the urine December, 1905, but a slight trace with numerous casts appeared in April and persisted until the death of the patient in August, 1906. The patient appeared in good condition even up to the day preceding coma. Chart XI.

Case No. 137, male, was referred to me by Dr. C. A. Lovejoy and Dr. Sarah E. Palmer. He developed symptoms of diabetes in June, 1904, at the age of fifty-three, but at no period followed any physician's direc-

CHART XI. CASE NO. 108.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen, grams.	Ammonia. Total, grams.	Ammonia. Per cent of nitrogen.	Urine, total sugar, grams.	Weight of patient, pounds.	
1903.								
June 12,	2,100	0	15.5			151		
1904.								
Jan. 27,	2,200					143		
Dec. 19,	1,690	0	21.2			16	146	
1905.								
June 11,	1,120	+	9.7			13	145	
Dec. 28,	1,700	++	9.9			50	146	
1906.								
April 14,	1,740	+++	10.1	2.4	20	52		April 18, 1906, 38 hyaline and 3 fine granular casts.
July 16,	1,920	++	9.6	2.8	24	70		June 21, weight, 138.

Death in coma, Aug. 12, 1906.

Chart XII. Case No. 138.

Best weight, 145 lb.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen, grams.	AMMONIA.		Urine, total sugar, grams.	$NaHCO_3$, grams.	Weight of patient, pounds.
				Total, grams.	Per cent of nitrogen.			
1906.								
Oct 9,	1,750	+ + +	18.5	1.0	5	22	4	
,, 15,	1,440	+ +	15.1	1.7	9	29	4	
,, 16,	2,235	+ + +	21.7	1.5	5	39	4	
,, 18,	1,830+	+ +	15	0.8	5	48	4	
,, 19,	2,190+	+ + +	16.3	3.4	17	43	4	124
1907.								
Jan. 23,		+ + + +			20			
April 21,		+ +		3.2		77	12	

Death in coma, July 12, 1907.

Chart XIII. Case No. 145.

Best weight, 178 lb. Summer, 1906, 138 lb., then rose to 152 lb.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen, grams.	AMMONIA.		Urine, total sugar, grams.	$NaHCO_3$, grams.	Weight of patient, pounds.
				Total, grams.	Per cent of nitrogen.			
1906.								
Aug. 18,	2,130	0	21.1			77		
Sept. 26,	2,880	0	21		8	104		
Oct. 12,	2,220	0	14		6	64		
Nov. 6,	2,280	0	15		5	77		
Dec. 4,	2,310	+	15		10	108		
,, 18,	1,930		12.4			100	6	Dec. 15, 150
,, 22,	1,620	+ +	10.3	1.4	11	82	6	Dec. 23, 148
,, 26,	2,220	+ + +	13.2	1.6	10	79	6	147
,, 31,	2,410	+ + + +	12.7	1.8	12	97	6	
1907.								
May 15,	2,760	+ + +		4.0		99	12	
,, 16,	2,420	+ + +		3.6		70	12	
,, 17,	3,000	+ + +		4.1		104	12	145
,, 18,	2,740	+ + + +		3.6		101	12	
,, 19,	3,040	+ + +		3.4		102	12	
,, 22,	2,380	+ + +	10	1.7	14	55	12	
,, 23,	2,640	+ +	14.9	2.4	13	79	12	147

Death in coma, Sept. 2, 1907.

Chart XIV. Case No. 137.

Best weight, 157 lb. Weight, Sept. 25, 1906, 121 lb.

Date.	Vol. ccm.	Diacetic acid.	Nitrogen, grams.	AMMONIA.		Urine, total sugar.	$NaHCO_3$, grams.	Weight of patient, pounds.
				Total, grams.	Per cent of nitrogen.			
1906.								
Sept. 26,		+ + +				6%		Oct. 19, 121
						grams		
Oct. 16,	4,250	+ +	15.2	4.7	26	230	12	
,, 23,	4,000	+ + +	17.7	5.8	27	124	12	122

Death in coma, Dec. 23, 1907.

tions for more than a brief interval. Moderate arteriosclerosis was present, and there was a slight trace of albumin in the urine with a few hyaline casts. The patient first came under my observation in September, 1906. The ammonia-nitrogen ratio of 27% implied a much more serious prognosis than did the aspect of the patient, and he was consequently allowed to go to California. The trip was borne well and on his return in the spring he was able to resume work for some months. At length, in December, 1907, he died in coma. Chart XIV.

Diabetes occurring in the sixth decade is considered to be a comparatively mild disease and one is not warranted in attacking this conception because of the cases above reported. We could cite many patients now under our care whose appearance would not disclose impaired health. Most of these reported cases, although they began in mild form, presented a severe type of the disease when they came under our observation. In not one case was it possible to keep the urine free from sugar for more than twenty-four hours. Diacetic acid, therefore, was, of course, invariably present. The diet in all instances after a preliminary period of observation contained at least 50 gm. carbohydrate, and most of the patients took about 12 gm. sodium bicarbonate daily from the time we first saw them until death. No notable loss of weight was experienced by any patient. The cases illustrate the seriousness of a moderate acidosis in old people in comparison to the severity of such a condition in young individuals.

CONCLUSIONS.

1. Quantities of ammonia reaching 5 gm. in twenty-four hours indicate an extremely severe form of diabetes, which usually proves fatal within a year.

2. Patients under forty years of age tolerate an acidosis estimated in terms of 4 to 5 gm. ammonia far better than those above fifty years tolerate an acidosis of 2.5 to 4 gm. ammonia. An acidosis in an individual above fifty years of age is of very serious prognostic import.
3. A knowledge of the ammonia excretion usually helps in the treatment of a case of diabetes, and generally, but not always, gives warning of impending danger.
4. The value of a knowledge of the ammonia excretion in the prognosis of a diabetic patient is enhanced by a knowledge of the quantity of albumin and carbohydrate in the diet.
5. A lowering of the carbohydrate intake in a severe case of diabetes from a total of 80 gm. to 55 gm. in twenty-four hours produces little effect upon the acidosis.

THE STUDY OF THE FUNCTIONS OF THE ALIMENTARY TRACT FOR THE DIGESTION AND ABSORPTION OF FOOD BY THE EXAMINATION OF THE FECES, IN CLINICAL WORK.

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The function of the alimentary tract is the digestion and absorption of the food. Whatever portions of the ingested food mixture fail of absorption in the course through the tract become finally constituents of the feces and are excreted in this excretion. The constitution of the feces of an individual must, therefore, be to a certain extent directly dependent upon the quality of the function of digestion and absorption in the alimentary tract of that individual; that is, the proportion of food derivatives in the feces upon a definite diet should vary according to the integrity or disturbance of integrity of the function of the alimentary tract present. In view of these facts it is clear that the examination of the feces should serve us in medicine as a means of studying the condition of digestion and absorption of food in the alimentary tract.

The most accurate and comprehensive single method of investigation of the feces for this purpose consists in the quantitative analysis of the total proteid, fat and carbohydrate constituents of the daily fecal excretion. The principal elements of the ingested food which undergo digestion and absorption in the alimentary tract belong to these three classes of food material, — proteids, fats and carbohydrates. Where disturbance of function resulting in lessened utilization of food in the alimentary tract exists, larger quantities of one or all of these substances, according to the character of the disturbance, will appear in the feces than are present there under the same conditions of diet in the normal, and will increase the total content of feces in these products. This variation in the constitution of the feces in proteid, fat or carbohydrate constituents will, of course, appear in the results of quantitative analysis. If, therefore, any individual with a disturbance in the function of utilization of food substances in the alimentary tract is placed upon a fixed or "test" diet and his daily fecal excretion subjected to quantitative analysis of nitrogen, fat and carbohydrate, we can, by a comparison of the results of such analysis with standard results of the constitution of the normal daily fecal excretion under this test diet, determine the fact of the increase of the proteid, fat or carbohydrate (the nitrogen serving as an index of proteid content) which results from the disturbance of function present.

It is clear, then, that this method of the quantitative analysis of the nitrogen, fat and carbohydrate of the feces obtained under definite conditions of diet, since it determines for us the fact of the relative completeness of utilization of the food in the alimentary tract, must serve as a direct and comprehensive means of studying the condition of function of the tract. For it is this utilization of the food, its absorption, which is the chief end and aim, the final achievement, of the combination of all the functions of the alimentary tract; and the completeness of such utilization as evidenced in the quantitative analysis of the feces is the most absolute index of the functional capacity that we can have. The application of the method in any case, that is the subjection of the feces to quantitative analysis and the comparison of the results obtained with the standard normal results, gives us: 1, evidence of the existence of abnormal conditions of function; 2, evidence of the particular type of function which is disturbed, whether that of the utilization of proteid, fat or carbohydrate; and 3, the extent of the disturbance in quantitative measure.

It must be borne in mind in the use of this or any method of quantitative analysis of the food principles of the feces, that the results as regards the estimation of food derivatives are accurate, only for determining the *comparative* quantity of these substances present, the quantity found in a given case as compared with that present in standard normal cases under the same diet. These records, though they may give accurate determination of the total fat, proteid and carbohydrate present in the feces, never represent accurately the exact amount of the proteid, fat or carbohydrate of the food which has escaped utilization in the alimentary tract. They represent this quantity of food derivatives plus whatever proteid, fat or carbohydrate of the feces is derived from other sources, as, for example, the tissues and secretions of the alimentary tract and the bacteria of the gut. That a certain amount of the nitrogen content and the fat content of the feces is always derived from these body sources is an undoubted fact proved by observations upon the feces of fasting individuals. Thus in the twenty-four-hour fecal excretion of the professional faster Cetti, Müller found 0.316 gm. of nitrogen, and 1.21 gm. of fat.[1] These findings must, of course, be attributed to the body excretions. Where food is taken it is not unlikely that the amount of such body nitrogen and fat is considerably greater, as more activity of secretion and more waste of tissue are present. Some carbohydrate substances are present in the constitution of bacteria, and it is possible that a portion of the carbohydrate of the feces determined by analysis is from this source.

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[1] Fr. Muller: Virchow's Arch., 131, 1893, Supplementheft.

The determinations of quantitative analysis are the estimates of total finding and do not distinguish food derivatives from body derivatives. In our study of the feces for the determination of the utilization of food substances we take it for granted that the proteid, fat and carbohydrate contents derived from the body are fairly constant in individuals upon the same diet. With this assumption our test is accurate for comparative work though it is not, as demonstrated, strictly so for absolute deductions as to the quantity of food derivatives. It is probable that this constancy is a fact in normal conditions. In abnormal conditions we cannot, of course, be sure of this fact. So in deducing the fact of the existence of a disturbance of the function of utilization of any special food, proteid, fat or carbohydrate, by the finding of an excess of this substance over normal in the feces in all cases, we are depending upon an assumption which may or may not be correct. We know that a disturbance of the function of absorption must cause an increase in the food content of the fecal excretion; but it is not equally a fact that an increase in the content in any one of the food principles means necessarily an increase in the quantity of this substance derived directly from the food. It may mean an increase in the unabsorbed food products or an increase of the portion of the proteid, fat or carbohydrate of the feces derived from body sources.

Practical consideration of the subject in the light of our knowledge of the physiology and pathology of the body would, however, make it appear fairly certain that this theoretical objection to the formulation of definite conclusions in regard to the condition of function of the alimentary tract from the findings obtained from the use of this method, is of practical import only in respect to one branch of function, that of the utilization of proteid. It is a well-recognized fact that the inflammatory and serous exudates of the body, wherever found, contain considerable quantities of proteid or of nitrogenous substances derived directly from the blood and tissues of the body. The presence of such inflammatory or serous exudates in the intestines is a very common pathological condition, as, for example, in inflammatory affections of the intestinal mucous membrane and in serous diarrhea from any cause. In such conditions and in conditions of hemorrhage into the alimentary tract there can be no doubt that a considerable portion of the increase of the proteid and nitrogen content of the feces which occurs may be due to excess of body proteids, as distinguished from food proteids. In such cases we must, therefore, be very conservative in ascribing an increase in the nitrogen to deficiency of absorption of food proteids, that is, in concluding the existence of the disturbance of the function of proteid utilization from the results of nitrogen analysis in the feces. All that we can justly claim from the results of the application of this method in general is that one suggestion offered by the presence of an increase of nitrogen content of the feces is that of the existence of the disturbance of the function. If inflammatory conditions, serous diarrhea, or hemorrhage are present we can make no absolute deductions as to proteid absorption. This point is illustrated by Case II, reported on page 666 of this article. If these conditions can be excluded we can reasonably conclude that an increase in nitrogen indicates a disturbance in proteid function.

As regards the fats, our general knowledge of the physiology and pathology of the body would lead us to believe that an increase in the total feces fat of any extent from an increased excretion of body fat, as distinguished from food fat, would be at most an extremely rare occurrence and that it is a fairly safe plan of procedure in general work to ascribe a finding of a fat excretion above the normal limits to an increase of unabsorbed food fats. A similar statement can be made in connection with the carbohydrates of the feces. It is safe in this plan of study of function to take it for granted in the general run of cases that the quantity of body or bacteria carbohydrate of the feces is of insignificant amount and that an increase of carbohydrate content of any marked degree indicates disturbance of the alimentary tract in the utilization of carbohydrate. There is reason to believe that the analysis of the carbohydrates of the feces gives us in all probability in all cases an estimate of the utilization of the food substance which is too high. For it is an undoubted fact that a considerable breaking up of the soluble carbohydrates which pass the intestine unabsorbed occurs in the lower intestines and feces through the agency of the lower organisms present in the intestinal contents. For this reason the quantity of unabsorbed food carbohydrate which gets into the feces and can be determined there as such is in all probability less than the total quantity of this substance which is unabsorbed in the intestinal tract. This fact does not, however, affect the validity of conclusions made from the presence of an increase in fecal carbohydrate.

The results of the application of this method of quantitative analysis of the test diet feces, though they aid us greatly in determining the fact of the existence of disturbance of function of the alimentary tract, and indicate the particular kind of food utilization which is disturbed, whether that of proteid, fat or carbohydrate, leave much unexplained in regard to the conditions of the details of functional activity which make up the combined function of the stomach and intestines for the utilization of food. A disturbance of function resulting in a decreased utilization may consist entirely of a decreased capacity of the organs for the digestion of food, any failure in absorption being secondary to this, or of a decreased capacity of absorption independent of the quality of digestion, or of a combination of both conditions. Either disturbance would result in a final decreased absorption of food products and, consequently, in an increase of fecal content of the food substance in question. The result of quantitative analysis is to tell us simply this fact of lessened utilization. It tells us nothing as to whether it is digestion or absorption which is primarily at fault. To gain some insight into these details of function we must supplement our method of quantitative analysis of the total nitrogen fat and carbohydrate of the test diet feces by other methods of examination of the feces.

For the study of the question of digestion of the fats as distinguished from that of the final utilization of these products we must use the method of the differential quantitative analysis of the total neutral fat, total fatty acid and total soap of the feces.

The neutral fats of the food are, in the process of the utilization of fat in the alimentary tract, broken up by a process of digestion into fatty acids and glycerin. The fatty acid, or a portion of it, is then combined with the alkalis provided by the intestinal content to form soap. These final products, fatty acids, soaps and the remains of neutral fat, are then for the most part absorbed. Such portions as escape absorption pass into the feces. Any deficiency in the initial process of the utilization of fat, the splitting of the neutral fat, may, whatever the capacity of the intestines for absorption, result in the presence of a higher proportion of neutral fat in the total fat present than is found in normal conditions in the intestinal content, and presumably also in that portion of the intestinal content which gets into the feces. The normal proportion of neutral fat to the total fat content of the feces upon a definite test diet, once established by experiment upon normal individuals, it is a simple matter by a comparison of the records of differential analysis of the feces of a given case upon the test diet with these normal records to determine whether or not the so-called digestion of fat is normal. If the proportion of neutral fat to the total fat content is excessive the existence of some disturbance of this digestion is suggested.

For the study of the digestion of proteids and carbohydrates we have the method of macroscopic and microscopic examinations of the feces under a definite test diet, devised and perfected by Schmidt and Strasburger.[2] These authors have found, as a result of a considerable amount of experimentation, that under the use of a definite test diet (known as the Schmidt and Strasburger test diet), containing a certain quantity of meat muscle fiber and a certain quantity of starch, the macroscopic and microscopic appearances of the feces in regard to meat remains and starch remains will vary, in accordance with whether or not the digestion of these forms of proteid and carbohydrate is normal or disturbed, in certain definite characteristics as to the quantity and condition of these remains, so that an observer, familiar with the characteristic appearance of the normal feces in these respects, can determine by macroscopic and microscopic examination in any given case under this test diet, whether or not any disturbance of the digestion of these proteid or carbohydrate substances exists. The feces findings in these special substances, muscle fiber and starch, are, of course, entirely independent of the condition of the function of absorption present. They vary with digestion whether absorption is normal or not.

This method does not, strictly speaking, provide a test for the digestion of proteid or carbohydrate generally. It does not, for example, give evidence as to the capacity for the digestion of egg, proteid, milk proteid, plant proteid or of dextrine or sugar carbohydrate. It does, however, serve as a test of the capacity of the alimentary tract to digest certain common forms of food proteid and carbohydrate, the form of carbohydrate being that which most requires digestion for its utilization in the body. The method, therefore, gives us valuable knowledge in regard to the condition of function of the alimentary tract.

This method of determination of the condition of function of the digestion of meat, muscle proteid and starch by microscopic examination of the test diet feces as outlined by Schmidt and Strasburger is as follows:

The individual under observation is given the following diet for a period of three days:

In the morning: 0.5 liter milk (or if milk does not agree, 0.5 liter cocoa, prepared from 20 gm. cocoa powder, 10 gm. sugar, 400 gm. water and 100 gm. milk); to this add 50 gm. zwieback.

In the forenoon: 0.5 liter oatmeal gruel, made from 40 gm. oatmeal, 10 gm. butter, 200 gm. milk, 300 gm. water, 1 egg (strained).

At noon: 125 gm. chopped beef (raw weight) broiled rare with 20 gm. of butter, so that the interior will still remain raw; to this 250 gm. potato broth (made of 190 gm. mashed potatoes, 100 gm. milk, and 10 gm. butter).

In the afternoon, as in the morning.

In the evening, as in the forenoon.

The feces of the second or third day are collected, thoroughly mixed by stirring, and examined macroscopically and microscopically.

For the examination a portion of the feces is diluted with water, ground lightly in a mortar and spread out in a thin layer on a black plate.

Macroscopic masses of meat remains are identified under the microscope.

The character and quantity of the muscle remains is determined by microscopic examination.

The character and quantity of starch remains is studied under the microscope.

For the purpose of the microscopic study of starch remains a drop of iodine and potassium iodide solution (Lugol's solution) is mixed with a portion of the feces, and the mixture placed on a slide under a cover slip and examined.

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[2] Schmidt and Strasburger: Die Feces des Menschen, second edition, Berlin, 1905. Verlag von August Hirschwald.

According to the authors, no free undigested granules of starch staining a deep blue with the iodine are found in normal conditions under the test diet. Some potato grains with starch enclosed in cellulose may be present.

This comprises the list of the methods of examination of the food constituents of the feces which have been proven useful for the study of the conditions of function of digestion and absorption of food products in the alimentary tract in practical medicine.

To make a comprehensive study of function in any case, a determination of the condition of both the functions of digestion and absorption of the three principal classes of food material in the alimentary tract, the investigator must utilize all the methods described, making a microscopic examination of the feces, after the method of Schmidt and Strasburger, for the purpose of studying the functions of muscle and starch digestion, a differential quantitative analysis of the neutral fat, fatty acid and soap in the diet feces, to study fat digestion and a quantitative analysis of the total nitrogen, fat and carbohydrate of a test diet feces to determine the general condition of function of absorption of proteid, fat and carbohydrate.

This process involves considerable labor and a certain amount of knowledge of microscopic and chemical technic. The only method among those included, which is simple enough in its application to recommend itself for the use of the general practitioner in the study of his cases, is the method of macroscopic and microscopic examination as outlined by Schmidt and Strasburger. And this method gives only a very partial information in regard to the general condition of function of the alimentary tract, determining only the condition of function of digestion of muscle fiber and the digestion of starch, and possibly in some cases something in regard to the utilization of fat, and revealing nothing in regard to the total utilization of proteids and carbohydrates generally.* In spite of the difficulties of the subject, however, this plan of the examination of the feces by the combination of methods described as required for the purpose of studying the condition of function of the alimentary tract for the utilization of food should be more generally utilized in medicine. Since the knowledge gained by such clinical procedure cannot but be of great service in connection with the understanding and treatment of conditions of disturbance of the alimentary tract, diseases of the large glands of the tract, the liver and pancreas and abnormal conditions of nutrition generally.

A study of this subject of the investigation of the function of the alimentary tract by the examination of the feces has for some time been carried on in this laboratory. One branch of this investigation has consisted of the application of this method or combination of methods of the examination of the feces described as required for the comprehensive investigation of the condition of function of the alimentary tract to the study of a variety of cases, both normal and pathological, with the idea of determining the usefulness of the method in question for the general study of clinical cases.

For the accomplishment of such a systematic study it was necessary to fix upon a definite "test" diet which was suited to the use of all the various methods included in the general method of examination, and to make a collection of the results of the examination of the feces under this test diet in a number of individuals with a normal condition of function of the alimentary tract for use in comparison in the study of the various cases examined in clinical work.

Since the character of the findings in respect to both the quantity of proteid, fat and carbohydrate, and also the macroscopic and microscopic appearance of food remains in normal conditions of function vary in accordance with the quantity of proteid, fat and carbohydrate in the diet, and also with the particular form of the food materials making up this diet, it is necessary in an experiment of this kind to use in all cases a test diet of a definite constitution in the three food principles mentioned and containing definite quantities of separate forms of food material, as meat, bread, milk, etc. As a necessary part of the combined method of investigation, that of the study of the microscopic character of the muscle and starch remains in the feces for the determination of muscle and starch digestion necessitates the use of the special Schmidt and Strasburger test diet; the work of these authors having proven that this diet was most adapted for this special object of research, it seemed advisable to adopt this test diet for general use in the application of the combined method of investigation.

The first set of experiments included in the investigation consisted in the collection of a record of the findings of the feces of normal individuals subjected to this required method of examination under this test diet. This preliminary publication of the work of the laboratory upon this subject consists of a report of this experiment.

For the purpose of the investigation a number of individuals in normal condition of nutrition and, as far as could be determined, in possession of a normal condition of function of the alimentary tract, were placed upon the test diet for a period of four days. The total fecal excretion of this period was collected. A specimen of feces obtained upon the third or fourth day of the régime was subjected to examination by the method or combination of methods described, viz., the quantitative determination of the total nitrogen, total fat and total carbohydrate; the quantitative determination of the total neutral fat, total fatty acid and total soap; the macroscopic and microscopic examination of the feces in respect to the quantity and character of the muscle fiber remains and the starch remains present.† The results of this examination were tabulated in each case, the report of each case containing a record of the per cent of dried residue of the feces in nitrogen, fat and carbohydrate, a record of the proportion (per cent) of each of the three forms of fat substance to the total of all the fat present, and a record of the character and comparative quantity of the meat remains and of the starch remains discovered in the microscopic examination.

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* Schmidt and Strasburger, in their publications of the method of the study of the functional condition of the alimentary by the macroscopic and microscopic examination of the test diet feces, claim that this method in addition to its use for the study of the condition of muscle and starch digestion, has a further use in connection with the study of the condition of fat utilization. According to this claim, the study of the test diet feces by macroscopic and microscopic examination will reveal, by the character and quantity of the visible and recognizable fat remains present, whether or not the total quantity of fat excretion is normal or increased, and hence give to the observer an indication of the normality or abnormality of the condition of the function of fat utilization present.

That this method may give such indications as to the condition of function when great disturbance of fat function is present is an undoubted fact. But that the method is useful in point of its accuracy, for the determination of the normality or abnormality of the fat finding in the general run of clinical cases is, according to the experience of the authors of this article, a matter of much doubt. The authors have, therefore, omitted this method from their general method of examination.

The number of individuals experimented upon was eleven. As it was desired to obtain normal records which could be used for comparison in the application of the method to all varieties of clinical cases, persons of all ages, children and adults, were included in the list of individuals examined. In the case of several of the individuals examined two sets of experiments were made at different periods to test the constancy of the findings in the same individual obtained at separate times.

The test diet used was that developed by Schmidt and Strasburger for the purpose of the study of certain functions of the alimentary tract in clinical work. (See page 657.) The twenty-four-hour diet included the following food materials: 1.5 liters milk, 100 gm. zwieback, 2 eggs, 50 gm. butter, 125 gm. beef, 190 gm. potatoes, 80 gm. of oatmeal.

The diet was administered in the manner advised by Schmidt and Strasburger, described on page 657 of this article.

The content of this diet mixture as computed by Schmidt and Strasburger after the tables of Koenig is as follows: Proteid, 102 gm.; fat, 111 gm.; carbohydrate, 191 gm.

The caloric value is 2,234 (raw calories).

An analysis of the total fat content of a mixture of this diet used in one of our cases showed a higher content of fat, viz., 120 gm.

The methods of quantitative analysis used for the determination of the total nitrogen, fat and carbohydrate, and of the total neutral fat, fatty acid and soap were the following: In preparation for this analysis the whole feces of a single day was thoroughly mixed in 95% alcohol.[3] This mixture was divided into three portions, — one for nitrogen analysis, one for fat analysis and one for carbohydrate analysis. For the nitrogen analysis one drop of sulphuric acid was added to the mixture of feces and alcohol and the mixture evaporated to dryness on the water bath.[4] The residue was removed to a mortar, pulverized and dried to constant weight at a temperature of 100° C.[5] The per cent of nitrogen present was then determined by the Kjeldahl process.[6]

The determination of the total fat, and of the total neutral fat, fatty acid and soap, was made by the following process: [7] The mixture of feces in alcohol was evaporated on the water bath, pulverized, dried to constant weight at 100° C., cooled in a dessicator and subjected to analysis.[8] One gram of the dried residue was placed in a capsule and boiled for one hour in absolute alcohol, using the reflux condenser. The capsule was then transferred to a Soxhlet tube and extracted for twelve hours with chloroform. The combined absolute alcohol and chloroform extracts were mixed, evaporated to dryness, and the residue extracted in sulphuric ether. The sulphuric ether extract was filtered, the filter paper being thoroughly washed with ether, and the filtrate evaporated. The residue of this sulphuric ether extract was taken up in petroleum ether, the petroleum ether extract filtered, and the filtrate placed in a weighed dish and evaporated.

The residue of the original absolute alcohol and chloroform left after extraction with sulphuric ether was scraped up and, together with the filter paper used for filtering the sulphuric ether extract and that used for filtering the petroleum ether extract, was placed in a capsule in the Soxhlet tube and extracted for four hours with petroleum ether. This petroleum ether extract was filtered and the filtrate poured into the weighed dish already containing the first petroleum ether extract. This combined extract in the weighed dish was then evaporated, the residue washed with warm water to remove fatty acids not belonging to the series of food fats, and after the removal of the water, dried at 100° C., and cooled in a dessicator in a vacuum until by alternate drying and cooling constant weight was obtained. The weight of the final residue was recorded as representing the quantity of neutral fat and fatty acid present in 1 gm. of feces.

Following this first step of the experiment, the estimation of the total neutral fat plus fatty acid, the residue of feces from which this had been extracted was analyzed for soap. The dishes used for the evaporation of the absolute alcohol and chloroform extracts from the first extraction were washed with boiling alcohol, and this alcohol added to twice its quantity of hydrochloric acid alcohol, consisting of a solution of hydrochloric acid in 95% alcohol of a strength of 3% hydrochloric acid. The capsule from which the neutral fat and fatty acid had been extracted was combined with the capsule extracted by petroleum ether in the Soxhlet tube in the first part of the process, the capsule made up of a mixture of the scrapings of the residue of the original extract of absolute alcohol and chloroform left after extraction with sulphuric ether, and the filter papers used for filtering the sulphuric ether and petroleum ether extracts, in a new capsule, and this new capsule boiled under a reflux condenser for one hour in the above mixture of 3% hydrochloric acid and the alcohol washings of the dishes of the first experiment. The capsule was then transferred to the Soxhlet tube and extracted with chloroform for twelve hours. The hydrochloric alcohol and chloroform extracts were then evaporated separately and the residue in each taken up in sulphuric ether, the combined sulphuric ether extract filtered, the filtrate evaporated, the residue taken up in petroleum ether, and the process of extraction continued as described in the first part of the process. The weight of the final residue of this second extraction was recorded as representing the quantity of soap present in the 1 gm. of dried feces.

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† If a good movement of the bowels occurs on the first and second days or on the second day of the experiment, all later feces represent test diet excretion.

[3] Poda: Zeitschr. für physiologische Chemie, 25, 1898, S. 353.

[4] Camerer: Zeitschr. für Biologie, 20, 1884, S. 355.

[5] Schmidt and Strasburger: Second edition, page 111.

[6] *Ibid.* p. 117.

The method used in our work was as follows: One gram of dried feces was heated with 20 ccm. of concentrated sulphuric acid to which 5 gm. of sulphate of potash and a few crystals of sulphate of copper were added, for three to four hours until the mixture was clear. To this mixture, diluted with 200 ccm. of water, enough sodic hydrate to give a strong alkaline reaction was added (50 to 100 ccm.) and the mixture distilled into a solution of decinormal sulphuric acid until all the ammonia was separated (one-half to one hour). The acid was then titrated with decinormal sodic hydrate solution, and the per cent record of nitrogen calculated from this finding.

[8] Blauberg: Experimentelle und kritische Studien über Saulings feces. Berlin, 1897.

In cases where much fat is present the preparation of the dried residue must be accomplished by the drying of the feces under low heat in a vacuum.

The process so far carried out gave us the total quantity of neutral fat plus fatty acid, and the total quantity of soap present in 1 gm. of dried feces. The sum of these two determinations, the quantity of neutral fat and fatty acid and of soap represented the total quantity of fat present in 1 gm. of feces (plus cholesterin).

To determine the separate quantities of neutral fat and of fatty acid present the residue of the first part of the process representing the sum of these two factors was dissolved in sulphuric ether, this solution added to an equal quantity of absolute alcohol, and the acidity of the mixture determined by titration with a decinormal solution of sodic hydrate in alcohol using phenolphthalein as an indicator. By multiplying the number of cubic centimeters of decinormal sodic hydrate used by the coefficient 0.0284 — which represents the equivalent of 1 ccm. 1-10 normal sodic hydrate in stearic acid — the quantity of fatty acid present in the 1 gm. of feces was calculated. By subtracting the quantity of fatty acid thus determined from the quantity of neutral fat plus fatty acid previously determined, the quantity of neutral fat was estimated. This analysis gave us the total quantity of fat and the quantity of neutral fat, fatty acid and soap present in 1 gm. of dried feces. From these records the per cent of total fat in the dried residue of the feces, and the proportion of the total fat present in each of the three forms of neutral fat, fatty acid and soap were calculated and these final records tabulated.

Duplicate analyses of the total fat were made in several cases, using sulphuric ether for extraction in the Soxhlet in the place of chloroform. The ether extraction was run for sixty hours, the absolute alcohol and sulphuric ether extracts of the first part of the process, and the acid alcohol sulphuric ether extracts of the second part of the process were evaporated, the residues taken up separately in petroleum ether, the petroleum ether extracts combined, and the method continued as already described.

The results of the two methods of extraction, that by chloroform, and that by ether, in the cases in which both methods were applied, varied very little. As a rule the results by the chloroform method gave a slightly larger quantity of fat. As experiment showed that the complete extraction by chloroform was accomplished in much less time than by ether, the chloroform method was adopted in routine, and the records given are those obtained by this method.

As described, both sulphuric ether and petroleum ether were used for solution of the fat obtained by the Soxhlet extraction. It was found that the extract obtained from the residue of the Soxhlet extraction, whether chloroform or sulphuric ether were used in this extraction, by the use of sulphuric ether as a solvent, was invariably larger than that obtained when using petroleum ether. If the extraction of the Soxhlet residue was first made by sulphuric ether, filtered, dried to constant weight and weighed, and this extract then treated with petroleum ether, the weight of the latter extract was invariably less than that of the former. If, on the other hand, the Soxhlet residue was first extracted with petroleum ether and the undissolved residue left after pouring off the petroleum ether treated with sulphuric ether, a further quantity of this residue, amounting sometimes to 10% of the total extract of fat present, would go into solution in sulphuric ether. If this sulphuric ether extract were dried and extracted with petroleum ether a portion, but not the whole, would go into solution in petroleum ether. So that by any method of treatment the total sulphuric ether extract was larger than that of petroleum ether. As, however, it seemed clear as the result of experiment that the sulphuric ether solution contains some substances other than fat it was decided to take the extract from petroleum ether as the final record of the fat content. As, however, it was also clear that the quantity of fat substance which could be extracted by petroleum ether was greater where a sulphuric ether extract was first made and a petroleum ether extract made from this than where an extract from the Soxhlet residue in petroleum ether alone was made, it was found necessary to use first sulphuric ether and then petroleum ether in obtaining the final fat extract.[7]

DETERMINATION OF STARCH.

The method employed was Strasburger's[‡] modification of the Volhard-Pflueger method.

The stool is dried, ground fine and dried again

[7] References in regard to method of analysis of fats: The general plan of the method follows that suggested by Müller for application in clinical work. Fr. Muller: Zeitschr. fur klin. Med., 12, 1887, S. 101.

For extraction of the dried residue the method recommended by Rosenfeld for extraction of fat from tissue by chloroform was used. Rosenfeld: Centralbl. für innere Med., 1900, no. 33.

It is recognized that other substances besides fat are taken up from the feces by chloroform and ether, — such as cholesterin, coloring matters and the phosphorus fat lecithin. Hoppe-Seyler: Physiologische Chemie, Berlin, Hirschwald, 1881.

Petroleum ether was used for final solution of the fat because as proven by our experiment it takes up less matter other than fat than sulphuric ether. The final residue obtained by the method recorded as total fat consists actually of true fat plus lecithin and cholesterin.

to constant weight in the dessicator. Two grams are accurately weighed and placed into an extraction flask of about 300 ccm. capacity; 100 ccm. of 2% HCl in distilled water are added and the whole boiled for one and one-half hours with a reflux condenser. After cooling, NaOH is added till the reaction is almost neutral, care being taken to retain a faint acidity to litmus. This is filtered rapidly through a hardened folded filter and carefully washed with distilled water. The filtrate is placed in a measuring flask of 200 ccm. capacity and distilled water added to the mark. Of this filtrate 50 ccm. are placed in a wide beaker of about 300 ccm. capacity and 60 ccm. Fehling's solution and 35 ccm. distilled water added. It is covered with a watch glass and suspended from a ring stand in the water bath in such a way that the contents is about 1 cm. below the surface of the water in the bath. It is essential that the water in the bath be boiling vigorously from the time that the beaker is placed in it till it is removed. After exactly thirty minutes the beaker is taken out and about 130 ccm. of cold distilled water are added. The content of the beaker is then filtered through a carefully prepared Gooch crucible. The fine precipitate of copper oxide collects on the filter and is thoroughly washed with water till the wash water is no longer alkaline. A rubber tipped glass rod is useful in collecting the copper oxide that adheres to the side of the beaker. The Gooch crucible is placed on the clean suction flask and a few ccm. of HNO_3 (S. P. 1.2) are added. The crucible is covered with a watch glass to prevent loss through foaming. When all the acid has dropped into the flask without the aid of the pump the crucible is thoroughly washed with water under suction. The filtrate is placed in a porcelain evaporating dish and about .5 to 1 ccm. concentrated H_2SO_4 added, and the whole evaporated on the water bath until all the HNO_3 is driven off. The residue, which consists of crystals of $CuSO_4$, is washed with a little distilled water into a measuring flask of 300 ccm. capacity. Concentrated Na_2CO_3 is added till all the acid is neutralized and a permanent precipitate appears. Then 50 ccm. saturated H_2SO_3 are added. A clear greenish-blue solution results, which is heated to the boiling point and immediately titrated with $\frac{n}{10}$ KCNS till the color has entirely disappeared. The solution is allowed to cool and water added to the 300 ccm. mark. After thoroughly shaking it is filtered clear and 100 ccm. measured with a pipette into a beaker and 50 ccm. HNO_3 C. P. (S. G. 1.2 — free from HNO_2) and 10 ccm. saturated ferric ammonium alum are added. A deep red color appears; $\frac{n}{10}$ $AgNO_3$ solution is carefully added from a burette until the cherry-red color gives way to an orange red. The amount of $\frac{n}{10}$ $AgNO_3$ solution used is multiplied by three and deducted from the number of cubic centimeters of $\frac{n}{10}$ KCNS used and the result indicates the amount of the copper bound by the CNS. One cubic centimeter $\frac{n}{10}$ KCNS equals 6.32 mg. copper. The corresponding sugar value is found by reference to Pflueger's table and multiplied by the factor 0.94 (Soxhlet, Linter, Duell)§ to obtain the amount of starch.

In the method employed by us we have substituted the Gooch crucible for the asbestos filters of Pflueger. The crucibles must be carefully lined with long fibered asbestos in the usual way, and care must be taken to obtain an even coating, which is firm enough to withstand considerable pressure, but not so thick that it will be clogged with copper precipitate. If properly constructed the entire filtration takes from one quarter to a half hour. We have found that it is easier to obtain satisfactory results with the Gooch than with the funnel filter of Pflueger. The end point of titration with the ferric ammonium alum, however, is not easy to determine, and a number of estimations were made with sugar solutions of known strength to serve as a comparison with the starch determination.

The total weight of the dried residue of the specimen of feces used was represented by the sum of the weight of the dried residue of the three portions of the feces used, the nitrogen portion, the fat portion and the carbohydrate portion. This was recorded in each case.

These records of the weight of dried residue do not in many cases represent the average daily excretion of the individuals under the test diet. In some cases the quantity of daily excretion varied within wide limits, in others this quantity of fresh feces was fairly regular upon each day. In the records of the cases in which the whole fecal excretion for the four days of experiment was obtained and reduced to dried residue a record of the average quantity of dried residue per day for the whole experiment is given, in addition to that of the specimen of the third or fourth day upon which the analysis was made.

In tabulating the quantities of the total nitrogen, total fat and total carbohydrate contents of the feces in our tables the records are given in per cent of dried residue.

It may be urged that such per cent records do not represent good data for judging the total utilization of food substances in the alimentary tract. That the record of the total amount of nitrogen, fat or carbohydrate contained, in the daily excretion on the test diet, the grams per day, is the proper record to serve as an index of food utilization.

This is true, and if it was the object of these records to estimate this fact of absolute daily utilization of the food products, such records would have to be used. The object of our method is not, however, to determine the actual figures of utilization of the food, but to obtain comparative records of the feces content and through these of the comparative condition of function in individuals under examination.

The results of our experience with the subject

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‡ J. Strasburger: Arch. für die Gesammte Physiologie, vol. 84, 1901, p. 173.

A. S. Schmidt and J. Strasburger: Die Faeces des Menschen, Berlin, 1901, p. 165.

E. Pflueger: Arch. für die Gesammte Physiologie, vol. 69, pp. 416–414, 423–430, 437, 439–442, 468–471.

Bickel: Arch. für die Gesammte Physiologie, vol. 75, p. 248.

§ Chemisches Centralbl., 1891, p. 733.

have led us to believe that, under the conditions which obtain for the performance of this method of the study of the function of the alimentary tract as applied in general work in clinical medicine, these per cent records of the nitrogen, fat and carbohydrate content of the feces are more serviceable for use as comparative records, as indications as to whether or not the functions studied by our method are normal or abnormal, than actual records of the total daily fecal excretion of nitrogen, fat and carbohydrate in grams per day.

The reasons for this conclusion are given in the following statement of facts and discussion of the subject. To obtain accurate records of the average daily excretion of nitrogen, fat or carbohydrate in an individual upon a test diet the whole fecal excretion of three or four days must be collected and the determination made from this mixture. By giving carmine with the food at the begining and end of the test diet régime an accurate collection of the test diet excretion for a period of days can be made.

The collection of feces in this way necessitates an amount of observation and labor which makes the method impracticable for ordinary clinical work. It is, however, practicable for the physician to place his patient upon the test diet and, without undue labor or excessive management as to precaution, obtain a specimen of feces representing the excretion of the third or fourth day of the régime, which he can have analyzed.

The collection of the whole excretion of the four days of experiment should, of course, always be attempted. In performing the experiment, however, in practice it is often very difficult where we trust to the patient to accomplish this object. Frequently, as in some of our cases, there will be no movement for two days and a large one on the two succeeding days. Or there will be two very constipated movements of much less than normal size on the third and fourth days. Or one stool will be obtained and diarrhea will then appear.

It is these practical difficulties which have led us to investigate what can be done with a per cent method of records of single day specimens for the purpose of the study of the subject in hand in general clinical work. The full metabolism experiment is certainly to be advised where it can be accomplished. For, as described later, the per cent records may, in certain pathological cases, though they give us a part of our diagnosis, give very inaccurate results as regards the understanding of some of the functions.

The points which I am emphasizing are that this method of examination is, in the general run of cases, an accurate method for clinical work, and that it can be used in such work where the method of calculation of total excretion per day cannot be accurately used.

A record of the actual quantity of nitrogen, fat, etc., of single daily specimens of feces in grams per day may or may not give a correct estimate of the average utilization of food products of the individual under the test diet. For the variation in the size of daily fecal excretion, the weight of the fresh feces or the dried residue of separate days under the experiment is very considerable. In our experiments, for example, the variation between the quantity of feces of the third day and that of the fourth day was not infrequently 40 gm. in weight of moist feces, or 7 to 8 gm. in weight of dried residue.

In some cases no feces was obtained on the second and third days, and a large excretion, 200 to 300 gms., on the fourth day, so that records of the findings of single daily excretions in grams per day would show extreme variations in the same individual or among different individuals, and could not possibly serve for average records of normal excretion of nitrogen, fat, etc., for use in the determination by comparison of these records with those of a given case, whether or not the utilization of these substances in our test case was normal or abnormal.

On the other hand, the proportions of nitrogen, fat and carbohydrate in each daily specimen of feces obtained under the test diet in any individual should be and are, as proven by experiment, fairly constant. These proportions are not dependent upon the size of the varying daily excretions, but represent the average excretiou of the food substances.

The per cent records of a single daily specimen of feces, therefore, represent good data for estimating the proportional utilization of food substances in a given case as compared with that of another case, or with the average utilization record of normal cases. They are much more serviceable in this respect than records of total daily excretion in grams per day determined from examination of single daily specimens.

So unless regular metabolism experiments made by the analysis of the whole fecal excretion of the several days' period of test diet régime are done, the per cent estimations of single specimens of feces are the most accurate and most serviceable records for the purpose of our experiment.

Conclusions based upon such per cent records, both as to the variation in the extent of utilization of food substances, which occurs in different normal individuals and as to whether or not the utilization in a given case is normal or abnormal, are, then, in the light of our general knowledge justifiable.

Since this is so, and since the obtaining of records of this kind which are reliable for use in the formation of conclusions as to the relative condition of function in given individuals, is much more practicable in the pursuit of regular clinical work, than the collection of records of the total excretion of food substances in grams per day, which would be equally reliable for the formulation of such comparative judgments, we have adopted this method of per cent records in the establishment of our collection of standard normal records for use in comparison in clinical work.

The records of a study of the separate daily specimens of feces of two individuals during the test diet régime, given in the following table, will serve as an experimental demonstration of these facts upon which the above conclusions are based, the fact of the constancy of the per cent records in separate daily specimens of feces of an individual, regardless of the quantity of fecal excretion of any separate day, which indicates that such records of a specimen of one day of a test diet régime represent the average per cent composition of the feces under the test diet, and the fact of the extreme variation which may occur in the records of total excretion of food substances in grams per day, owing to the variation in the total quantity of feces of the separate daily excretions.

As you will see by a study of this table the size or dried weight of the separate daily feces in the same case varies greatly. The quantity of nitrogen, fat, etc., per day varies with these quantities of feces and, as you can see by calculation of the results, varies greatly on separate days.

The proportions of nitrogen, fat, etc., in these separate feces are, however, fairly constant. They do not vary regularly with the quantity of feces or in proportion to this quantity.

Table I.

		Grams, weight of fresh feces.	Grams, weight of dried residue.	Nitrogen, per cent.	Nitrogen, grams in feces.	Fat, per cent.	Fat, grams in feces.	Carbohydrates, per cent.
Case I. — One daily excretion on each of four days of experiment.	Feces of third day,	70.2	19.4	5.29	1.025	21.2	4.1	6.81
	Feces of fourth day,	89.4	21.1	5.04	1.05	23.2	4.9	7.05
Case II. — Excretion of first and second day. None on third and fourth days, excretion on fifth and sixth days. Diet continued six days.	Feces of fifth day,	226	57	5.4	3.07	24.1	13.6	
	Feces of sixth day,	54	12.1	5.04	0.60	23.2	2.8	

In the use of these per cent records in the study of clinical cases as a means of determining the relative degree of utilization present in a given case as compared with the normal, of determining whether or not the actual utilization of nitrogen, fat, etc., in this case is normal, or decreased by disturbance of function, it must be borne in mind that in any pathological case where the excretion of one food substance, nitrogen, fat or carbohydrate, is excessive, thereby increasing materially the total bulk of the stool and, so to speak, diluting the feces content of the two remaining constituents by the greater quantity of excess of its own substance, this method of observation, while it gives us an accurate indication of the presence of an excess of the particular substance in question, thereby enabling us to make a diagnosis of the disturbance of function present in this respect, does not give us accurate indications in regard to the condition of utilization of the two remaining substances.

The fact that the per cent of these remaining substances is normal, or even low, does not prove that the total excretion of these substances is not actually increased. This fact can be illustrated by the record of an experiment upon a patient with obstruction of the gall duct (see Table II). In this case the function of fat utilization was greatly affected, causing a great increase of the bulk of fat in the feces and consequent great increase in the total bulk of the feces with comparative dilution of the fecal content of nitrogen. Yet the total excretion of nitrogen in this case was actually increased over normal, as the calculation of the average total excretion in grams per day reveals. The per cent of nitrogen was, however, low normal. In the second case, on the other hand, the per cent records suffice for the determination of the fact that both the fat utilization and the nitrogen utilization are abnormal, both excretions being increased, and no estimation of the average total excretion per day is necessary.

Whenever in clinical work the result of the examination of the single day specimen of feces giving the per cent record of nitrogen, fat and carbohydrate and the records of the weight of dry residue shows an increase in the per cent of one food substance over normal, at the same time increasing the bulk of the feces so that the weight of the dried residue is much over the normal limits, we cannot, strictly speaking, conclude accurately from the per cent records whether or not the utilization of the two remaining substances, which show a normal or low per cent, is normal.

Our examination by this clinical method has, however, determined for us the existence of a definite pathological condition of function and the nature of the function which is principally disturbed. We can, then, since we have determined the existence of a pathological condition, make an accurate estimation of the condition of

Table II.

	Weight of feces, average per day.	Weight of dried residue per day.	Nitrogen, per cent of dried residue.	Nitrogen, grams per day.	Fat, per cent of dried residue.
Case of jaundice: Examination of mixed three-day excretion.	315 gr.	59 gr.	4.14 Normal average, 5	2.49 Normal, 1 gr.	52 Normal, 20–35
Case of pancreatic disease? Examination of single daily specimen.	297 gr.	58 gr.	6.81		48

functions for utilization of the other two food substances by ordering a complete three days' metabolism experiment with a determination of the total excretions in grams per day.

If, on the other hand, the result of our experiment shows a record of normal per cent findings, and a normal weight of dried residue, we have determined the question of the conditions of the functions of the alimentary tract by our clinical method and need go no further. Practically, the only two conditions in which our clinical method of per cent records plus the weight of the dried residue fail to give us accurate determinations in regard to the utilization of all three classes of food substance and thus possibly necessitate the use of the more complete method in the study of the case, are conditions in which the function of fat utilization is seriously disturbed or conditions where the daily excretion of feces is on the average abnormally large, as represented by the weight of dried residue.

In the first instance our method gives us our diagnosis of the disturbance of one function. If it is necessary for the understanding of the case to determine the condition of the other functions we can then do so.

In the second instance we may, of course, have a normal per cent of the various food substances and yet have an actual increase in the total quantity of one or all, that is, a less utilization of these substances than in the normal.

In such cases the record of the increased quantity of dried residue, if such increase is found to be a fact, by obtaining the average of this factor for the days of the experiment, indicates to us, unless we have some affection of the intestine, such as hemorrhage or inflammation with a large albuminous exudate present, that the function of utilization of food substances is disturbed, disturbed if the per cents of all three food substances are normal for all three, or if one substance is above the normal average though still within the limits of the normal, and the other two average findings disturbed principally for this special food.

The existence of this contingency described, the fact that where one substance in the feces and the total weight of dried residue are at the same time increased, the per cent records of single daily excretion in regard to the two remaining substances may not give reliable indications as to the normality or abnormality of these substances, does not, of course, affect the validity of our normal records as collected in this experiment for serving as indices of normal findings and the variations of findings in the normal.

It affects the value of these records for use in comparison in clinical work only in this respect: that in certain conditions, notably conditions of great excess of fat in the feces, we cannot use our records for comparison in respect to the normality or abnormality of the nitrogen and carbohydrate content.

It enables us, however, as well as by the more laborious method, to determine even in these cases the principal fact of a disturbance of fat function. It enables us in all cases where the proportion of the nitrogen, fat and carbohydrate and the quantity of the dried residue are within the normal limits, to determine as well as by the more laborious method, the question of the normality of function.

The records of the normal characteristics of the test diet feces, under the method of examination and record described, collected as the result of 17 examinations upon 11 normal individuals, are given in the following table.

As the one object of the experiment was to provide and test by experiment a method of examination and record which could, where necessary, be used for the determination of the condition of function in cases in which single specimens of feces representing the excretion of one particular day of the experiment were obtained as well as in cases where it was possible to obtain the whole of the four days' expression, the records included are in all cases those of the examination of one separate day's excretion — that of the third or fourth day. [See Table III, page 665.]

The object of this experiment for the collection of a set of records of the characteristics of the feces of normal individuals as examined by this method for the study of the function of the alimentary tract was not only to give us some standard records for comparison in the use of the method in general work, but also to enable us to determine from the degree of uniformity in the characteristics of the feces of various normal individuals in regard to each of the particular finding of importance for the study of the several functions of the alimentary tract, as the finding of proteid, of fat, of starch, etc., something in regard to the degree of usefulness of the method of general work. In the use of the method in any given case, we judge of the condition of any particular function as, for example, that of utilization of proteid, or that of the utilization of fat, in this case, by a comparison of our findings in this regard the total nitrogen, or the total fat of the feces with the normal finding. If the quantity of the nitrogen or of the fat is above the normal limits we diagnose disturbance of the function of proteid or of fat utilization respectively. If the quantities are within the normal limits, we judge that these functions are performing normally. Clearly, then, the degree of usefulness of this method of determination of the existence of normality or abnormality in regard to any particular finding by quantitative comparison of results is directly dependent upon the degree of uniformity or constancy of the particular finding in the normal results. If the results of our experiment upon normal individuals indicate that the capacity of function for the utilization of a given food substance on a definite diet is a matter of great variation in normal individuals, or in the same individual at different periods, then the usefulness of our method for making determinations of the normality or abnormality of function is limited to cases where marked disturbance of function exists.

For the increase in excretion of any particular

TABLE III.

Case.	Microscope examination.		Quantitative analysis.			Differential analysis of fats.			Weight of dried residue of specimen, grams.	Weight of dried residue, average daily weight.
	Muscle.	Starch.	Nitrogen, per cent of dried residue.	Fat, per cent of dried residue.	Carbohydrate per cent of dried residue.	Neutral fat, per cent of total fat.	Fatty acid, per cent of total fat.	Soap, per cent of total fat.		
I. Child, 6 years.	Few muscle fibers partly digested. No masses of muscle in connective tissue.	No free starch giving iodine test. Occasional potato grain with starch giving faint color with iodine.	5.04	20.2	11.2	29.7	37.1	33.1	16.4	20.5
Same case, second experiment.	Same.	Same.	5.08	21.1		28.8	39.2	36.0		
II. Child, 6 years.	Same as Case I.	Same as Case I.	5.04	39.5					18.3	
Same case, second experiment.	Same.	Same.	5.00	30.2					19.6	18.0
III. Child, 6 years.	Same.	Very rare starch granule staining with Iodine.	5.13	19.8	11.0				12.1	
IV. Child, 12 years.	A little more muscle than I.	No starch (free).	5.4	33.0	7.1	32.2	35.7	27.8	21.3	19.1
Same case, second experiment.	Same as I.	Same.	4.99	31.1					15.6	
V. Child, 12 years.	Same as IV, first experiment.	No free starch.	4.49	35.5	6.39	33.1	34.3	33.1	54.1	
Same case, second experiment.	Same.	Same.	4.41	32.6						
VI. Child, 13 years.	Same as I.	Same as I.	4.9	38.3					13.1	
VII. Adult.	Same as I.	Same as I.	5.28	21.2	7.05	28.8	38.1	33.1	20.0	21.1
Same, second experiment.	Same.	Same.	5.34	26.0						
VIII. Adult.	Same.	Same.	4.48	22.0	6.88	29.9	36.6	33.5	16.1	19.7
IX. Adult.	Same.	Same.	5.06	34.2					22.5	22.0
X. Adult.	Same.	Same.	4.76	19.2	6.50				17.0	
XI. Adult.	Muscle slightly more than average.	Same.	5.29	33.6		31.4	34.8	33.8	29.3	18.7
Same, second experiment.	Same as above.	Same	5.15	28.4					19.0	

substance, following a disturbance of function of moderate extent existing in an individual of an average or more than an average capacity of function in regard to this special food substance might, in case that the variation in the substance was normally of wide extent, though it brought the total quantity to a figure abnormal for this individual, still leave the record of total quantity within the limit of variation of normal figures obtained from the study of a number of normal individuals. If, on the other hand, our experiment proves that the capacity of function of normal individuals for a given substance is constant in all cases, the limits of variation in the quantity of this substance in the feces of normal individuals under a test diet being very slight, then we may consider that the usefulness of our method extends to the diagnosis of degrees of disturbance of moderate as well as great extent, that is, that it is possible from our findings by the method, in a great majority of cases, to say definitely that a given function is normal or disturbed.

Let us now go over the records of our study of normal individuals to determine what these records show in regard to this question of uniformity of findings of the various excretions upon the determination of which our judgment in regard to the condition of the various functions studied by this method depends; that is, to determine the verdict of the experiment as to the degree of usefulness of the method of study in regard to each of the functions of the alimentary tract.

The findings of meat remains, the muscle fiber, as revealed by the microscopic examination of the feces which serve as an index of the capacity of function of the individual to digest meat proteid in our experiment, showed great uniformity in all the normal individuals examined. The findings in children and adults were practically the same. From the definiteness and constancy of this finding in the normal, it would appear that it would be possible for any observer familiar with the normal finding to determine in any given case whether or not the finding was abnormal and thus to diagnosticate where it existed the presence of a disturbance of digestion of meat.

The records of nitrogen excretion, which serve as the index of proteid utilization in our experiment, were as follows:

Average finding in 17 examinations upon 11 individuals,	4.98%
Minimum finding in 17 examinations upon 11 individuals,	4.41%
Maximum finding in 17 examinations upon 11 individuals,	5.40%
Extreme variation of all findings,	0.99%
,, ,, found in one individual,	0.41%

The findings in the three cases of young children average slightly higher than in the older children and adults, 5.05% with a minimum of 5% and a maximum of 5.4%, as against an average of 4.95% and a minimum of 4.41% and a maximum of 5.34% for older children and adults. This suggests that the utilization of proteid upon this test diet is slightly less in young children than in individuals of greater age.

The findings of our experiment as regards the study of proteid utilization would, therefore, indicate that the capacity of function of normal individuals for the utilization of food proteid, under the conditions of diet in the experiment, is fairly uniform. From this fact it would appear that by the use of the method of investigation used in the experiment it should be possible to determine with considerable accuracy the existence or non-existence of any disturbance of the function of the absorption of proteid in any case under observation.

Examples of the possibilities of determination of the existence of a disturbance in the function of the utilization of proteid food by the method of study may be seen in the following records of two cases, in which the proteid finding was abnormal.

Case I. Cancer of pancreas.

Microscopic examination: Great increase in quantity of muscle fiber over normal.

Total nitrogen, 7.81%.

Case II. Enteritis with diarrhea: Microscopic examination showed quantity of muscle fiber normal, evidencing normal function of digestion of this proteid.

Total nitrogen, 8.05%.

According to our explanations on page 665, the increase of proteid in this case may be due to either an increase of food proteid or an increase of body proteid (diarrhea being present). No absolute deduction as to the function of proteid utilization can be made.

The finding of total fat contents of the feces which serve as the index of the utilization of fat in our experiment were as follows:

Average finding of 17 examinations upon 11 individuals,	28.5%
Minimum finding of 17 examinations upon 11 individuals,	19.2%
Maximum finding of 17 examinations upon 11 individuals,	39.5%
Extreme variation of all cases,	20.3%
,, ,, in a single individual (two examinations),	9.3%

If we contrast the findings in the three cases of young children with those of the older children and adults, we find that the average is much the same. That is, it appears that the utilization of fat under this test diet is equally good in children and adults.

The findings of our experiment as regards the study of fat absorption would therefore indicate that the capacity of function of normal individuals for the utilization of food fat under the conditions of diet used in this experiment shows a considerable variation. And this extreme variation is not a matter of one exceptional case — one extremely low finding and one extremely high finding. The maximum figure is approached in several cases and the minimum in several cases.

Since this is the fact it would appear that absolute determinations of the existence of disturbance of fat absorption could be made by this method of comparison of the findings of the case under experiment with the normal findings only in cases where the normal excretion was large, so that a moderate deficiency in the absorption would increase the quantity of feces fat over the maximum normal limits, or in cases with a great deficiency of fat absorption. The variations in the quantity of fat in the normal are so extensive that it would appear perfectly possible for any normal individual whose capacity for utilization of fat was above the average to have a considerable deficiency of absorption of food fat, without increasing the quantity of feces fat above the normal limits. We can say in regard to any individual with symptoms of disturbance of intestinal function or of nutrition, whose feces show as the result of examination a fat content which is above the average normal, though still within the normal limits, that his feces findings suggest that a disturbance of the function of fat utilization may be a cause of his symptoms. But we can absolutely diagnose the existence of such a disturbance of fat function only in cases where the fat excretion transcends such maximum findings as are common in normal individuals.

This variation in fat content of the feces in the normal individuals on any definite diet is a well recognized fact. Thus v. Noorden found in the same individual upon the same diet a daily variation of from 0.5 to 4.5 gm.[9] It is clear that such a variation would show equally in results obtained by actual calculation of the average daily excretion in grams per day as by those of this per cent method of calculation.

The findings in regard to the proportion of neutral fat in the total fat content of our feces, which serve as the index of the digestion of fat in our experiment, indicate that the proportion of this substance to the total fat excretion is fairly constant in normal individuals. In no case was the proportion above one third of the total fat. The findings in this regard would indicate that the capacity for the digestion of fat in normal individuals under the diet given was fairly uniform. The method of examination should, therefore, enable us to determine the existence of any considerable disturbance in this function.

The records of carbohydrate excretion, which serve as the index of carbohydrate utilization in our experiment, were as follows:

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[9] v. Noorden: Lehrbuch der Pathologie des Stoffwechsels, Berlin, 1893, sup. 7, S. 33.

Average finding of 7 individuals,	8.01%
Minimum ,, ,, 7 ,,	6.39%
Maximum ,, ,, 7 ,,	11.2%
Extreme variation in all cases.	4.81%

The variation found in these normal findings for carbohydrates is, if we take the minimum and maximum records, very considerable in proportion to the quantity of carbohydrates present. A further study of the records, however, reveals the fact that a discrepancy from the common finding exists only in the cases of the two young children examined, the findings of the older children and adults showing a fairly uniform character. The findings in the two children are both much higher than in the other cases, but are very similar to each other. The suggestion of this showing of our experiment is that the utilization of carbohydrates upon this diet is less good in younger children than in older persons. In using this method of examination for the study of function in the general run of clinical cases, therefore, we must use two separate sets of normal records for comparison, — one for young children and one for adults. If this course is followed, it would appear from the results of our experiment that the method provides fairly accurate means of determining the existence of any considerable disturbance of the function of utilization of carbohydrates, since the records obtained in normal individuals of the same general class as to age are fairly uniform. The number of observations made in regard to this point is, of course, too small to justify a decided statement to this effect. But as far as these records go this is the evidence: the extreme variation of the 5 cases of older children and adults being only 0.71%, the minimum finding 6.39%, and the maximum 7.1%, the average 6.78%, while the two cases of young children show records of 11% and 11.2%, respectively.

The finding in regard to starch remains as revealed by the microscopic examination of the feces, which serves as the index of starch digestion in our experiment, showed marked uniformity in all the normal individuals examined. The result of our experiment upon this point convinced us that under the Schmidt and Strasburger test diet the findings are so definite that any trained observer can determine in any case the existence of a normality or abnormality of this finding.

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BLOOD CULTURES IN TYPHOID FEVER WITH COMMENTS UPON THE HOSPITAL TREATMENT.

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Conradi [1] has recently found typhoid bacilli in the blood of a child four days before the first symptoms of the disease appeared, and he further records the discovery of typhoid bacilli in the feces of two individuals eight and eleven days, respectively, before they developed typhoid fever. These facts indicate that typhoid fever can be contagious in the prodromal and early stages of the disease, and in confirmation of this point Conradi has also been able to furnish statistical evidence. Of some six hundred cases of typhoid fever, eighty-five were shown to have acquired the disease by contact, and of this number forty-nine contracted the infection during the first week of illness of the primary case. It, therefore, follows that an early diagnosis of typhoid fever is absolutely essential if its spread is to be prevented.

The Widal reaction is rarely positive in the first week, but it is present in about seventy-five per cent of the cases in the second week, and eighty-five per cent of the cases in the third week, thus becoming a more valuable test diagnostically the longer the disease lasts. Although the Widal reaction is present at some time or other in practically all cases of typhoid fever, it may persist for so short a time as to be overlooked. Furthermore it is not absolutely reliable, because it occasionally persists after a previous typhoid infection, and may even develop in the course of some other acute illness. The test represents an incalculable advance over previous methods of diagnosis, but Conradi's work on the early contagiousness of typhoid fever shows that earlier methods of diagnosis must be sought.

The cultivation of typhoid bacilli from the circulating blood appears to answer this requirement, for it has been convincingly shown [2] that it is possible to obtain a positive blood culture from over ninety per cent of typhoid patients during the first week of illness. The per cent of positive cultures falls very rapidly as the disease progresses, varying according to different observers from fifty-seven to seventy-three per cent in the second week, forty-three to sixty per cent in the third week, and from twenty-six to thirty-eight per cent in the fourth and fifth weeks. The blood culture method is, therefore, pre-eminently advantageous for the early, and the Widal method for the late diagnosis of typhoid fever.

The technic was at first a bar to the general adoption of this method, but the introduction of various bile media [3] by Conradi, Kayser, Meyerstein and others has greatly simplified the process. It was supposed that the blood used for the test must be removed from a vein to avoid contaminating organisms, but Conradi found that the blood taken from the ear [4] would do as well, and his observations have been confirmed by Peabody [5] working at the Massachusetts General Hospital. The Kayser-Conradi Typhus Galleröhre for the use of the general practitioner have been employed for some time in Germany, and similar outfits are now furnished by our own boards of health.

The difficulty of an early clinical diagnosis in typhoid fever was well illustrated this last summer by the admission and discharge diagnoses at the Boston City Hospital. During the last seven months of 1907, two hundred and fifty-one patients entered with the diagnosis of typhoid fever, but only one hundred and sixty-five of this number were given the same diagnosis on discharge. Errors in diagnoses were undoubtedly made by the physicians who sent the patients to the hospital, but any one who has followed a medical service for some months is aware of the mild fever cases of doubtful etiology which occur upon it, and will be ready to concede that if these had been seen throughout their whole course many new diagnoses of typhoid fever would probably be made.

It was with the purpose of testing the new cultural method, particularly in the early and doubtful cases of typhoid fever, that our work was undertaken.

Technic. — Normal ox gall was collected in a sterile flask immediately after the death of the animal and then transferred to test tubes in quantities of 5 ccm. each. These were then sterilized for ten minutes at 100° C. on three successive days, but as contaminations with motile organisms occasionally appeared, the autoclave was later employed subjecting the media to a pressure of 10 lb. for ten minutes, the pressure reaching as a rule 18 lb.

The arm was prepared by a nurse or orderly who first scrubbed a broad area including and surrounding the elbow with soap and water, and then with 70% alcohol and finally applied a corrosive poultice for thirty minutes. The blood was invariably taken from the median cephalic vein, which, after the first few attempts, proved to be a simple procedure. We were surprised to find that it was often easier to puncture a vein which was not plainly seen, but was palpable, than a vein visible to the naked eye, but freely movable beneath the skin. The operation caused as a rule less pain than the removal of several drops of blood from the ear. It is far cleaner and allows one to obtain an abundance of blood which is entirely free from contamination. Its disadvantages are the time consumed in the disinfection of the arm with the consequent apprehension on the part of the patient, the risk of infection and the need of an assistant.

Five to ten cubic centimeters of blood were usually removed, and of this quantity 2½ ccm. were placed in each of the test tubes containing 5 ccm. of ox gall; a portion was also saved for Widal reactions and histological study. We found it of advantage to use two bile tubes. Thus, of twenty-one positive cultures eight times the bacilli were obtained from only one of the tubes after the first transfer, and in four of these eight cases one tube never showed a growth. The blood, after its transfer to the bile-enriching medium, was incubated for about eight to ten hours, and then four loops from each tube were transplanted respectively to two plain bouillon tubes. These were examined twelve hours later and of those thus examined five — 62% — were positive at this time. The growth in bouillon should be sufficient for the performance of a Widal test in less than twelve hours. In another series of cases we should use a greater number of loops of bile in the transfer. The bacilli were easily detected in the bouillon, which medium has this advantage over the other media that from it a Widal test can be made at once. Typhoid bacilli were obtained in twelve out of twenty-one instances on transfer to bouillon after twenty-four hours' incubation in the bile medium, not until after forty-eight hours' incubation in one instance, and only after seventy-two hours' incubation in three instances. Motility did not prove to be a safe guide in diagnosis and we preferred to first test the bacilli with a typhoid serum of known agglutinative power. The organisms were invariably found in pure culture and their reactions easily tested. Transfers were always made to plain agar (not sugar free) and often to blood serum and glucose agar, but we soon found that if the bacilli grew upon one medium they grew upon all.

We did not have much success with the transference of the bile to dextrose agar, making at the same time a stab in order to determine its ability to form gas. This method should enable a positive diagnosis of the paratyphoid group to be made in twelve hours.

The total number of cases studied was forty-five. Fifteen of these patients were later shown by the absence of the Widal reaction and course of the disease not to have had typhoid fever. The blood of one of these patients showed a positive culture of staphylococcus pyogenes aureus, and this occurred at a time when a positive diagnosis of osteomyelitis had not been made from the physical signs, and while typhoid fever was considered the probable diagnosis. This was the only instance in which we encountered an organism other than those of the typhoid group. It shows that the bile medium may be useful for the detection of other organisms than Eberth's bacillus.

Cultures from the circulating blood showed the presence of typhoid bacilli in twenty-one out of thirty cases of typhoid fever. The number of cases is so small that conclusions are only justified when these cases are considered in connection with those of other authors. For convenience we have classified them according to the week of the disease in which the culture was taken:

Week of disease.	Number of cases.	CULTURE:	
		negative.	positive.
1	5	0	5
2	19	8	11
3	2	0	2
4	0	0	0
5	1	1	0
?	1	0	1
relapse,	2	0	2
Total,	30	9	21

In three instances in which we examined the blood in a relapse typhoid bacilli were found. It would thus appear probable that blood cultures would be a useful point in the differential diagnosis between relapses and complications.

Positive blood cultures are somewhat more frequently obtained in the severe than in the mild cases of typhoid fever. Kayser (*loc. cit.*) gives the following data:

Nature of typhoid cases.	Total cases.	Positive cultures obtained.*
Very severe,	27	21 or 78%
Severe,	21	16 or 76%
Medium,	41	25 or 61%
Mild,	36	15 or 42%

The difficulty of classifying cases of typhoid fever in terms of severity is obvious. We have attempted to do it more from the general impression the individual made upon us than from any one arbitrary criterion. It would not be justifiable to draw far-reaching conclusions from such a small number of cases as we present in the following table:

Nature of Typhoid cases.	Total cases examined.	Positive cultures obtained.
Severe,	9	8 or 88%
Medium,	15	12 or 80%
Mild,	6	1 or 16%

We repeatedly attempted to prove that mild cases of fever entering the wards were of typhoidal origin, but almost invariably failed to do so. In only one such case, in fact, were we successful. There is no doubt but that better results would have been obtained if the mild cases had been examined earlier. The severe cases were examined on an average by the eleventh day, the cases of medium severity on the twelfth day, but the mild ones, on an average, not until the sixteenth day.

It is certainly only fair to state that as time went on our experience improved, and it is quite possible that an occasional positive case may have been overlooked in the first part of our work. Improvement in technic, of course, was bound to occur. The time saved in investigating a single case was easily reduced two thirds, so that we feel the blood culture method of diagnosticating typhoid fever can be introduced as a routine measure.

The organisms from nineteen of the twenty-one positive cases gave all the typical reactions for typhoid bacilli. The organism isolated from one of the patients, who clinically did not differ in type from the others, produced gas in dextrose agar, to a slight extent in plain agar and had a more diffuse growth on plain agar than was the case with the other organisms, but the initial acidity in litmus milk persisted. This organism was uncommonly motile, shorter and of smaller diameter than the typical typhoid bacilli. It resisted clumping with the sera of many other typhoid patients except in a dilution of one to ten, and was not agglutinated even by the patient's own serum until thirty-three days from the onset of the disease, and only then in a similar dilution. This patient's serum also failed to clump the laboratory stock cultures of typhoid bacilli except in a dilution of one to ten. It also completely failed to clump the laboratory stock cultures of alpha- or beta-paratyphoid bacilli except in the same dilution. v. Hösslin[6] has recently reported cases of this character. This case illustrates the advantage which the cultural method of diagnosis has over the agglutinative reaction.

The organisms of another case gave all the positive reactions for typhoid bacilli except that after the initial acidity was produced the latter changed back to a deeper blue than before. The changes in the acidity of the milk produced by this case (Gay) as well as by the previous case (Roan) are merely qualitative reactions and do not determine the classification of the organism.

The following tables show the variations of these two organisms in acidity and gas formation with the different sugar media in comparison with typhoid and alpha- and beta-paratyphoid bacilli. Plain bouillon was used from which the sugar was removed by the colon bacillus. To portions of this were added one per cent of lactose, saccharose, mannite, dextrin, maltose, galactose and dextrose. The fermentation tubes used were those devised by Theobald Smith to whom we are indebted for many suggestions.

Table of Acidity after Incubation for Forty-eight Hours.

Bouillon.	Control.	Typhoid.	Gay.	Roan.	Alpha-para-typhoid.	Beta-para-typhoid.
	No. of ccm. of $\frac{N}{100}$ NaOH used.					
Plain,	0.6	0.8	0.8	0.8	0.7	0.4
Lactose,	0.7	0.9	0.7	0.9	1.0	0.8
Saccharose,	0.8	0.7	1.0?	0.6	0.7	0.6
Mannite,	0.5	3.4	3.4	3.6	3.5	4.1
Dextrin,	0.6	0.8	1.3	1.2	1.3	1.0
Maltose,	0.6	3.3	3.3	2.8	3.0	3.6
Galactose,	0.7	3.4	3.6	2.6	3.1	3.8
Dextrose,	0.6	3.6	3.6	3.9	3.8	4.5

Table Showing Gas Formation after Forty-eight Hours' Incubation.

Bouillon.	Control.	Typhoid.	Gay.	Roan.	Alpha-para-typhoid.	Beta-para-typhoid.
Plain,	0	0	0	0	0	0
Lactose,	0	0	0	0	0	0
Saccharose,	0	0	0	0	0	0
Mannite,	0	0	0	+	+	+
Dextrin,	0	0	0	0	0	0
Maltose,	0	0	0	+	+	+
Galactose,	0	0	0	+	+	+
Dextrose,	0	0	0	+	+	+

From the quantitative results shown in the above tables, it is evident that Gay's organism agrees well with the typhoid organism, except that it produces a higher acidity in dextrin bouillon. In the table showing gas formation it corresponds throughout with the typhoid.

Likewise, it will be seen that the organism obtained from Roan agrees with the paratyphoids in acidity, especially alpha-paratyphoid, with which the greatest difference is but 0.5 ccm. in galactose bouillon. In gas formation this organism is identical with the paratyphoids.

Control tests were invariably made in the gas formation and acidity tests and were repeated until constant results were obtained.

HOSPITAL TREATMENT OF PATIENTS WITH TYPHOID FEVER.

Typhoid fever caused nearly six times as many deaths in Boston during 1907 as it did in Munich during 1906, yet the two cities have about the same population. Other cities in Germany and England also show much less typhoid fever than does our city. The record is still more unfavorable if we go farther back, because the year 1907 showed the smallest typhoid death-rate which Boston has so far attained.

The recent lowering of the typhoid death-rate has been brought about in this vicinity chiefly by hygienic measures of a general nature — such as closer inspection of water, milk and shellfish, both by the city and state authorities. Little has been done to prevent contact infection which Conradi and others have demonstrated to be the source of about one-fourth of all cases. It would therefore appear that the prevention of contact infection was the factor which demanded especial attention here at this time.

Two opportunities are open by which contact infection can be avoided: first, the early diagnosis of typhoid fever, and second, the detection of the bacillus carrier.

We have already alluded to Conradi's work which has shown that typhoid is especially contagious in the first week, and have demonstrated that by blood cultures an early diagnosis is possible. We are glad to again call attention to the fact that the Boston Board of Health is prepared to furnish blood culture outfits to those desiring them. Yet by this means only a portion of the contact infections can be avoided. The other source, the bacillus carriers, is entirely overlooked. With commendable energy, however, the State Board of Health has undertaken work along this line also and we undoubtedly shall hear much of it soon.

Fifty-five per cent of all diphtheria cases occurring in Boston during 1907 were treated in the South Department of the Boston City Hospital, and similarly fifty-four per cent of all fatal cases of typhoid fever which occurred in the city during the last five years were treated at one or the other of the three large hospitals. This is as it should be, because immediate contact infection is thereby reduced. That the practitioners in the city thoroughly approve of this course is shown by the large number of doubtful cases which they send to the Boston City Hospital, one third of the cases admitted with the diagnosis of typhoid fever in the course of seven months last year proving not to have the disease.

It is probable that the per cent of cases of typhoid fever which will be treated in the large public hospitals will increase, and for several reasons. Typhoid fever is a very expensive disease in private life. The duration of the illness, the necessity for at least one and usually two nurses, the two daily visits of the physician, or even the need of a doctor in constant attendance, and the frequent calls for specialists of one description or another contribute to this end. The cost is not lowered by sending typhoid patients to a private hospital. These hospitals consider such patients so undesirable that they demand rigid isolation with absolutely no contact between them and the nurses of other patients. Indeed, several of the private hospitals absolutely refuse to admit typhoid patients at all, because the surgeons, who chiefly patronize such institutions, will not tolerate the chance of infection of their own surgical cases with typhoid fever. Only wealthy patients can enjoy the privilege of being treated for typhoid fever in a modern manner in their own homes.

The large institutions on the other hand are well adapted to the care of typhoid fever. They contain many wards, and it is a simple matter to so group the typhoid patients that infection of other patients and attendants can be reduced to a minimum. The isolation of typhoid fever patients in hospitals was provided for in Germany in 1905.[6]

Nurses should be protected during the care of typhoid fever patients in hospitals. In a former paper[7] we showed that nurses working in six hospitals in Massachusetts were eight times as liable to contract typhoid fever as the ordinary citizen, and that hospital ward tenders under the same circumstances were thirteen times as apt to acquire the disease.

This last year (1907) forty-seven nurses in the State of Massachusetts have been thus attacked, while the total number of reported cases of typhoid fever in the state was two thousand three hundred and eighty-nine. Another year might not show that for every group of fifty typhoid patients a nurse developed the disease, but we think this not at all unlikely. Only ten of these nurses apparently contracted typhoid fever in private nursing, but thirteen of the hospital nurses, it is only fair to say, were infected by an early unrecognized typhoid case in a nurses' dining-room. It does not seem justifiable to expose twenty-three female nurses, fifteen male nurses and thirteen physicians on one day in the same institution to the risk of contracting typhoid fever from twenty-eight typhoid patients when a hospital possesses many wards and rooms into which these patients could be gathered and cared for by a third of the above number of attendants.

Isolation in separate wards is not by any means the whole story. Early diagnoses to determine when to isolate are essential. Fortunately, by the use of blood cultures, the early diagnoses are the ones most easily made. The possibility of making an early diagnosis probably decreases about five per cent a day after the first few days until well along in the second week when the Widal test becomes rapidly more and more positive. On comparing the dates upon which we made blood cultures with the dates of admission of these same patients to the hospital, we find that we lost on an average two days of time. This shows the need of such work being performed by those living in the hospital rather than by voluntary workers from outside. An early diagnosis demands much time, and allowance must be made for this in the organization of a medical clinic.

If it is really intended to stamp out typhoid from the community, patients should not be discharged from the hospital without a knowledge on the part of the health authorities as to whether they are typhoid carriers. The time at which the typhoid bacilli disappear from the stools and urine is a variable factor, and as far as the stools are concerned an uncontrollable one. It is perfectly feasible, however, to determine whether patients are free from bacilli. German regulations require isolation, when bacilli persist in the stools, until ten weeks after the beginning of the disease; after this period special rules are provided for those who may still be bacillus carriers. As yet no such regulation exists in Boston or Massachusetts, but a knowledge of the presence or absence of typhoid bacilli in the stools would exert much influence upon the date recommended for the discharge of a patient. Such work would demand much time, but it would represent a high standard of preventive medicine.

CONCLUSIONS.

1. Our data agree with those of investigators having much larger series of cases, namely, that typhoid fever generally can be diagnosticated in the first week by use of blood cultures, but that this method yields positive results in only about sixty per cent of the cases in the second week.

2. The typhoid bacilli are most easily obtained by blood cultures from the severest cases.

3. The typhoid bacilli were found in the relapse of typhoid fever in three individuals.

4. Typhoid fever is becoming more and more a disease to be treated in the larger public hospitals.

5. Isolation of typhoid fever patients in hospitals for the sake of other patients and particularly for the nursing staff is demanded.

6. Early diagnoses on entrance to the hospital and the detection of bacillus carriers before discharge are requisites in the present campaign against typhoid fever.

We wish to express our appreciation of the courtesy extended to us in our work by Dr. George B. Shattuck, Dr. John L. Ames and Dr. John Bartol who placed all their typhoid patients at our disposal, and to Dr. Francis H. Williams and Dr. Horace D. Arnold from whom we obtained special cases. The work would have been impossible without the co-operation of Drs. Rhea, Mabee and Bosworth of the Pathological Laboratory to whom we feel much indebted as well as to Dr. Adler for helpful suggestions.

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THE USE OF TUBERCULIN IN THE TREATMENT OF LOCALIZED TUBERCULOSIS EXCLUDING PULMONARY TUBERCULOSIS.*

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THE treatment of tuberculosis with the various products of the tubercle bacillus is nearly as old as the discovery of the specific cause of tuberculosis. A considerable mass of evidence has been collected concerning the therapeutic use of tuberculin in various ways. More recently, Trudeau and his associates at Saranac Lake have argued that the end to be attained was immunity against the tubercle bacillus. Some facts of animal experimentation also seem to favor this view. Those observers have reported a considerable series of cases of pulmonary tuberculosis showing the value of increasing doses of tuberculin. Sir A. E. Wright, of England, has utilized the theory of phagocytosis. He believes that in cases favorable for treatment, which are essentially localized tuberculosis, there is a deficient amount of opsonins, those substances in the blood which prepare the bacteria for ingestion by the leucocytes. According to his theory tuberculin acts by increasing the amount of opsonins, and the treatment should be controlled by the determination of the opsonic index.

It is not the purpose of this paper to discuss the theories of the action of tuberculin but to give the results obtained in a series of cases of localized tuberculosis. There were 25 cases, divided as follows: 9 cases of tuberculous adenitis, 4 cases of lupus vulgaris, 4 cases of tuberculosis of the genito-urinary tract, 3 cases of tuberculosis of the wrist, and 1 case each of tuberculosis of the knee, tuberculosis of the spine and pelvis, tuberculous sinus, tuberculous fistula in ano, and erythema induratum. As far as known no cases of pulmonary tuberculosis are included. In the early cases the opsonic index was determined as a routine, as a rule, twice a week. Of the cases included in this list, the opsonic indices were followed in 9 for varying lengths of time during the treatment. Seven were followed for over four months. Four cases (I, II, XI and XIII) showed an opsonic index of 1 or above, at two or more observations at the beginning of treatment. According to the rules laid down by Wright they were not satisfactory cases for treatment. However, they were not doing well at the time. Nevertheless, under treatment by tuberculin, 3 of the 4 showed a most satisfactory result. In 5 cases (X, XIV, XVIII, XIX and XXIII) the initial observations were distinctly below normal. All these 5 are classed as distinctly benefited. In none of the 9 cases was a marked tendency for the opsonic indices to follow any particular curves noticed. As a rule, it should be said, however, that if a case was doing badly the index was often low, but not invariably so. The clinical manifestations were markedly more accurate. At first, attempt was made to re-

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inoculate at the time advised by Wright, that is when the opsonic curve was descending to normal. This was soon found to be impracticable, and for the last several months no opsonic indices have been determined in any of the cases under treatment. Cases which have been put under treatment since that time have apparently done as well as the others. The old cases have apparently done as well without the opsonic index as with it.

Dr. Roger Kinnicutt and the writer made some comparative opsonic index determinations, using different preparations of bacteria, white corpuscles and sera. In all the cases of which I have record, 10 in number, the greatest difference was in hundredths, using 1 as the standard. There were observations on a number of cases which were not treated. In all cases, at least four indices were determined over a period of two weeks. Twenty-three cases, obviously tuberculous, presented a fluctuating index beyond 0.8 and 1.2. Four cases, with the clinical diagnosis of probably a non-tuberculous disease, presented similar fluctuations. One of these is Case XXIII, in whom, it seems to me, we have a therapeutic diagnosis. Another was a case of a knee which was treated by request with vaccines of the gonococcus without change. A guinea pig inoculated with tissue from that knee showed tuberculosis. Another, clinically, was a case of Hodgkin's disease, in whose sputum typical tubercle bacilli were subsequently found. The fourth was a patient with a mediastinal tumor who gave a positive tuberculin reaction. There were 5 cases of obvious tuberculosis, whose opsonic indices did not vary from normal limits. There were 3 cases in whom the clinical diagnosis of probable tuberculosis was made, whose opsonic indices did not vary from normal limits and who gave no tuberculin reaction. Five milligrams of old tuberculin were finally given in each case.

There were 3 cases of especial interest. The serum of an interne at the Massachusetts General Hospital was used on two occasions as control. Compared with my own serum his opsonic index was 0.6 and 0.65. The discrepancy was attributed to an error in technic. Two months later he had pulmonary hemorrhages. One case was seen in May, 1907, with a diagnosis of the tuberculous glands of the neck. Four different observations showed her opsonic index to range between 1.1 and 1.3. She was kept under observation but not inoculated, since at that time it was considered that she was manufacturing enough opsonins and ought to get well spontaneously. Her general condition improved. The glands of her neck became much smaller. She then passed from observation until February, 1908. At this time she presented enlarged glands in the left axilla, which were apparently about to break down. She has been started on tuberculin but has been under observation only two weeks. The third case was a case of acute tuberculous pleurisy. Clinically the case was steadily failing and a bad prognosis was given. The opsonic index was continually over 1.2. After a period of three weeks, improvement set in and the disease was apparently arrested. The conclusions from the work on the opsonic index in connection with tuberculous disease are that the opsonic index has no value as a therapeutic indicator; that it may be of some value in diagnosis and prognosis, but it is certainly not reliable. Two observers will get approximately the same results.

In the cases about to be reported, no case has been under treatment less than four weeks. No case was taken unless it was doing poorly from the clinical point of view. In every case due attention was paid to the necessary doctrines of fresh air, food and general hygiene. Most of the cases, however, have continued their same mode of life without essential change. The diagnosis has been, of course, unfortunately clinical in nearly every case. Nevertheless, there seems to be doubt of diagnosis in no case, In every case the diagnosis was confirmed by at least one other observer.

The preparation used was tuberculin, B.E. The initial dose has varied from 1-10,000 to 1-1,000 of a milligram. The doses have been graded always to avoid any reaction, either constitutionally or in the local lesion. In only 2 cases has there been any increase of dosage over 1-1,000 mgm. The dosage has been increased only when the case seemed to be standing still. There are a few cases which have been under treatment for nearly a year which are still improving on a dosage of 1-1,000 mgm. and have shown no signs of immunity. As far as known there have been no rises in temperature. On several occasions there have been constitutional reactions of headache and malaise in the twelve hours following inoculations. Occasionally, fairly well-marked local reactions at the site of the tuberculous lesion were seen. The most marked example was in Case XIX. A dose of 1-4,000 mgm. caused, first, a marked increase in a local lesion, and then breaking down and discharge, all within two days. Any such reactions were regarded as indications to decrease the dose. The inoculations have been given subcutaneously, chiefly in the back and abdomen. There have been no untoward effects at the site of inoculation beyond a trifling discomfort in some apparently susceptible cases. As a routine, cases have been inoculated once a week until the disease was apparently arrested. There was observed in no case any objection on the part of patients to the inoculation.

There were nine cases of tuberculous glands:

Case I. M., a young woman of twenty-three, gives a history of glands in the left axilla which were lanced in 1899, glands in the right axilla which were first noticed in December, 1903. Glands in the neck were noticed in 1904. She has had three extensive operations on left side of neck. She was first seen April 23, 1907, at which time she presented large, disfiguring masses of glands on both sides of the neck. She was recommended for operation, but at my request operation was postponed in favor of a trial with tuberculin. She was inoculated with 1-2,000 mgm. of tuberculin, and since that time has been inoculated practically once a week and is now receiving 1-1,000 mgm. a week. At the present time she shows a slight fullness of the neck, but no visible glands. On palpation numerous hard small glands can be felt, none larger than a small cherry. There has been marked improvement of the general condition, but no gain in weight. At the present time she has been working for over two months. This case is regarded as arrested.

Case II. S., a young woman of twenty, first noted "lumps" in both sides of the neck and both axillæ in November, 1905. She was first seen in May, 1907. At that time she presented numerous disfiguring masses of glands on both sides of the neck and in the left axilla. Operation had been advised, but declined. The initial dose was 1-3,000 mgm. She has received inoculations weekly up to the present time. For the past three months dosage has been 1-1,000 mgm. Present appearance: axillary glands are barely palpable. Small kernels are felt in both sides of the neck. There may be some visible fullness of the neck. There has been marked improvement of general condition with a gain in weight of ten pounds. This case is regarded as arrested.

Case III. C., a girl aged fifteen, noticed a "lump" in the right side of her neck in May, 1906. Tonsillectomy July, 1907. Oct. 15, 1907, a fluctuating mass was incised in the region of the lump before noticed. There was considerable induration and a persistent sinus which showed no tendency to heal. She was first inoculated Dec. 12, 1907. At that time there was a sinus leading to a mass on the right side of neck, size of small apple. She received weekly inoculations, increasing from 1-4,000 mgm. to 1-1,000 mgm. In three weeks the sinus was closed. At the present date she presents only a slight induration about the scar of the incision and no palpable glands. There was no change in general condition. This case is regarded as arrested.

Case IV. C. S., a girl of eighteen, noticed a mass over the left clavicle, beginning in August, 1907, which steadily increased to size of a grape-fruit. There were no other palpable glands, and as she presented hoarseness and evidence of a mediastinal tumor it was thought advisable to operate. Operation, Dec. 28, 1907, and a few drams of tuberculous pus evacuated. She drained profusely for about a week and then stopped. The sinus persisted. On Jan. 17, 1908, she was inoculated with 1-3,000 mgm. of tuberculin. The discharge immediately again became profuse. She has had inoculations weekly since then. At the present time she is getting 1-2,000 mgm. There is a profuse discharge from the operation wound and a constant diminution in the size of the mass of tuberculous glands. This case is regarded as hopeful inasmuch as after the cessation of the discharge apparently a profuse discharge of necrotic material has been kept up by the use of tuberculin with a steady diminution in the size of the glands. The girl always appeared rugged, has remained at work, and shows no change in general condition.

Case V. R., a young girl of ten, noticed glands in both sides of neck about one year ago. Incision for "cold abscess" of neck in October, 1907. Tonsils and adenoids removed November, 1907. The tonsils on section showed no evidence of tuberculosis. She was first seen Dec. 14, 1907, when she presented numerous small glands in both sides of neck and two masses of glands the size of large walnuts in right side of neck, with a sluggish sinus leading to the upper one. She was given 1-4,000 mgm. and has been inoculated weekly with dosage increasing to 1-2,000 mgm. up to the present time. There has been marked diminution in the size of the glands. None are larger than small cherries. The sinus is practically closed. There has been a very marked improvement in the general condition with a gain in weight of twelve pounds in ten weeks. The weight before that time had been stationary for six months. This case seems to have been greatly benefited, with very good prospects of arresting the disease.

Case VI. Sa., a man about thirty-five, presented in November, 1907, very large masses of glands in both sides of neck. The glands were somewhat tender. He refused to come for treatment except at two weeks' intervals. He was inoculated with 1-1,000 mgm. every two week for three months. At the end of the time the glands had diminished one half. The man kept at work and there was little change in his general condition. There seemed to have been some improvement in the condition of his neck and might suggest a hopeful prognosis if the man would consent to regular weekly inoculations.

Case VII. F., a young woman of thirty, noticed glands in the left side of her neck six years ago. She had two radical operations five years ago. There was some little discharge from operation wounds. She took a long vacation and was apparently perfectly well for three years, although she could always feel small "lumps" in her neck. About one year ago she began to have pain in left side of neck with increased size of glands. An abscess was opened on Oct. 7, 1907, which left a discharging sinus. On Oct. 19, she presented a few small glands in left side of neck and a discharging sinus, leading to a small indurated mass about halfway up the sterno-mastoid muscle. She was started on 1-2,000 mgm. which was increased slowly at weekly inoculations to 1-1,000 mgm. The sinus healed in two weeks. On the week of Jan. 17, 1908, there was some little pain in the neck, but was immediately relieved when four to five drops of pus discharged spontaneously. There has been no discharge since. At the present time no glands are palpable. There is only very slight induration about the operation wounds. There has been marked improvement in general condition, but no particular gain in weight. Of some interest is the fact that her catamenia, irregular for the past seven years and absent all last summer, has been practically regular since the inoculations began. This case is regarded as arrested.

Case VIII. Ri., a woman of forty, has noticed some glands in the neck the size of English walnuts for a number of years. She has always been nervous but otherwise in good health. On Nov. 22, 1907, she presented a few small glands, the largest on the right side the size of an English walnut. Throat is negative. She was given 1-4,000 mgm. tuberculin which has been increased at weekly inoculations to 1-2,000 mgm. The glands are somewhat smaller but the marked change has been in the great improvement in the general condition of the patient. She is able to do her work more easily. She has no annoying symptoms from her glands which formerly troubled her and made her nervous. This case is classed as benefited.

Case IX. B., a young woman of thirty, noticed a little over a year ago a "lump" in the right side of her neck which steadily grew larger. Ten months ago a large abscess was evacuated. The wound healed in two weeks, but below the scar a sinus has formed which from time to time has discharged a little. On Feb. 1, 1908, she presented a discharging sinus in her neck on the right side which led to an irregular mass the size of a small peach. She was given 1-4,000 mgm. and at weekly inoculations the doses have been increased to 1-1,500 mgm. After five inoculations the mass is hardly noticeable. The sinus discharged rather freely at first and is not yet healed. This case is classed as distinctly benefited in four weeks' time. Favorable outcome seems reasonable.

There were four cases of lupus vulgaris:

CASE X. Mar., a woman of forty, has had extensive and increasing lupus of both sides of the face for the past seventeen years. She has faithfully been under treatment for ten years. This treatment has consisted of various caustics, x-ray, etc., without effect. She was first seen on March 12, 1907. At that time she presented many red, active, confluent, lupus patches over both sides of face, and left side of neck. These patches were raised in some instances one quarter of an inch. She has received weekly inoculations beginning at 1-2,000 mgm., increased to 1-750 mgm. at the present time. The present condition is that the left side of her face, which was most involved, seems quiescent. There has been very marked improvement in the appearance of her face. The lesions are no longer confluent, raised and red, and are much fewer. An occasional single nodule appears. The color is a dark red. The scarring is very smooth and soft. Curiously, on the right side of the face, which was least involved, the result has not been so good, but the very marked improvement of the appearance of the face leaves no doubt of the great benefit derived from the tuberculin treatment. Whether this obstinate case will be ultimately cured is still an open question.

CASE XI. E., a young woman of thirty, has had an extensive lupus of the nose and adjacent part of face and mucous membranes of the nose and mouth for eleven years. Under the most efficient treatment available the disease had steadily progressed. She was first seen in May, 1907. She was given 1-2,000 mgm. tuberculin, and was inoculated at weekly intervals for eight weeks with marked improvement. She was better than she had been at any time for ten years. Inasmuch as she lived so far from Boston she was given some tuberculin with instructions for inoculations by the local doctor. Improvement continued for a month. After that time the inoculations were given very irregularly, often two weeks going by without an inoculation. With the irregularity of the inoculations, improvement ceased, and after two months, treatment was abandoned. This case was not benefited, but the improvement with regular inoculations and the cessation of that improvement when the inoculations became irregular, seem to suggest a possible reason for the failure.

CASE XII. H. L., a boy nine years old, had lupus of the wrist in 1901 and which began on the neck in 1902. Since 1904 he has been under treatment for Pott's disease. He was first seen April 23, 1907. At that time he had a few lupus nodules in an extensive white scar of neck and chin. Over an area, 6 x 3 in., on the right wrist was a crusted lupus lesion. He was inoculated at weekly intervals from April 24 to Aug. 17. The dose was increased from 1-2,000 mgm. to 1-1,000 mgm. On Aug. 17 he showed no lupus nodules and presented a smooth, white scar both on wrist and chin. He was given 1-1,000 mgm. at about two weeks' intervals from Aug. 17 to Oct. 25. At that time there was no recurrence. He disappeared from observation until Dec. 7. At that time a few new lupus nodules were starting on his wrist. He was re-inoculated, but has reported only at very irregular intervals since. At the present time he has numerous, new crusting lupus lesions in the scars of his neck and wrist. The boy lives among the most unfavorable environments. This case is one presenting a recurrence which it seems possible might have been averted had the boy reported regularly for inoculation. It certainly shows importance of close observation of cases and the necessity in some cases of continuing the inoculations after the disease is apparently arrested to avert recurrence.

CASE XIII. C. B., a boy eleven years old, has had an increasing patch of lupus vulgaris on his left cheek for seven years. This patch had slowly spread, despite the usual efficient treatment. He was first seen on April 23, 1907, when he presented a circular patch on his cheek about four inches in diameter. There were numerous red, active, new lesions. He was inoculated weekly from April 23 to July 28. The dosage was increased from 1-3,000 to 1-1,500 mgm. On July 28 the patch presented for the most part a smooth scar with only a small rim of ulcerated tissue on one half the circle. The physician in charge of the skin department stated that he was better than at any time during the four years he has been under observation. It was thought advisable to remove the small remaining rim of diseased tissue with curette and cautery. The boy then reported not oftener than once in six weeks. He was seen on Feb. 8, 1908, when his lesion was entirely healed. Inoculations every two weeks had been urged upon the boy but he had not reported for them. Tuberculin seems to have had some part in the arrest of this disease. This case is in notable contrast to the preceding case, as this boy went without inoculations without recurrence. It should be stated, however, that the boy has better home surroundings; his general condition is far better and he shows no other lesions of tuberculosis.

There were four cases of tuberculosis of the genito-urinary system:

CASE XIV. G. P., a man of thirty-three, has had pain and frequency of micturition since October, 1906. Since March, 1907, his urine has been cloudy and at times has contained clots. No other symptoms. The man is athletic and has worked hard. Rectal examination is negative. Urine contained pus, blood and tubercle bacilli. A guinea pig inoculated with the urinary sediment showed tuberculosis. Inoculations were begun on Nov. 25, 1907. The dosage was slowly increased at weekly intervals from 1-10,000 mgm. to 1-1,000 mgm., which he is now receiving. There has been little change in the local condition. The frequency is about the same. Pus and tubercle bacilli remain in the urine. There has been considerable improvement in the general condition. For some time previous to the inoculations his weight has been steady at 155. Without any other change, he now weighs 160, his best weight. He says he feels better than for years. This case is classed as doubtfully benefited. This case is a patient of Dr. Wilder Tileston, to whom I am indebted for notes of the case and permission to include it in this series.

CASE XV. L., a young man twenty-one years of age, has noticed increasing frequency of micturition for the past year. When first seen on Oct. 31, 1907, he got up five times at night to urinate and urinated every one and a half hours during the day. There was considerable pain on micturition. His urine contained much pus. A guinea pig inoculated with the urinary sediment died of tuberculosis. On examination, his external genitals are normal. There is a nodule in the right lobe of the prostate. The right kidney is palpable and large, somewhat tender. On cystoscopic examination an injected bladder was found but no ulcers. He was not considered a case for surgical interference. Beginning with 1-4,000 mgm. the dosage has been increased on weekly inoculations to 1-1,000 mgm. At the present time he gets up either once or twice at night to urinate, and urinates during the day every two to three hours. There has been no pain on micturition after the first three weeks of treatment. There has been a gain of weight of about ten pounds. The man has kept at work. He says himself that he feels vastly better than at any time for two years. His comfort is apparently insured by stopping the frequency of micturition. His urine still contains the same amount of pus. This case seems benefited. The most conspicuous change has been the improvement in general condition.

Case XVI. La., a young man of twenty, four years ago, had frequent and painful micturition with pus in the urine. For the last three years the pus has continued in the urine, but the frequency and pain have not been so marked. On cystoscopic examination the bladder seemed normal and pus was seen coming out of the left ureter. At that time, September, 1907, the testicles and prostate were normal. On Sept. 10, 1907, a tuberculous left kidney was removed. The wound healed slowly. Beginning Oct. 17 he received weekly inoculations of tuberculin, the dose being increased from 1-3,000 to 1-1,500 mgm. The wound rapidly healed, but perhaps a more important feature than the tuberculin was the removal of several silk sutures. However, there was a gain of ten pounds in weight. The man is now at his maximum weight and working every day. He has no urinary symptoms. There is still microscopic pus in the urine and a few tubercle bacilli. On Feb. 7, 1908, his left testicle, which became swollen immediately after the operation before the tuberculin was given, again became swollen. His dosage was immediately cut from 1-1,500 mgm. to 1-3,000 mgm. At the present time the testicle is rapidly growing smaller. It cannot be definitely stated that this case was benefited by tuberculin. It seems probable that the use of rather large doses (1-1,500 mgm.) stirred up the process in the testicle. There has been, however, a marked improvement in the general condition.

Case XVII. Ma., a man of thirty-three years old, gives a history for the past six years of backache, and frequent, painful micturition, and pus in the urine. In August, 1906, a perinephritic abscess was drained, which left a persistent sinus. Since that time his frequency and pain in micturition increased and he no longer had control of his urine. He lost weight and was unable to do steady work. Cystoscopic examination showed a small injected bladder without ulcers. Testicles and rectal examination were negative. Tuberculin reaction was positive. Nov. 22, 1907, his left kidney was removed. Pathologically, it showed typical appearance of tuberculosis. After the operation the frequency and lack of control of the urine persisted, and on Jan. 13, when first seen, he presented a large sluggish wound in his kidney region. Beginning with 1-4,000 mgm. he has received weekly inoculations up to 1-1,000 mgm. At the present time the wound has healed. He still has some lack of control of urine at night, but is able to hold his urine three or four hours in the daytime. There is no pain. The urine still contains pus and tubercle bacilli. The most marked change has been in the general appearance. In a little over six weeks he has gained fifteen pounds, and he is now doing a full day's work as painter. He states that after the inauguration of the inoculations of tuberculin he began to feel generally better and now is better than he has been for six years. While the local condition is apparently the same, there seems no doubt that the man's general physical condition has markedly improved.

There were three cases of tuberculosis of the wrist:

Case XVIII. Ch., a woman of forty-five, had had a painless swelling on the back of the right wrist for over a year. This swelling was removed at operation in March, 1907, and the mass proved to be tuberculous. She was first seen May 14, 1907. At that time she presented a clean scar with a considerable mass of indurated tissue about it. This mass had been increasing for the past three weeks with an increase of pain. She was given six inoculations of 1-1,000 mgm. at weekly intervals. At the end of that time there was no pain in the wrist, no induration, the motion was free. She was then discharged to go into the country. She was again seen in January, 1908, and had no symptoms or signs of recurrence. This case is regarded as probably arrested, although there might be some room for doubt as to the nature of the induration and pain coming on several weeks after the operation.

Case XIX. G., a young girl of ten, gave a history of injury to the right wrist in December, 1906. This was soon followed by a painless swelling over the fourth and fifth metacarpal bones. She was treated by plaster fixation and Bier's hyperemia for two months without change. She was first seen April 8, 1907. At that time she presented a painless fluctuating mass the size of a golf ball on the back of her hand. On April 12 she was given 1-4,000 of tuberculin. The lesion promptly became larger, broke down within the next forty-eight hours. There were apparently well-marked constitutional symptoms also. The inoculations were kept up at ten-day intervals, the dosage being increased to 1-2,000 mgm. On June 21, the splint was omitted but the child did not keep the hand quiet. The induration of the back of the hand persisted. The splint was re-applied July 26. From that time on improvement was rapid. The splint was again omitted on Sept. 20. At that time there was present only a smooth scar on the back of the hand and considerable diffuse induration. She was then given inoculations at two weeks' intervals until Nov. 22, 1907. At that time very little difference between the two hands was noticeable. There was no deficiency in motion. Unfortunately, none of several x-ray plates were satisfactory. There were no inoculations after Nov. 22. The child was again seen two months later and the condition remained the same. This case is regarded as arrested.

Case XX. M. M., a woman forty years old, who had pain and swelling in both wrists in January, 1906. Operation in September, 1906, when considerable tuberculous material was excised from the anterior surface of both wrists. Tuberculin test was positive. She went into the country for six months. Considerable swelling still remained in both wrists but no pain. She started in work but the pain and swelling in the wrists increased. She was first seen Dec. 5, 1907. At that time she presented two clean scars in both wrists. In the left wrist there was a little swelling but no pain. There was fair motion of the left hand. The right wrist was markedly swollen. There was considerable pain, increased on motion and some swelling of the thenar eminence. There was marked limitation in motion of all the fingers. She has been inoculated at weekly intervals, the dosage being increased from 1-4,000 mgm. to 1-1,000 mgm. at the present time. There is now no swelling of the left wrist. The motion and strength of the left hand are apparently normal. The right wrist is still considerably swollen, although less so than at the inauguration of treatment. There is much less pain in the right wrist than at the beginning of treatment. There is marked improvement of the general condition, despite the fact that she does hard work in domestic service. This case is classed as doubtfully benefited.

There was one case of fistula in ano:

Case XXI. Bu., a man of fifty, has had a fistula on either side of the anus for four years. Has had several abscesses and several operations, including radical ones, for the cure of fistula, but the fistulæ have never been healed. He was first seen Oct. 20, 1907, when he presented large wounds on either side of the anus. Beginning with 1-2,000 mgm. of tuberculin he has had weekly inoculations and now is getting 1-1,000 mgm. The fistula has closed on one side and is apparently healing in well on the other. There have been no untoward symptoms since the beginning of the treatment. Again in this case there has been marked improvement of the general condition.

There was one case of persistent sinus after operation for tuberculous peritonitis:

Case XXII. B. G., a young woman of nineteen years, had an operation for tuberculous peritonitis six months ago, which left a persistent sinus. Beginning Feb. 6, 1908, she received tuberculin weekly beginning with 1-10,000 mgm. and increasing 1-10,000 every week. The environment of this case was changed for the better. Her general condition has been much improved. There has been marked gain in weight and strength. The discharge from the sinus is now spasmodic and averages much less. This case has been doubtfully benefited by the tuberculin.

There was one case of erythema induratum:

Case XXIII. O'D., a young woman of twenty-five years of age, has had psoriasis for years. When a child she had some "scrofulous glands" of which she now has only the clean scars on both sides of her neck. For a number of years on both legs she has had varying sized lesions of erythema induratum which have ulcerated and formed scars. In that time her legs have never been free from ulcers. In the winter time the lesions are more numerous. She has had various treatments, including active specific treatment. There was some doubt concerning the diagnosis of this case, and Dr. Roger Kinnicutt observed her opsonic index for the tubercle bacillus from April 3 to Aug. 10. I am indebted to him for his notes and his permission to include the first part of this case. The first four determinations of the opsonic index showed an index well below normal. She was then given tuberculin, starting in with 1-2,000 mgm. For several weeks there was no special change. Since that time the improvement has been steady. She now requires inoculation of 1-750 mgm. every seven days. On two occasions she has gone without inoculation for nine or ten days and very promptly on the eighth or ninth day new lesions have appeared. The last appearance of a new lesion was on Feb. 24, when she had been nine days without inoculation. Before that time she had been two months without any lesion, a thing which she does not remember to have happened since the onset of this disease. It is to be remembered also that she has more lesions in the winter time. This case is to be classed as distinctly benefited. It is of considerable interest, however, to note that the inoculations apparently have got to be kept up, although she has been under treatment for ten months, and at one time the disease seemed arrested. The psoriasis was unaffected.

There was one case of tuberculosis of the knee:

Case XXIV. J. B., a girl twenty-four years old, seven years ago had an excision of the right knee joint for tuberculosis. About Jan. 1, 1907, the left knee became swollen and somewhat painful on motion. There was no limitation in motion. She did not improve under best of general hygienic and local treatment. About Dec. 15, 1907, she had some pain localized to two red areas on the outside of the knee. On Jan. 9, 1908, she was given 1-10,000 mgm. She has had weekly inoculations to the present time, the dosage being increased 1-10,000 mgm. at each inoculation up to 1-1,000 mgm. On Jan. 25, she presented a sausage-shaped swelling along the outside of the knee joint, which distinctly fluctuated and which apparently was outside of the knee joint. The swelling was incised on Jan. 31, and pus evacuated. After the evacuation of the pus, the knee joint itself was very little swollen and not at all painful on motion. There has been some constant discharge from the incision but no swelling of the knee joint. Under precisely the same conditions as before tuberculin was given she has gained seven pounds in weight. Before that time her weight had been stationary for three months. It is problematical how much the tuberculin had to do with the change in the picture. It seems possible that the formation of this localized abscess was hastened by its use. The general condition and the local condition, which had been at a standstill for several months, are now certainly better. This case is classed as doubtfully benefited.

There was one case of tuberculous spinal and pelvic caries:

Case XXV. V., a woman twenty-nine years old, had, one and a half years ago, a left ilio-psoas abscess which was opened in March, 1907. She was in a plaster cast for some time. This ilio-psoas abscess has continued to drain. She presented a rigid back, but no knuckle. She came under observation Oct. 2, 1907, and was running a continuous temperature. She received 1-3,000 mgm. on Nov. 3, which was increased, by weekly inoculations to 1-1,000 mgm. on Nov. 24. The temperature came down. The discharge increased, but on Dec. 1, 1907, a fluctuating mass appeared over the crest of the right ilium, which increased in size with variations in temperature. The abscess was opened on Jan. 2, 1908. At that time apparently bare pelvic bone was felt. The temperature still showed wide excursions. On Jan. 16, 1908, she was again given tuberculin, this time with the initial dose of 1-10,000 mgm., which was increased at weekly inoculations 1-10,000 mgm. to 1-1,000 mgm. Since the second inauguration of tuberculin the temperature has drifted to normal and there has been some improvement in the general condition. The history of this case suggests the possibility that the tuberculin stirred up increased suppuration as evidenced by the formation of the second abscess. There seemed to be some slight improvement in the general condition. On the whole it cannot be said that this case received any benefit from the inoculations of tuberculin.

Of course, too short a time has elapsed to draw any permanent conclusions from the results as seen in this very small series of cases. Many of the cases are still under treatment. Experience also has shown the fallacy of definitely designating any case of tuberculosis as cured, no matter how long the interval of quiescence. The following conclusions, however, seem justified. Of 25 cases of tuberculosis localized elsewhere than in the lungs, treated with tuberculin, B. E., 6 cases were classed as arrested; 12 as distinctly benefited; 5 as doubtfully benefited; and 2 as uninfluenced by tuberculin. The most striking feature is that practically all of the cases showed a marked gain in a general condition, thus enabling them better to combat the local disease. The local condition was certainly markedly benefited in the cases of tuberculous glands and lupus. In the cases of genito-urinary tuberculosis, while there was some amelioration of the local disease, on the whole there did not seem to be much change. The use of tuberculin apparently has to be continued over a long period of time. It does not prevent relapse. While the opsonic index may be of some value in diagnosis and prognosis, it seems to be of no value as a therapeutic indicator. The dosage should be small. The initial dose is from 1-10,000 to 1-4,000 mgm. On few occasions is it necessary to give over 1-1,000 mgm. Any marked reactions are to be carefully avoided. The best interval of inoculation apparently is one week. Regularity of inoculations is essential. The routine use of tuberculin is simple and should be accompanied by no discomfort on the part of the patient. In no case apparently was any lasting injury caused by the use of tuberculin. That it may be harmful if used incautiously seems certain. That it is a potent factor for good in selected cases of localized tuberculosis seems also certain.

HODGKIN'S DISEASE WITH EOSINOPHILIA: REPORT OF A CASE WITH AUTOPSY.

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THE presence of eosinophiles in the glands of Hodgkin's disease, or pseudo-leukemia, has been observed in a number of cases since 1892, when Goldmann first called attention to their presence. Some of these cases showed eosinophiles in other organs, but their presence in marked excess in the blood has almost never been so striking that they have been a clinical as well as a pathological factor.

The following case of Hodgkin's disease at the Worcester City Hospital, in the service of Dr. Ray W. Greene (whom I wish to thank for his permission to report the case), presented such a very unusual and marked eosinophilia, both in the blood and in several of the organs, that there exists sufficient excuse for reporting it.

Clinical history: D. S., fifteen years old, born in Worcester, Mass., of Swedish parents, entered the Worcester City Hospital on March 18, 1907.

Family history: Negative, except that his father was insane for five years, and one brother was in the hospital about the same time with osteomyelitis of the femur.

Previous history: He was always sickly, working ten hours a day for the last year.

Present illness: Before entrance he had been ill about four months, but three months before this some swellings began to appear on both sides of his neck and in his groins. These never gave him any trouble, but have been constantly present. About the second week in December, 1906, he felt tired and run down, with a backache which at that time he complained of as low down in the lumbar region. Up to two weeks before entrance he was up and about the house most of the time. Then followed one week of severe diarrhea, he having six or seven movements of the bowels a day. At the same time there developed a swelling of his face and legs, and occasional nausea and vomiting. For four months dating from November he had a cough, coming on insidiously, with expectoration. During this time he had a few attacks of dyspnea. At first he had some pain in his chest, but there was none later on. His appetite was fair, but he slept poorly.

Physical examination showed a rather poorly developed and poorly nourished boy, the skin and mucous membranes pale, marked edema of face and legs, considerable loss of subcutaneous tissue, and pupils of equal size and reacting alike. In the cervical, axillary and inguinal regions (especially in the right inguinal region) there were enlarged lymphatic glands of various sizes, from about half a centimeter to about two and a half centimeters in the longest diameter, some being in chains.

The apex of his heart was in the fifth intercostal space, about one and a half centimeters outside the nipple line. The right border was at the right edge of the sternum. No murmurs were heard.

His lungs showed dulness on percussion at both bases, with numerous fine moist râles, and on the right side there were diminished respiratory sounds, but normal fremitus. His breathing was rapid, though not labored, both sides of the chest moving freely and apparently equally.

The liver dullness extended from the sixth rib to about three centimeters below the costal margin, giving resistance on palpation, but the lower edge was not felt.

The abdomen was full and tympanitic, except in the flanks, where it was thought that shifting dullness could be made out. The kidneys and spleen were not palpable. The knee jerks reacted equally.

Sputum examination showed no tubercle bacilli.

A blood examination showed: hemoglobin 40%, white cells 49,000, red cells 1,470,000. (These red cells were not counted directly, but were estimated by comparing the relative number of white and red cells in a hundred microscopic fields.) A differential count of 500 white cells showed:

		Absolute number per cmm.
Polymorphonuclear neutrophiles,	27.4%	13,426
Small lymphocytes,	.6%	294
Medium sized lymphocytes,	2.6%	1,274
Large lymphocytes,	.6%	294
Transitionals,	.6%	294
Eosinophiles,	68.2%	33,418
		49,000

The red cells showed considerable poikilocytosis, and some achromia. There was some, but not a general, increase in the size of the cells, some macrocytes and some microcytes. One normoblast was seen, or 98 per cubic millimeter.

A differential count of 200 white cells of the same specimen by Dr. J. B. Manning (to whom I am also indebted for the three white counts) showed:

Polymorphonuclear neutrophiles,	27%
Small lymphocytes,	3%
Eosinophiles,	70%

During this count one blast was seen.

March 19. A systolic murmur was heard at the apex and base of the heart, but only when the patient held his breath.

March 20. The chest was full of fine and medium sized and coarse râles with prolonged expiration giving rise to dyspnea. The urine was of normal color, acid reaction; albumin and sugar were absent. A differential count of 500 white blood cells showed:

Polymorphonuclear neutrophiles,		31.2%
Small lymphocytes,		2.0%
Medium sized lymphocytes,		3.2%
Large lymphocytes,		.8%
Transitionals,		1.8%
Mast cells,		.2%
Eosinophiles, polymorphonuclear (one of these showed a process resembling a pseudopod),	57.0%	60.8%
Eosinophiles showing only part of the protoplasm stained with eosine,	3.6%	
Eosinophiles, mononuclear,	.2%	

The red cells showed some variation in shape and size, and a few were seen larger than normal, but hardly to be classed as macrocytes; more were smaller than normal. A few oval forms were seen.

March 23. Condition unchanged. White count 31,000.

March 24. Examination of stool showed no parasite eggs. Some cells were seen resembling the ova of ascaris lumbricoides and oxyuris vermicularis, but as at autopsy a careful search revealed no parasites these forms were probably vegetable cells.

March 25. There was dullness, especially marked, at the base of the right lung, with bronchial breathing and fine and medium sized moist râles. Fine and medium sized râles were scattered throughout the chest.

March 26. Examination of the blood showed: hemoglobin 35% to 40%. A differential count of 500 white cells showed:

Polymorphonuclear neutrophiles,	50.2%
Small lymphocytes,	4.0%
Medium sized lymphocytes,	.8%
Large lymphocytes,	.4%
Transitionals,	1.0%
Myelocyte (?),	.2%
Eosinophiles,	43.4%

In this count 9 normoblasts were seen (one with a divided nucleus). Besides these others were seen with two or three divisions to the nuclei, and one megaloblast. The red cells showed some variation in shape and size, an occasional macrocyte, frequent microcytes and some poikilocytosis. There was considerable achromia.

March 27. Considerable edema of lungs. Pulse gradually became weaker, and respiration more labored. The patient died at 11.15 A.M.

While he was in the hospital his temperature ranged somewhat irregularly between 100° and 102.6°, his pulse varied from 120 to 136, except on the day of admission, when it was 144, and his respirations were between 32 and 40, and on all but the first and last days were nearly uniformly 34.

The autopsy was performed March 27, 1907, four and a half hours after death.

Anatomical diagnosis: Hodgkin's disease; involvement of the cervical, axillary, inguinal, mediastinal, retroperitoneal glands, and glands of the lesser curvature of stomach, involvement of the liver, spleen and lungs. Persistent thymus gland.

A well developed and poorly nourished white boy. Length, 5 ft. 3½ in. Some suggillations of the posterior surface of the body. Pupils moderately dilated. Considerable edema of face, hands, feet and legs, and a little of the trunk.

The *thymus* gland was found persistent and enlarged. It was swollen and infiltrated.

The *pericardial* cavity contained four or five ounces of clear fluid.

The *heart* weighed 200 gm. and showed no valvular changes.

Glands of above-mentioned regions were enlarged, of firm consistency and discrete. Sections of three of these, as of other organs, were mounted in paraffin, and some stained by Unna's method with methylene blue and eosin, and some stained with Wright's modification of Leischman's stain. As a rule the eosinophiles stained better with the latter, but one or two specimens, stained by Unna's method, show them best; and the sections as a whole are better when stained in this way. Specimens fixed in celloidin and stained by hematoxylin and eosin failed to show any eosinophiles for some reason, so these specimens were all passed back through alcohol and remounted in paraffin.

Sections of a bronchial lymph gland from the neighborhood of the right bronchus show a marked hyperplasia of new formed tissue. As a whole, the glandular structure is lost. While certain areas show a predominance of lymphoid cells, yet the follicular character is gone, and there is a well defined hyperplasia throughout. The capsule is thickened, but there are no fibrous septa.

Microscopically, the gland consists of a minimum of reticulum in which are spindle and oval or epithelioid cells of various sizes, some plasma cells and giant cells containing two or three to six or eight nuclei and with pale blue protoplasm. The nuclei of the epithelioid cells occasionally show mitotic figures. There are some polymorphonuclear leucocytes and a great abundance of *eosinophiles* with granular protoplasm scattered rather evenly throughout the gland; no more numerous, however, at the periphery than in the center. These have nearly all trilobed nuclei, but occasionally one with a bilobed nucleus is seen, or a smaller cell with a small round nucleus. Certain areas contain particles of brownish pigment.

Another of the lymph glands (probably mesenteric), enlarged to about 3 cm. in length, shows a marked abundance of hyperplastic cells. The gland is divided about one third from one end by a septum of fibrous cells, while the capsule is a fairly thick fibrous structure. There are a few areas composed of lymphoid cells, also containing some polymorphonuclear leucocytes and plasma cells, a few giant cells and oval-shaped or epithelioid cells, and a few eosinophiles. Most of the gland shows, however, a diffuse hyperplasia of new formed cells in a network of fibrous tissue, which in places is quite abundant to the exclusion of other cells. These cells consist for the most part of various sized oval-shaped or epithelioid cells, generally of moderate size, of spindle cells, and frequent giant cells, usually with 3 or 4 nuclei and a pinker protoplasm than the others, but occasionally containing more nuclei sometimes arranged in a circle. There are also plasma cells and some leucocytes. The eosinophiles are not so numerous as in the other gland or in the lung, liver or spleen, or else take the stain poorly, which seems rather to be the case. In a few places, however, they are fairly numerous. There is one area of necrosis filling about one third of the field of the low power objective (Leitz No. 3).

The left pleural cavity was normal. The *right* contained about a pint of clear fluid.

The left lung weighed 860 gm. and showed a few scattered small, firm, white areas similar to those of the right.

The right lung weighed 560 gm. and showed peculiar areas scattered throughout of white to light brown indurated tissue, especially marked at the base behind, a cross-section of this being from 5 cm. to 8 cm. in diameter. Here it was somewhat firm, with muco-pus exuding from the bronchi. This tissue also extended up along the median side near the hilus, bordering on enlarged lymphatic glands.

Microscopical sections of this area show in paraffin mounts stained both by Unna's methylene blue and eosin, and by Wright's stain, normal lung tissue which in many places is filled with cells, sometimes becoming a solid mass of abnormal tissue. These cells consist of mononuclear cells of a round and oval shape, or epithelioid cells, with nuclei both small and medium sized, and frequently vesicular, and occasionally there is a spindle cell. At times they contain vacuoles. In places the background consists of fibrous and spindle cells. Throughout this new formed tissue there are scattered some polymorphonuclear neutrophiles, lymphoid and plasma cells, and there are many *eosinophiles*, in places quite abundant. Most of them are polymorphonuclear with a trilobed nucleus, and with granular protoplasm, while others have a round or oval nucleus at one end. These cells are in the new-formed tissue, and at times in the exudate contained in some of the bronchi, though often absent. Mitotic figures occasionally occur in the epithelioid cells. The blood vessels also contain a few eosinophiles. The alveoli and bronchioles, both those appearing normal and those whose walls are thickened and infiltrated, contain an exudate of blood, some endothelial cells, lymphoid cells, and polymorphonuclear neutrophiles, and, as above stated, at times eosinophiles. The lymphatics and capillaries are somewhat dilated. In places there is an apparent organization going on in the alveoli resembling an organizing pneumonia. This is co-ordinate with the Hodgkin's disease, but not a part of it. Some of the erythrocytes are stained pink, and others yellow. Several sections of this new-formed tissue were stained for tubercle bacilli, but none were found.

The liver was enlarged, weighing 1,700 gm. The appearance when fresh was mottled, due to the contrast of normal brown red areas against the interspersed abundant white areas of "pseudo-leukemic" tissue, which vary from the size of the head of a pin, or less, to ½ cm. in diameter. The surface was smooth and regular.

Microscopic sections stained by both Unna's and Wright's stain show the parenchyma with some cloudy swelling and considerable infiltration of the liver cells with fat, and some intercellular invasion of polymorphonuclear leucocytes. At the corners of the lobules are areas varying in size, generally round or polygonal in shape, near and surrounding the bile ducts and vessels, at times quite large, infiltrating irregularly and nearly replacing whole lobules. They correspond to the white areas of the gross. They contain connective tissue and a variety of hyperplastic cells, spindle cells, oval or epithelioid cells and medium sized mononuclear cells with a vesicular nucleus, a few of which have a pinkish protoplasm with Wright's stain, a few lymphoid cells, plasma cells, and a considerable number of polymorphonuclear neutrophiles. There are often collections of lymphoid cells, but no large areas of these. There is an occasional small-sized giant cell with the grouping of three or four nuclei in the center, and a bluish protoplasm. The epithelioid cells are occasionally undergoing mitosis. Some areas are more fibrous, some have more spindle cells, some have more of the other varieties, some have no ducts. Throughout the tissue are numerous *eosinophiles*, quite abundant, especially in the areas of new-formed atypical tissue, but also present among and invading the parenchyma. These are similar to those heretofore described. One on careful focusing gave the appearance of thrusting out a pseudopod. The central cells of the lobules contain an excess of blood pigment. Erythrocytes are scattered throughout, some staining pink, and others yellow.

Spleen: Slightly enlarged, weighing 270 gm., of normal red color, but giving the suggestion of the porphyry appearance from minute whitish areas. One such area is about one half a centimeter in diameter, oval in shape. Trabeculæ markings were normal. The capsule was normal, and the surface smooth.

Microscopical examination of sections, stained both by Unna's and by Wright's stain, show the trabeculæ normal. In places they contain spindle cells. A few small Malpighian bodies are present, containing lymphoid cells, a few leucocytes, an occasional spindle-shaped cell of medium size, an occasional red blood corpuscle, and frequently an abundant number of *eosinophiles.* Scattered throughout are several pale-staining areas somewhat larger than the Malpighian bodies. Sometimes these are fibrous in character, though containing a few each of the above-mentioned cells, but sometimes they are cellular, containing oval or epithelioid and spindle-shaped cells. The larger white area, mentioned above in the gross, contains a hyaline-like background, in which are scattered a few of the above-mentioned cells, excepting the eosinophiles, and a number of nuclei, especially of lymphoid cells and leucocytes. One area seems to contain chiefly these extruded nuclei.

The rest of the spleen pulp consists of a stroma infiltrated with atypical small and medium-sized, round and oval cells, with both small and vesicular nuclei which occasionally are dividing. There are also spindle cells, and an occasional giant cell with pink or bluish protoplasm and three to six nuclei. There are lymphoid cells, some polymorphonuclear leucocytes together with an abundance of eosinophiles, in places very thick. These stain somewhat better by Wright's method, though well by Unna's. These have generally a trilobed or horseshoe nucleus, often, however, small and solid, occasionally larger, and more vesicular. Rarely there is a larger form with nuclei in opposite sides, and occasionally the nucleus is protruding. Throughout are scattered erythrocytes in places in large masses, often staining a golden red color, or sometimes a yellow, while there are collections of blood pigment of a dirty yellow.

Kidneys: One weighed 140 gm.; the other 120. *Macroscopically,* the cortex was normal, and the kidney as a whole was rather pale. *Microscopically,* there is some cloudy swelling of the convoluted tubules, which as a rule contain a considerable amount of granular material. The glomerulæ show a slight increase of the nuclei, and occasionally a slight desquamation into the periglomerular space.

The stomach, intestines and appendix were normal. The intestines contained no evidence of parasites.

The diaphragm and muscles of the chest and abdominal cavity were smooth, and macroscopically gave no evidence of the presence of trichinæ.

Unfortunately, the *bone marrow* was not examined.

The pathology of Hodgkin's disease has been fairly definitely settled since the researches of Reed were published in 1902. Whatever the relation of Hodgkin's disease to leukemia, lymphosarcoma, sarcoma of lymph glands, and tuberculosis, if there is any one pathological condition that is a type of the disease, then aside from the general eosinophilia the case now reported corresponds to that type.

Hodgkin's disease is characterized by a hyperplasia of lymphoid tissue, the cells, many of which probably originate from the reticulum, consisting of many varieties of epithelioid, spindle, lymphoid and plasma cells, eosinophiles, fibrous cells, in any lymphoid structure of the body, notably the lymph glands, liver and spleen, the latter acquiring the so-called "red-porphyry" appearance.

Pinkus[1] states that the lymph glands show the normal arrangement with a proliferating center of large cells and a peripheral layer of small cells, the histological picture corresponding exactly to that of lymphatic leukemia. Other authors,[2] however, give a different and more specific pathology.

Dorothy Reed[3] says: "In the smallest gland examined . . . we found only proliferation of the flat so-called endothelial cells, which cover the reticulum of the lymph sinuses, and of the large cells of the centers of the lymph nodes which are presumably identical cells. Mitotic figures in cells of this description are frequently seen. . . . As the process advances we find the lymph spaces filled with masses of lymphocytes and proliferating endothelial cells. The presence of these newly formed cellular elements destroys the normal appearance of the gland. . . . The endothelial cells, which show many karyokinetic figures, in proliferating form large epithelioid cells with vesicular nuclei. Numerous giant cells with one or more nuclei and prominent nucleoli appear in great numbers. . . . Occasionally a very large giant cell with many small nuclei peripherally arranged is seen. . . . The lymphoid cells . . . are of the usual small type. . . . Plasma cells are often observed in almost as great numbers as the lymphocytes. Eosinophiles are usually abundant throughout the tissue spaces, except in the germinal centers of the follicles. . . . As the process advances the connective tissue shows marked proliferation. The framework of the gland becomes increased and bands of connective tissue, starting often from about the vessels, gradually break up the gland substance into coarse lobules . . . at the expense of the other cells. . . . The capsule of the gland usually shows no change, except possibly some thickening."

Eosinophiles were first observed in a case of Hodgkin's disease or malignant lymphoma in the lymph glands by Goldmann[4] in 1892 Since then they have been observed by other writers,[5] and although they were thought to have a certain diagnostic value, still they are not characteristic since they are found occasionally in other varieties of lymphomata, and they are by no means constant in Hodgkin's disease.[6] In several cases of Hodgkin's disease they have been, however, very numerous.

A case of Hodgkin's disease where the eosinophiles have invaded the liver, spleen, lung and lymph glands in such large numbers and occurring in the blood to such an extent, namely, 68.2% or 33,418 per cubic millimeter in a total leucocytosis of 49,000, I have been unable to find reported. Dreschfeld,[7] in 1892, stated that eosinophiles were present in fairly large quantities in the blood in some cases, but specified no examples.

Cabot, in 1897, cited one case[8] with 9.3% eosinophiles, the white count not being increased, and in 1898 cited another[9] with 7%, or 826 eosinophiles in a leucocytosis of 11,800.

Einhorn,[10] in 1902, reported a case with 10% eosinophiles or 730 per cubic millimeter in a white count of 7,300. Later there were 12.4%. Longcope,[11] in 1903, reported a case with 2.8% eosinophiles or 563 in a leucocytosis of 20,100, in which later the percentage fell to 2.4%, but the absolute number rose to 1,872 in a white count of 78,000. They were numerous in the glands, and increased in the bone marrow.

Longcope,[12] in 1906, reported a case showing 13.2% or 1,491 eosinophiles per cubic millimeter with a total leucocytosis of 11,300, a few large mononuclear eosinophiles in the thymus, but only a few were noted in the spleen and in the lungs; none were seen in the liver; and there was an increase of eosinophilic myelocytes in the bone marrow.

Pepper[13] has recently reported a case with 16% of eosinophiles, or 4,608 in a total white count of 28,800; enormous numbers of eosinophiles were found in an excised axillary gland. He also mentioned two other cases at the Pennsylvania Hospital, with 8.8% and 10.6%, respectively, of eosinophiles in the blood. Of twenty cases of Hodgkin's disease he found 20% had eosinophilia.

Nowack,[14] in 1905, reported a case with 24.5% eosinophiles per cubic millimeter, or 940 per cubic millimeter in a white count of 3,840.

Several other cases[15] have also been reported, showing a slight absolute increase of eosinophiles in the blood, varying from 250 or 300 per cubic millimeter (the upper limits of normal)[16] to 1,173 and up to 5% (the normal being 1% to 4%),[16] but in the organs they were numerous only in the lymph glands, except one case[17] with 4.4% eosinophiles or 550 in a white count of 12,500, with abundant eosinophiles in the lymph glands and spleen, and a few in the liver and lung.

Another case[18] showed eosinophiles in the spleen and liver, while they were numerous in the lymph glands. In the blood, however, there were only 272 per cubic millimeter. A few other cases[19] showed a few eosinophiles in the spleen or liver, but no large excess in the blood. On the other hand, in a case of lymphosarcoma colli[20] 60,000 eosinophiles per cubic millimeter have been found.

The small relative number of lymphocytes in this case (3.8%–6%) is consistent with a diagnosis of Hodgkin's disease. Notwithstanding that it has been asserted that in Hodgkin's disease there is a relative lymphocytosis,[21] this statement is disputed,[22] and there is sufficient evidence to show that in a certain proportion of cases there is a normal or low number of lymphocytes.[23] That the proliferation in the lung is not evidence of a sarcoma is supported by two cases of Hodgkin's disease reported by MacCallum,[24] in one of which the disease invaded the right lung, and in the other, both lungs. Apparently, Hodgkin's disease is a hyperplasia of pre-existing lymphoid tissue, anywhere in the body, rather than an infiltration or transplantation of new growth cells.[25] Pseudo-leukemia gastro-intestinalis, a recognized type of disease, is an example of this.[26]

The presence of dyspnea in the case under discussion possibly may be considered evidence of asthma, and as such a sufficient cause for the excessive eosinophilia. But it is not so likely that this was the cause of the eosinophilia, as that the hyperplasia and changes in the lung were the cause of the dyspnea. Further, I am not aware that asthma causes a marked presence of eosinophiles in the various internal organs. In a pure asthma the total white count is only slightly raised, if at all, and when bronchitis is present the count runs from 6,000 up to 26,000,[27] although one case showed 45,000,[28] running up to 68,000 before death. The maximum percentage of eosinophiles in asthma reported is 53.6%,[29] but their absolute number was only 4,449 per cubic millimeter in a white count of 8,300, while another case showed 25% or 13,000, in a white count of 52,000,[30] but still considerably below the percentage and absolute number in the present case. Also our case had had no recent attack of dyspnea at the time of entrance, and it was not till two days later that there was any suggestion of an asthmatic attack, and then, instead of the percentage of eosinophiles rising, they fell from 68.2% to 60.8% with a falling white count. So the most we can say is that if there was any true asthma present in our case (which is extremely doubtful) its influence on the production of eosinophiles was only slight, partial and contributory with other causes inherent to the Hodgkin's disease.

Being of so marked a type, and differing so from the usual run of Hodgkin's disease, and unless recognized as a type so likely to lead to confusion in diagnosis, the present case is worthy of the descriptive title, *Pseudo-leukemia Eosinophilica.*

The origin of these eosinophiles is held by Opie [31] to be the bone marrow, although others maintain they are formed locally in various affections. As Longcope [32] says, in Hodgkin's disease, "We can only suppose they accumulate in the tumor nodules by one of two methods. On the one hand, it is possible that they are formed locally in the lymphomatous tumors; on the other hand, they are brought to this situation by the blood stream." Goldmann [33] and Dorothy Reed [34] held this latter view. In our own case the preponderance of eosinophiles in the blood would favor also this view. We have, in all likelihood, what is probably an exaggerated type of the frequent occurrence of eosinophiles in Hodgkin's disease, and not a blood disease *sui generis*, carried a degree further than Longcope's, Nowack's and Pepper's cases to an eosinophilia of many of the organs.

In conclusion, I wish to express my thanks for advice and assistance to Drs. Henry A. Christian, Frederick H. Baker and Ernest L. Hunt, and to Miss Ora M. Mills.

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SAHLI'S BUTYROMETRIC TEST OF GASTRIC FUNCTION.*

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In 1902 a method of stomach examination was published by Sahli,[1] of Berne, and by Seiler,[2] his assistant, which from its ingenuity of conception and its theoretical advantages promised much. A few articles, however, soon appeared which questioned the reliability of the test, and also criticised it as too complicated for practical use; but articles dealing with the subject have been too few to lead to definite conclusions. Since the method must continue to attract attention as appearing in Sahli's valuable book upon diagnostic methods,[3] and since in its author's hands it is reported in later communications as still being used with satisfactory results, a further consideration is desirable.

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In principle the test is a development from the earlier attempts, notably those of von Mering and of Strauss, to measure the activities of the stomach by introducing into it with a test diet some substance not acted upon by the stomach which in subsequent tests of the stomach contents might serve as an index of the amount of the test diet still remaining. Sahli's test is also performed with more stress upon quantitative determinations of amounts, given and withdrawn, than are the older tests. The following advantages are claimed for it: (1) In addition to determining the simple acidity of the mixed contents it is possible to determine the composition, by showing to what extent the specimen is composed of the substance ingested, and to what extent it is composed of gastric juice. (2) The amount and the acidity of the pure gastric juice can be determined; thus one can distinguish between hyperacidity and gastrosuccorrhea, and between subacidity with secretion normal in amount and subacidity due to diminished secretion. (3) Numerical values may be obtained indicating the degree of gastric motility; this may be of value in determining the degree of stasis in cases of pyloric stenosis and in showing variations resulting from medical or from surgical treatment. (4) All data to be obtained by means of the Ewald breakfast are said to be obtained as well by this method. (5) The process is not disagreeable to the patient. The soup employed as a test meal is not distasteful, and by reason of its fluid consistency it can be easily and rapidly withdrawn.

The theoretical basis of the test deserves careful study. The test soup, of which 300 ccm. are given, is esentially a stable fat emulsion, a sample of which is kept for comparison with what is later obtained from the stomach. The fat percentage is determined, 1st, in the original soup, and, 2d, in the stomach contents obtained an hour after ingestion. In normal cases the fat percentage in the stomach contents is found to be only about a half as great as that of the original emulsion. Now since fat cannot be absorbed from the stomach this fall in the fat percentage must be due to *dilution* of the fluid ingested *by gastric secretion.* The relative fat percentages measure this dilution since excessive secretion obviously causes excessive dilution, and lessened secretion causes a less degree of dilution. Thus, in the contents obtained, it can be learned how much is soup and how much is secretion. The proportion of secretion in the contents thus being known and the acidity of the total contents being easily determined by the usual titration, the acidity of the pure gastric juice can be calculated. To obtain an index of motility the amount of contents is measured, and the extent to which this is composed of the original soup is calculated from its fat percentage. The relation which the amount of soup residue bears to the amount of soup ingested indicates what proportion of the test emulsion still remains in the stomach at the end of an hour, and what proportion has passed on beyond the pylorus.

The test is performed as follows: A soup is prepared by heating 15 gm. of butter and 25 gm. of flour in a pan with constant stirring until the mixture becomes browned to the color of strong coffee with milk. To this are added slowly 350 ccm. of hot water and the whole is boiled for five minutes, after which water is added up to the original 350 ccm., and also 3.5 gm. (1%) of salt. This soup is fairly agreeable in taste and is a stable emulsion of the butter fat, without tendency to separate in layers of different concentration.

Of this soup, still hot, the patient is given 300 ccm. to be eaten with a spoon. The remaining 50 ccm. are kept for subsequent fat estimation. The patient's stomach should be washed clean before the soup is given.

After an hour the stomach contents are withdrawn as completely as possibly, and then 300 ccm. of warm water are allowed to run in and out, several times, to determine the amount of residue after the method of Matthieu,[4] as will be described later.

The stomach contents obtained should present the appearance of a perfect emulsion without visible fat globules.

Three specimens are then at hand which are, the materials for laboratory study,— the original soup, the stomach contents and the washings with the 300 ccm. of water. The ordinary chemical tests of the contents are first performed as with the contents after the Ewald breakfast. Free HCl † and total acidity are determined quantitatively. The lactic acid and the guaiac or benzidin tests or any other tests usually tried may be made, but are not an essential part of this method. The washings with the 300 ccm. of water are next tested for total acidity. From this we are in the position to apply the formula for estimating the amount remaining in the stomach after no more pure contents can be withdrawn through the tube:

$$\frac{x = 300 \times b}{a - b},$$

x being the amount of residue in centimeters; 300 ccm., the amount of wash water; b, the acidity of the washings; and a the acidity of the undiluted contents.

The result of this calculation added to the actual amount of contents is the total amount contained in the stomach at the conclusion of the test.

Thus the amount contained in the stomach being known, its composition, and the relative amounts in it of gastric secretion and of test soup are to be estimated. To this end the fat percentage of the original soup (F) and of the stomach contents (f) are determined. Sahli and Seiler recommend a modification of Gerber's butyrometric method. The author has found that the small tubes sold in this country for testing milk by the Babcock process are sufficiently accurate

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† Töpfer's agent is rapidly decomposed when added to this fat-containing material. In quantitating the free HCl, therefore, successive drops of Töpfer's solution on a porcelain plate, or filter paper saturated with Töpfer's solution, are touched at intervals during the titration with a glass stirring rod dipped in the contents, as the NaOH solution is run in.

Number.	Date.	Fasting contents, amount in ccm.	Food remains.	Micro-organisms.	Free HCl.	Lactic acid.	Blood.	Ewald — Amount in ccm.	Free HCl.	Total acid.	Lactic acid	Sahli — total residue.	Free HCl.	Total acid.	Lactic acid.	Secretion amount.	Secretion acidity.	Soup residue.	Per cent passed on in 1°	Sahli deductions	Clinical diagnosis.
1	Aug. 30 ...	20	0	0	+	0	0	—	—	—	—	65	.10	.146	0	36	.26	29	90+	Hypermotility.	Gastric neurosis.
2	Aug. 30 ...	0	0	0	0	0	0	50	0	018	0	130	0	.025	0	46	.07	84	72	Subacidity. Deficient secretion.	Cancer (?)
3	Aug. 5 ...	—	—	—	—	—	—	—	—	—	—	150	.15	.22	0	95	.35	54	82	Slightly deficient secretion.	
„	Aug. 17 ...	0	0	0	—	—	—	—	—	—	—	250	.12	17	0	125	.24	125	58	Deficient motility.	Pyloric stenosis.
„	Sept 22.	630	+	—	.01	—	—	—	—	—	—	480	.01	.018	–	Em	ulsio	n impe	rfect	——	
4	Sept. 1....	5	0	0	+	0	—	—	—	—	—	67	.09	.016	0	17	.35	50	83	Deficient secretion. Note: Mucus present.	Gastric catarrh.
„	Sept. 13...	0	0	—	—	—	—	—	—			197	.09	.125	–	131	.13	66	78	Hypersecretion.	Gastric catarrh.
5	Sept. 11...	190	Sl.	yeast	.16	0	0	—	—	—	—	226	.09	.14	0	102	.41	124	58	Deficient motility.	Pyloric stenosis.
6	Aug. 10 ..	0	0	—	—	—	—	?	.036	.08	—	—	—	—	–	—	—	—	—	——	Dyspepsia.
„	Aug. 18 ...	20	0	0	0	0	0	—	—	—	—	135	.066	.189	0	67	.36	67	78	Normal functions.	Dyspepsia.
7	Aug. 25 ...	0	0	0	0	—	—	—	—	—	—	180	0	0	0	111	0	69	77	Anacidity.	Dyspepsia, colitis.
„	Sept. 5....	—	—	—	—	—	—	8	+	—	—	—	—	—	–	—	—	—	—	——	Dyspepsia, colitis.
8	Aug. 25 ...	30	0	0	0	0	—	—	—	—	—	160	.09	.14	0	59	.27	101	66	Deficient motility. Deficient secretion.	Eructatio nervosa.
9	Sept. 14...	0	0		+	—	—	—	—	—	—	191	.10	.13	0	120	.2	70	77	Slight hypersecretion.	Nervous dyspepsia.
10	Sept. 18...	3	0	—	—	—	—	—	—	—	—	200	.10	.13	0	133	.15	67	78	Hypersecretion.	Indigestion.
11	Sept. 25...	5	0	—	0	—	—	—	—	—	—	193	.08	.13	0	96	.39	96	68	Slightly deficient motility.	Cholelithiasis.
12	Sept. 28...	0	0	—	—	—	—	—	—	—	—	96	.10	.15	0	29	.35	67	74	Slightly deficient secretion.	Dyspepsia.
13	Oct. 7.....	*	*	*	*	*	*	*	*	*	*	163†	0	.03	0	30	.17	133	56	Hypermotility.	Eructatio nervosa.
14	Oct. 7.....	0	0	—	—	—	—	—	—	—	—	130	.04	.11	0	52	.27	78	74	Slightly deficient secretion. Note: Mucus present.	Gastric catarrh.
15	Oct. 9.....	2	0	—	—	—	—	—	—	—	—	187	.16	.20	0	100	.37	87	71	Normal functions.	Dyspepsia.
16	Oct. 12....	0	—	—	—	—	—	—	—	—	—	94	.03	.07	0	33	.2	61	89	Deficient secretion.	Dyspepsia.
17	Oct. 23....	0	0	—	—	—	—	—	—	—	—	90	.02	.04	0	24	.12	66	78	Deficient acidity.	Dyspepsia.
„	Nov. 6	–	—	—	—	—	—	—	—	—	—	118	.15	.20	0	50	.48	68	77	Hyperacidity.	Dyspepsia.
18	Nov. 16 ...	630	Sl.	sarcinæ	.22	0	+	600	.17	.19	0	—	—	—	–	—	—	—	—	——	Pyloric stenosis with gastrosuccorrhea.
„	Dec. 3 ...	240	—	—	—	Sl.	0	—	—	—	—	420	.15	.22	0	327	.28	93	69	Hypersecretion — high degree.	
19	Oct. 30....	10	0	0	+	—	—	—	—	—	—	80	.19	.22	0	30	.57	50	83	Hyperacidity.	Hyperacidity.
„	Jan. 27....	—	—	—	—	—	—	—	—	—	—	141	.33	.44	–	Em	ulsio	n impe	rfect	Hyperacidity.	Hyperacidity.
20	Aug. 1	25	0	yeast	+	0	0	—	—	—	—	90	.10	.22	0	45	.36	45	85	Normal functions.	Cholelithiasis.
21	Aug. 22 ...	275	+	sarcinæ	.07	0	0	550	0	.16		—	—	—	–	—	—	—	—	——	Cancer of pylorus.
„	Aug. 23 ...	250	+	sarcinæ	0	0	0	—	—	—	—	454	0	.08	0	202	.18	252	16	Extremely low motility. Subacidity.	Cancer of pylorus.
„	Sept. 18...	140	+	0	.12	0	0	—	—	—	—	375	.07	.12	0	168	.22	207	44	Improvement after operation.	
22	Nov. 8 ...	0	—	—	—	—	—	—	—	—	—	135	0	.02	+	0	—	135	55	Absence of secretion.	Achylia gastrica.
23	Oct. 28...	10	0	0	0	0	0	—	—	—	—	80	0	.05	0	35	.11	45	85	Subacidity.	Gastric neurosis.
24	Nov. 9 ...	10	0	0	+	—	—	—	—	—	—	165	.16	.22	0	88	.35	70	77	Normal functions.	Dyspepsia.
26	Nov. 16 ...	30	0	0	0	0	—	—	—	—		50	.01	.02	0	21	.05?	29	90+	Hypermotility.	Dyspepsia.
27	Dec. 2.....	10	0	sarcinæ	—	—	—	—	—	—	—	300	.02	.025	0	225	.03	75	75	Hypersecretion.	Hypersecretion.
28	Nov. 29...	68	0	0	0	0	0	—	—	—	—	220	trace	.012	0	88	.03	132	56	Deficient secretion, low acid. Hypomotility.	Gastroptosis.
„	Dec. 12 ...	60	0	—	+	0	0	—	—	—	—	110	0	.04	0	9	—	101	66	Deficient secretion. Hypomotility.	Gastroptosis.
„	Feb. 1	—	—	—	—	—	—	175	.12	.29	—	—	—	—	–	—	—	—	—	(All symptoms relieved.)	Gastroptosis.
29	Oct. 9.....	40	—	—	+	—	—	—	—	—	—	91	.07	.13	0	68	.19	23	92	Hypermotility. Note: Mucus present.	Acute gastritis (?)
30	Dec. 14....	10	—	—	+	—	+	—	—	—	—	170	.26	.38	0	Em	ulsio	n impe	rfect	——	Gastric ulcer (?)
31	Jan. 2.....	—	—	—	—	—	—	—	—	—	—	164	.09	.18	0	80	.36	84	74	Normal functions.	Deferred.
32	Dec. 28 ..	175	+	sarcinæ	0	0	0	—	—	—	—	360	0	.18	0	131	—	193	39	Hypomotility. Deficient acidity.	Cancer.
33	Jan. 6.....	90	+	—	0	0	+	—	—	—	—	90	.03	.14	0	24	.49	61	80	Deficient secretion.	Deferred.
34	Jan. 6.....	15	—	—	—	—	—	—	—	—	—	240	0	.06	0	44	.33	196	34	Hypomotility.	Cancer of pylorus (?)
35	April 1....	350	+	—	0	0	+	—	—	—	—	425	0	.11	0	340	.05	85	72	Hypersecretion.	Cancer of pylorus.
36	Feb. 2	10	0	—	0	—	0	—	—	—	—	166	0	.03	0	118	!!	284!!	51!	——	Achylia gastrica.
37	July 11....	0	Sl.	0	—	—	0	125	.09	.23	0	—								——	Benign pyloric stenosis.
„	July 12....	+	—	—	—	—	—	—	—	—	—	478	trace	.16	0	276	.27	202	33	Hypomotility. Moderate hypersecretion.	
„	July 13 ...	+	—	—	—	—	—	—	—	—	—	373	trace	.14	0	242	.23	151	50	Hypomotility. Moderate hypersecretion.	
38	Feb. 16 . .	0	0	Wash	ings	clea	n.	—	—	—	—	310	.18	.22	0	206	.34	109	62	Hypomotility. Hypersecretion.	Pyloric adhesions.
„	Feb. 18 . .	160	+	sarcinæ	.15	0	0	—	—	—	—	410	.12	.18	0	262	.21	148	51	Hypomotility. Hypersecretion.	
„	Feb. 19 ...			Not fast	ing	—w	ash	ed c	lean.			260	.11	.18	0	140	.28	120	60	Hypomotility.	

* No contents after 1° — washings clean. †Oct. 17, after ½°.

for purposes of the test. These are filled with 5 ccm. of the contents or of the fat emulsion, to which is added 1 ccm. of amyl alcohol and then concentrated sulphuric acid up to the shoulder of the tube. Shreds of mucus are first to be removed by forceps. Both tubes so filled are then mixed by rotation and then centrifuged for five minutes. The tubes are then allowed to stand upright in hot water for a few minutes, after which hot water is introduced until the surface of their contents reaches the zero point of the graduations. After a second centrifugalization of one minute the results are read off. It is necessary to work rapidly to prevent cooling and contraction in the bulbs.

The reading ("*f*"), the percentage of fat in the stomach contents, divided by ("*F*"), the percentage of fat in the original soup, indicates the proportion in which the stomach contents are composed of soup ingested. In normal cases the value (*f*) is found to be approximately half as great as (*F*), showing that the contents are made up of nearly equal parts of soup ingested and of secretion. To obtain absolute amounts of soup and of secretion the amount of the total contents (including the estimated residue) is multiplied by $\frac{f}{F}$; the result is the number of cubic centimeters of the test soup remaining in the stomach at the end of the hour. The difference between this amount and the total contents is the amount of secretion. To obtain the acidity of the pure secretion the acidity of the mixed contents is multiplied by $\frac{F}{f}$. Normally, according to Seiler, this is from .35% to .44%.

The amount of test emulsion remaining in the stomach at the end of the hour being known, the difference between this and the original 300 ccm. must have passed through the pylorus to the intestines. In normal cases, it is said, the total residue should not be over 160 ccm., the amounts of secretion and of soup residue varying between 30 ccm. and 80 ccm. The amount of the test fluid passing through the pylorus within the hour should be from 75% to 90%.

A few illustrative cases may serve to show the significance of the results obtained.

Case I. A man aged twenty-eight, a shoe-worker, had complained for five months of poor appetite, eructations and acid regurgitation, pyrosis, pain worse an hour after meals, and occasional nausea. He was neurotic and overworked, but had not lost weight. By the method described above the following values were obtained. Total residue 65 ccm., a low amount, suggesting high motility. In this free HCl was present to .10% and the total acidity amounted to .146%. The fat percentage of the original emulsion (*F*) was found to be 1.8% and that of the stomach contents (*f*) was .8%. From this it follows that the total residue of 65 ccm. was made up of 36 ccm. of secretion and of 29 ccm. of the original soup. The acidity of the contents being .146, the acidity of the pure secretion must be .26%.[‡] The soup residue of but 29 ccm. shows that over 90% of the test fluid has passed through the pylorus within an hour. These results show no notable abnormality of function but suggest the presence of a hypermotility such as is often present as a part of a gastric neurosis. (See also Case XIII in table.)

Case XVIII. A man aged forty-three had complained for ten months of distress beginning immediately after meals, with pyrosis and belching of wind, gradually increasing. For six weeks before entering the hospital he had had attacks of vomiting about once in three days, after which he would feel better for a day. The vomitus was, as a rule, large in amount, watery and sour, thought not to contain food, but containing a dark-brown sediment. The man had lost 55 lb. in six months. The fasting contents on the day after entrance were 630 ccm., slightly turbid, with slight brownish sediment, few starch granules and fat drops, free HCl .22%, total acid .24%, lactic acid absent, guaiac test positive. Daily lavage showed similar contents of the fasting stomach although the amount gradually diminished. Seventeen days after entrance the amount of fasting contents was 240 ccm. Sahli test performed on this day resulted as follows, Total residue 420 ccm.; Free HCl, .146%; total acidity, .22%; secretion, 327 ccm.; of acidity, .28%. Soup residue, 93 ccm. Per cent passed out of the stomach in an hour, 69%. The high relative amount of secretion shows strikingly the condition of hypersecretion or gastrosuccorrhea. (Absence of pyloric stricture is probable from the complete disappearance of gastric symptoms during the next year.)

Case XXI. A man aged forty-five, who for two years had complained of gradually increasing sense of fullness in the stomach, with eructations and regurgitation, showing an emaciated condition, with visible gastric peristalsis, was found by this test to have a total contents of 454 ccm., calculations from which showed that *only* 16% of the test emulsion had passed the pylorus. Operation by Dr. M. H. Richardson revealed a ring-like cancer at the pylorus which was removed by pylorectomy. Three weeks after the operation the test was repeated and the motility coefficient was found to have risen to 44%. (Fifteen months later the patient died of typhoid fever; at autopsy the union of stomach and duodenum showed almost no sign that any operation had been performed, and no recurrence.)

Other cases examined are recorded in the appended table.

In these cases the findings have agreed well with the clinical diagnosis. In other cases among those in the table, however, and in the following cases, were found results showing considerable variations from what we should expect.

Case XXXV. A patient with palpable cancer of the pylorus (confirmed by exploratory laparotomy), with fasting contents of 350 ccm., was found, according to the Sahli test, to have a total residue of 425 ccm., of which 340 ccm. were secretion and only 85 ccm. were remains of the soup ingested. If accuracy of the test is not questioned we must assume here a high degree of gastrosuccorrhea in addition to the symptoms of cancer.

Case XXII gave readings still more unusual. The total residue of 135 ccm. contained the same fat percentage as that of the original soup. The patient, then in my service at the Long Island Hospital, I later found to have been at the City Hospital, and to be one of Dr. F. W. White's series of cases of achylia gastrica, yet it is to be supposed that even the small amount of saliva swallowed would give some appreciable dilution. Moreover, Koziczkowsky reports cases of apepsia gastrica tested by this method in which secretion was present. It was unfortunately impossible to repeat the test.

[‡] In this case the directions of Sahli, who uses the total acidity as the basis for his calculations of the acidity of the gastric juice, were followed. Except in earlier determinations, however, the author has based this calculation upon determinations of the total HCl by Congo red, or by the alizarin method, so as to leave out of account the slight acidity of the soup itself. The acidity values are thereby somewhat lowered, but must be nearer to the truth.

In one case only (Case XXXVI) have I obtained a result such as Koziczkowsky obtained in several cases, showing complete proof that in this case the method was at fault. The patient, a woman aged fifty-six, complaining of gas in stomach and distress after eating, relieved by belching, was found to have, one hour after ingestion of 300 ccm. of the test soup, contents containing a percentage of fat higher than that of the original soup ingested. If we exclude the possibility of absorption of water through the stomach walls, shown by Senator not to occur, this result can be explained only by the assumption that the contents in the stomach separated into two layers, the upper one becoming richer in fat and the lower one only passing through the pylorus. The emulsion of fat in the contents, however, was not broken up; unlike the contents in 8 cases excluded from this series as obviously failures of technic it contained no macroscopic fat drops. The existence of gastric stasis was excluded by the absence of residue in the fasting stomach and by the fact that dried currants given by mouth appeared normally in the dejections.

The results of other authors as to the value of this method may be summarized as follows: Koziczkowsky,[5] in Senator's clinic, made tests to determine whether the test emulsions remain homogeneously distributed in the stomach. Drawing the contents from the stomach in two portions, the first through a tube reaching barely to the cardia and the second from the lower portion of the stomach, he found in several cases that great differences existed in the fat percentages from the two specimens. Also in a series of tests performed upon one patient his results were extremely variable. His conclusions are wholly unfavorable.

Bonniger,[6] from Riegel's clinic, speaks of the preparation of the test soup as not easy, and of the whole method as too complicated for general use. Using a different method of fat estimation, he found that in different portions of the stomach contents the fat percentages were not uniform, although the variations which he found were not so great as those reported by the last author. He also reports cases in which with the ordinary test breakfast free HCl was present, but by the Sahli test it was found to be absent. He concludes that the Sahli test soup is not a suitable substance for use as a test of acidity. He concludes that the older methods will remain the most satisfactory for general use even though Sahli's method or others on the same principle may be found useful for purposes of research.

Zweig and Calvo,[7] as a result of 52 cases tested in Gassner's clinic, accept the method as of value but with certain reservations. They find that the stomach contents are homogeneous except when the emulsion is so destroyed that the fat occurs in visible droplets, or where there are solid particles present from faulty preparation of the material. In the presence of mucus from chronic gastritis they find the fat estimation unreliable. They find, as does Bonniger, that there is less stimulus to the secretion of acid than by the test breakfast. They, too, regard the method as too complicated for ordinary clinical purposes. In investigating cases of nervous dyspepsia, however and in detecting conditions of atony, and especially in demonstrating hypersecretion, they consider the test of value.

Aronson,[8] working under Ewald, has used the method in 20 cases. He finds that the results in many cases were at variance with the clinical diagnoses, and has observed, without quantitative examinations, cases where the contents seemed to be not homogeneous. He considers the test too complicated for practical use and questions the reliability of the results, but still he considers that it may be of value in making diagnoses of functional disturbances and in determining the degree of acidity and amount of secretion.

Other articles have been either merely descriptive of the method or have simply given results in cases without critical discussion.

Sahli, in his book, and Seiler and Ziegler,[9] in a later article, have answered the criticisms mentioned and have suggested certain modifications which tend to overcome certain difficulties and sources of error. Seiler reports a large number of cases and continues to use the method regularly in his clinical work.

The most vital question is that as to the formation of layers of varying concentration in the stomach as described by Koziczkowsky and by Bonniger. Seiler has repeated Koziczkowsky's experiment in 32 cases and has found no great lack of homogeneity, the average difference in fat content between different layers being 0.15% to 0.25%. Koziczkowsky's poor results are attributed to faulty preparation of the emulsion, and Bonniger's to his method of fat estimation. To correct any possible influence of gravity, however, it is suggested that the patient should change his position frequently during the period of the test. It is admitted by Seiler that separation in layers might occur to a marked degree if peristalsis of the stomach were paralyzed. Koziczkowsky's variable results in the successive tests in his single case are attributed partly to faulty technic and partly to the variability of gastric functions under slight influences of environment. Bonniger's objection that secretion is not adequately stimulated is answered by Seiler's results in 28 normal cases, in which the free HCl averaged .11%, the total acidity .17%, and the acidity of the pure secretion .34%. It is suggested, however, that a raw egg be added to the test soup as an additional stimulus. The objection generally expressed that the test is too complicated is disputed. Sahli,[10] in his latest article, deals with this point at length, describing technic which obviates the need of a centrifuge.

My own observations agree in part with those of both sides. The difficulty of technic is certainly greater than that of older methods, but I do not consider it prohibitive for use of the method in important cases. The preparation of the test soup takes about twenty minutes for a single case, and somewhat less if the roasted flour and butter (which I have kept a month in the cold without deterioration) is prepared in quantity. The chemical procedures, when the technic is once mastered, require thirty to forty-five minutes in addition to tests performed upon the ordinary stomach contents.

As to the values of free HCl in the mixed contents, it will be seen by reference to the table that among the cases in which both the Ewald test breakfast and the Sahli test soup have been used there are a few in which the free HCl after the test breakfast has been normal but in the Sahli test has been diminished or absent. In other cases, however, there has been no great discrepancy.

As to the variation in results of cases tested more than once, I am unable to express certain conviction. These variations have been considerable, but whether these variations in result indicate true variations in gastric function or misleading inaccuracies of which the method is to be accused, I cannot positively decide. It is to be noted in some of these cases how variable has been the amount of the fasting contents. It is also to be noted in these cases, as well as in Koziczkowsky's series, that one of the most variable factors has been the amount of contents at the end of the hour. This variation obviously cannot be brought forward as evidence against the method.

I have unfortunately few cases where tests were repeated without change of conditions. Case III, from Aug. 5 to Sept. 22, presents the development of a pyloric stenosis. Case XXI, between Aug. 23 and Sept. 18, had undergone pylorectomy. In cases XXXVII and XXXVIII, although conditions seemed the same on the different days, still great variations occurred in the amounts of fasting contents and of contents at the end of the test.

It must be understood that the method, like many clinical methods, cannot lay claim to such accuracy as is required by the analytical chemist. I freely admit that the error in my fat determinations may be 0.1% in either direction, perhaps sometimes even 0.2%, which is enough to influence considerably the calculated results. Yet I feel that in cases such as Case XXXVIII the three results, roughly similar, it is true, but yet widely different, are to be explained largely by irregular action of the stomach.

Finally, as to the question of the homogeneity of the stomach contents, the question according to the decision of which the test must stand or fall: In one case (Case XXXVI), perhaps also in another (Case XXII), we have evidence agreeing with that of Koziczkowsky and of Bonniger, that separation of fat from its suspending fluid has occurred. Case XXXV may also be suspected of showing a similar process by which the fat containing portion has been the first to pass out of the stomach. I am also able to agree with Zweig and Calvo that in certain cases, in spite of every precaution, the emulsion of fat may be broken up in the stomach so that the fat is found floating in large drops at the surface of the stomach contents. Such conditions obviously show that in these cases the test has failed. Yet I can also prove that this method is not always open to such objections. In Case XXXVIII, on Feb. 16, the contents were drawn by Koziczkowsky's method from two levels. In the first, the upper layer, the readings were as follows: (1) 1.0%, (2) 0.9+%. In the second layer (the larger) the readings were: (1) 0.8+%, (2) 0.9%. On Feb. 19 the contents were withdrawn in three layers which contained the following percentages: 1st layer, 1.1%, 2d layer, 1.2%, 3d layer, 1.0%. In testing a few of my earlier cases, observations as to this same question were made. Although I have unfortunately mislaid the readings they showed no such great variations as those of Koziczkowsky and Bonniger. Moreover, if the glaring errors found by Koziczkowsky are of frequent occurrence, it is strange that more inconsistencies have not become evident in the course of the series of cases recorded in my table.

The question naturally arises, how we are to distinguish cases in which the results are reliable from those in which they are fallacious. Sahli has answered this by advising that in every case the contents be withdrawn in two portions so as to detect undue variation. This adds to the time required by the test, but I feel that it is the only solution of the difficulty possible if we are to continue to use this test fluid which we must admit is liable in some cases to separation.

Thus we have in this method a procedure which, in spite of a liability in some cases to complete failure, offers in other cases, at the price of an hour's extra work, information, probably at least roughly accurate, of a nature which we cannot otherwise obtain. It must be admitted that the method lacks much of being an ideal application of the theoretical considerations upon which it is based. It is strongly to be hoped that better solutions of the problem which this method attempts may be brought forth.

But the final question to be considered is whether this method as it stands is to be accepted with its limitations or whether it is to be entirely discarded. Personally I feel that for certain cases, especially where there is question of impaired motility or of hypersecretion, and where circumstances demand that every effort shall be made to arrive at a diagnosis, this method is not without value.

In conclusion I beg leave to express my gratitude to Dr. Maurice H. Richardson and to the physicians of the Massachusetts General Hospital for clinical opportunities, without which this work could not have been done.

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ON THE OCCURRENCE OF STEATORRHEA UNASSOCIATED WITH JAUNDICE OR DEMONSTRABLE PANCREATIC DISEASE.

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CONFLICTING views are still held in regard to the significance of fatty stools in the diagnosis of pancreatic disease. Friedrich Müller[1] in his studies on icterus showed that the ordinary clay-colored stool of jaundice was composed largely of fat. In the three cases of pancreatic disease that he investigated fatty stools did not occur. He maintained that in pancreatic disease there was a deficiency in the splitting of the fat which would lead to a decrease of the fatty acids and soap with an increased percentage of neutral fat. Recent observations, especially those of Brugsch,[2] indicate that marked splitting of the fat may occur even when the pancreatic juice does not enter the intestine. Deuscher,[3] Zoja[4] and Brugsch believe, however, that the determination of the composition of fecal fat is of diagnostic importance in suspected pancreatic disease. Deuscher's careful analyses indicate that a high percentage of fatty acids occurs in pancreatic disease, and he holds that this increase is due to a lack of soap formation rather than to increased splitting of the neutral fat. The views of Zoja and Deuscher are practically in accord although one lays stress upon the diminished percentage of soap and the other on the increased percentage of fatty acids. Recent investigators have clearly demonstrated that true steatorrhea does occur in pancreatic disease unassociated with icterus.

The exclusion of bile from the intestine produces a greater relative increase in the amount of fat in the feces than does the loss of pancreatic secretion. The highest percentage of fat occurs when there is complete obstruction to the flow, both of bile and pancreatic juice.

With the co-operation of Professor Fitz one of us began several years ago a study of the composition of fecal fats in cases of suspected pancreatic disease occurring at the Massachusetts General Hospital.

Clay-colored or grayish-white stools occur under three conditions: (1) when no bile enters the intestine; (2) when the hydrobilirubin which gives the normal color to the stools is reduced to the colorless derivative, leukohydrobilirubin; and (3) the presence of a large amount of fat may obscure the hydrobilirubin and give rise to a colorless stool. Some examples of the last two conditions are found reported in the literature under the title "acholic stools without icterus." This is a misnomer, however, because in both conditions derivatives of bile do occur in stools. It is possible that the few cases reported as acholic stools due to leukohydrobilirubin are really due to an excess of fat in the feces. No case can be accepted as belonging in class two unless it be shown that the percentage of fat in the stools is not increased. If it is increased one is not justified in assuming that the clay-colored stool is due to leukohydrobilirubin. It was at first thought that the two cases with clay-colored stools reported in this paper were due to the presence of colorless leukohydrobilirubin. Chemical analysis showed, however, a high percentage of fat.

Stools very rich in fat have been observed rarely in extensive amyloid disease of the intestine, in tuberculous peritonitis, and in tuberculosis of the mesenteric lymph nodes. The condition to be described in this paper is a fatty diarrhea without jaundice and unassociated with any demonstrable organic disease of the pancreas, intestine, or lymphatics.

CASE I. B. D., age thirty-three years, entered the Massachusetts General Hospital on Dr. Fitz's service on Oct. 30, 1903.

Anamnesis. Family history unimportant. Aside from the ordinary diseases of childhood he was always well until the onset of present trouble. Never jaundiced.

For many years he has had recurrent attacks of pain over the stomach and intestine, lasting two or three hours usually and followed by diarrhea for a day or two. Eructations of gas were marked during these seizures. Diarrhea since the summer of 1902. Frequently has seven to twelve stools a day; rarely less than six. Bowels often distended with gas; passes much gas by rectum. Stopped eating meat in September, 1903, as he thought this caused the attacks of abdominal pain. Vomiting has been frequent. The stools have been light colored for a long time. Never noticed blood or mucus in stools. Considerable loss of weight in past year and a half. Has been able to do very little work for past year owing to general debility.

Status praesens. Fairly well developed, rather poorly nourished. Slight pallor of skin and mucous membranes. Lungs hyper-resonant. Cardiac outline normal. Soft systolic murmur over pulmonic area. Pulse regular and slow. Blood tension 125 mm. Abdomen distended. Umbilicus almost even with abdominal wall. Slight peristaltic movement visible at times. On palpation much gurgling, no masses or tenderness. Liver and spleen not enlarged. Knee kicks and plantar reflex normal.

Urine free from albumin and sugar. Bile absent. Sediment shows no casts.

Oct. 31. Hemoglobin 60% (Tallqvist), leucocytes 8,800, erythrocytes 4,096,000.

Nov. 2. Stool, consistency of pea soup. Reaction faintly alkaline. It contains a large amount of tenacious mucus. Few striated muscle fibers. Few fat droplets.

Rest in bed and a farinaceous diet improved his condition, and when he left the hospital, Nov. 20, he was having only one movement a day.

He re-entered the hospital Dec. 18, complaining again of diarrhea.

Dec. 17. Diet yesterday:

Breakfast: Cream toast, cup of cocoa.
Dinner: Boiled milk; French bread.
Supper: Boiled milk; French bread.

Specimen passed at 11 A.M. Examined at 12 M. It consists of about 75 ccm. of homogeneous, soft, clay-colored, bulky feces, without odor. Upon treating a small portion with ether the light-gray color becomes somewhat brownish. Test for bilirubin by Gmelin's method positive. Microscopic examination: Numerous sheaves of crystals (fatty acids ?). No small "soap crystals" seen nor epithelial or pus cells. Much granular material. Stain for tubercle bacilli negative.

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[1] Zeitschr. für klin. Med., 1887, xii, p. 45.
[2] *Ibid.*, 1906, lviii, Heft 5 u. 6.
[3] Correspondenzbl. für Schw. Aerzte, 1898, xxviii, p. 321.
[4] Morgagni, 1899. Referat im Centralbl. für inn. Med., 1899, 1.

The stools continued to be clay colored until his discharge on Jan. 9, 1904. He was re-admitted Feb. 11, 1904. No loss of weight in past month. About six movements daily since he left the ward a month ago. They are sometimes clay colored and sometimes light yellow.

Feb. 19. Test breakfast: No free HCl. Total acidity 4. Two of Sahli's glutoid capsules given.

Urine voided at the end of 7 hours positive.
Urine voided at the end of 9 hours positive.
Urine voided at the end of 25 hours positive.

Feb. 21. Stools since last entrance into hospital have been straw-yellow in color. He has averaged four to five liquid stools daily. No fat crystals now found on microscopical examination.

Feb. 22. Test breakfast. No free HCl. Two of Sahli's glutoid capsules given with the breakfast at 8 A.M.

Tested for Salicylic Acid.

9 A.M.	Fluid from stomach,	1 hour	negative.
10 A.M.	Urine,	2 ,,	negative.
12 M.	,,	4 ,,	positive.
2 P.M.	,,	6 ,,	positive.
4 P.M.	,,	8 ,,	positive.
6 P.M.	,,	10 ,,	positive.

Feb. 25. Test breakfast. Reaction neutral. Pepsin and rennin present. Schmidt's test for bile in stool positive.

Feb. 28. Discharged. Diarrhea less marked during last few days. Still some epigastric distention.

Analysis of Stool Passed Dec. 18, 1903.

		Composition of fecal fat.	
Nitrogen,	3.3%	Neutral fat,	11%
Fat,	62.7%	Fatty acids,	23%
		Soaps,	66%

Case II. W. S., age, forty-eight years. Single, born in New York. Overseer of orange plantation in Porto Rico for the past fifteen years. Entered Dr. Fitz's service, Massachusetts General Hospital Nov. 1, 1905.

F. H. Father living and well. Mother, one brother, and an aunt died of consumption. One sister living who has consumption.

P. H. Mumps in childhood. Intermittent fever in 1890, followed three months later by "typhoid malaria." Malarial fever in 1894. Denies lues.

Habits: Tea and coffee in moderation. No alcohol or tobacco.

P. I. For the last two years he has felt "run down" and has been unable to do as much work as formerly and gets easily fatigued. For the last year has occasionally had loose movements of the bowels for a few days at a time, but in the intervals stools have been formed and have averaged one a day. Two months ago he began to have diarrhea which has persisted ever since. The movements are of the consistency of paste, sometimes watery, never formed; frequency, two to three a day. Color light yellow. Patient says they frequently contain mucus, but never any blood. They sometimes have foul odor, but as a rule the odor has not been remarkable. Slight abdominal pain on defecation, but aside from this he has no pain. Appetite poor. Has vomited twice in the last month, once after taking porter, once after chocolate. Noticed nothing remarkable about the vomitus. Has lost flesh. Usual weight 125 lb., now 115 lb. Has never been jaundiced. No cough, dyspnea, or urinary symptoms. He left his work in Porto Rico two weeks ago, coming directly to Boston.

P. E. Well developed. Poorly nourished. Skin sallow. Over buttocks and inner aspect of thighs is an area of dark-brown pigmentation, which shows a tendency to scale, especially in the central portion. Conjunctivæ normal. Teeth poor. Throat negative. A few glands in groins, axillæ and neck the size of a pea. Lungs: Slight dullness in left supraclavicular fossa, and dullness at left base behind. Heart: Area of cardiac dullness not enlarged. Action regular and of good quality. Abdomen: Level, soft, tympanitic. No shifting dullness. No masses or tenderness. Liver: Upper limit of dullness in right mammillary line at fourth rib, flatness fifth rib. Lower border at costal margin; edge not felt. Spleen enlarged to percussion; edge not felt. Genitals normal. No edema of extremities. Knee jerks present and equal. Rectal examination negative. Prostate of normal size. No masses or tenderness. Temperature, pulse and respiration normal at entrance and remained so throughout entire stay in hospital of fourteen weeks. Weight, 102 lb. on Nov. 6. At time of discharge weight had fallen to 97 lb.

Blood: Hemoglobin 80%; leucocytes 4,800; erythrocytes 3,500,000. Stained specimen showed only a relative increase in polynuclear neutrophiles (82%).

Urine: Faint trace of albumin found repeatedly, but never any casts. Bile was present at first examination, but not afterward.

Stool: light clay color, semisolid, no froth or mucus, odor not abnormal. Microscopical examination: No blood, pus, amebæ, or parasites. Rare ovum of Tricocephalus dispar. Guaiac test for blood negative. No tubercle bacilli present.

Patient remained under observation for fourteen weeks during which time his symptoms varied but little. Lassitude, weakness, anorexia and diarrhea were the chief complaints, occasionally nausea, rarely vomiting. The abdomen was frequently distended by gas. Pain was either absent or slight and occurred chiefly in association with abdominal distention. Movements varied from one to ten daily. The number was little influenced by treatment. Average number of stools two to four daily. Pancreatin was given without effect. The stools were examined daily. They were always bulky, semisolid, never formed, light yellow or clay colored, often noticeably frothy and of normal odor. The most constant microscopic finding was large quantities of fat occurring as drops and crystals. At times stools were seen which showed yellow streaks of practically pure fat. Muscle fibers were frequently seen, but not in large numbers and not constantly. A diet poor in meat was given. No mucus, except in December, when he was having six to ten movements daily. Occasionally the guaiac test for blood was positive; no blood was ever seen macroscopically or microscopically. The eggs of Tricocephalus dispar were sometimes found. For several days during December sarcinæ were present in large numbers. Starch granules were found in some stools. Discharged Feb. 6, 1906, slightly relieved.

Subsequent history: On leaving the hospital on Feb. 6 patient went to Syracuse, N. Y., where he gained 4 lb. in five days. On Feb. 11, while at dinner table he suddenly vomited blood, and later in the day again vomited and also passed blood by rectum. On Feb. 13, again had hemorrhages from stomach and bowels, and on Feb. 14, further hemorrhage from bowels. At the date of writing (March 7, 1906), there was no pain and he was steadily improving. Diarrhea had ceased and he was having one formed movement a day.

Analysis of Clay Colored Stool.

		Composition of fecal fat.	
Nitrogen,	3.2%	Neutral fat,	24.3%
Fat,	53%	Fatty acids,	19.1%
		Soaps,	56.6%

Commentary.—The most interesting feature in these two cases of chronic diarrhea is the fatty character of the stools. In Case I, 62.7% of the dried stool was composed of fat, and in Case II, 53%. Normally the stools contain less than 30% of fat, except in rare instances with a diet unusually rich in fat. In pancreatic disease without icterus the percentage of fat, as Brugsch has pointed out, is rarely more than 55%. As the stools were bulky and numerous in both our cases the total amount of fat not utilized by the body must have been large.

In the following table the results of our analyses of the fecal fats and those obtained in health are compared:

	Percentage of fat in dried stool.	Neutral fat.	Fatty acids.	Soaps.
Health, milk diet,[5]	21	27.8	51.3	20.9
" " "[5]		20.5	39.8	40.5
" bread and milk,[5]		24.8	25.3	49.7
Case I. B. D.,	62.7	11	23	66
Case II. W. D. S.,	53.0	24.3	19.1	56.6

It will be seen from this table that in our two cases the proportions of neutral fat, fatty acids and soaps correspond closely to those obtained in health. In the stool from Case I there was more splitting of the fat than is usual even in health. The analyses do not indicate any lessening of pancreatic digestion.

Aside from the fact that the stools are fatty there is no evidence in these cases that the disease is pancreatic in origin. A. Schmidt has recently described under the term "pancreatic achylia," cases that bear a superficial clinical resemblance to the two here reported. His patients suffered from diarrhea of long standing. There was considerable distention of the abdomen at times. The stools were frothy and contained considerable fat. Microscopic examination showed that the fat occurred chiefly in the form of droplets (neutral fat). The stools showed considerable starch. Sahli's glutoid test of pancreatic function was negative in one of his cases while it was positive in one of ours, thus supporting the view that the form of fatty diarrhea he was studying was of pancreatic origin, while the disturbance in the absorption of the fat in our cases was not of pancreatic origin. Unfortunately, Schmidt made no chemical analysis of the composition of the fecal fat so that the proportion of split fat is unknown. The nucleus or meat bag test of pancreatic disease which Schmidt has devised was negative in his cases. It is to be regretted that this test was not used by us. The percentage of fat was larger in our cases than in those of Schmidt. He obtained 40.6% of fat in one case, and 40.1% in another. As stated in the early part of this paper, fatty stools have been studied in a few cases of severe tuberculosis of the intestine and mesenteric lymph nodes. There was no evidence of tuberculosis in our cases. In both the feces were examined for tubercle bacilli with a negative result. Weintraud[6] believes that the loss of nitrogen in the stools is less in organic diseases of the intestine than in occlusion of the pancreatic ducts. In our cases the percentage of nitrogen was within normal limits. Oppler[7] and Einhorn[8] showed that diarrhea may occur as the result of achylia gastrica. The intestinal function in these cases becomes secondarily deranged. In the absence of gastric juices connective tissue is not digested and may have an irritating action in its passage through the intestine. Our first patient had voluntarily given up the use of meat as he had noticed that it aggravated his symptoms. Repeated examinations of the gastric contents always showed absence of hydrochloric acid after the test breakfast. The study of these two cases seems to show that severe fatty diarrhea may occur in the absence of pancreatic disease and of jaundice as a result of functional or catarrhal disease of the intestine. It is not improbable that the intestinal disease, at least in the first case, was secondary to achylia gastrica.

FACT AND SPECULATION CONCERNING THE NATURE OF TYPHOID FEVER.

BY MARK WYMAN RICHARDSON, M.D., BOSTON,
Medical House Pupil, Massachusetts General Hospital, 1895.

DURING the past eleven years my medical interests have centered largely in a study of immunity in bacterial disease. More especially my attention has been fixed upon one disease, namely, typhoid fever.

What is the essential nature of typhoid fever? It is an intoxication produced during the struggle between the typhoid bacillus on the one hand, and the body cells and juices on the other. The typhoid poison is a so-called endotoxin, i. e., it is contained within the body of the bacterial cell. The typhoid bacillus does not, as far as is known, produce a soluble poison and is, in this respect, fundamentally different from the organisms of diphtheria and tetanus. We do not, therefore, in typhoid, get, as a result of infection, an antitoxic immunity, in a strict sense, but one directed against the bacillus itself. In the more recent literature, to be sure, one begins to read of antiendotoxins, and it seems probable that antibodies of this type can be developed up to a certain point. Compared with true antitoxins, however, their strength is small, and, for the purposes of this discussion, they may be disregarded. According to this view, therefore, there can be in typhoid no intoxication until there is a bacillary destruction. Where does the destruction take place? In the circulation, or in the tissues in intimate relation with the blood or lymph. In this connection the gastro-intestinal tract, including gall bladder, as well as the urinary bladder, ureter and pelvis of the kidney, are not to be considered as within the body. They are really outside.

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[5] Müller: Zeitschr. für klin. Med., 1887, xii, p. 45.

[6] Die Heilkunde, Heft 2, p. 67.

[7] Deut. med. Wochenschr., 1896, no. 32.

[8] Arch. für Verdauungskr., i, 1895, p. 158, and iii, 1898, p. 139.

How does infection take place? In the vast majority of instances through the intestinal tract. Mere presence of the organism in the intestine does not mean necessarily infection, however. Of many individuals exposed only a few become infected. The intestinal contents may harbor many typhoid bacilli, and yet the host may remain well. If the bacillus gains access to the "real body," what happens? It may be killed immediately by the bactericidal substances in the blood. It may circulate undestroyed in the blood and finally be eliminated in the bile. In the first instance, if there were only a few bacilli, the destroyed germs would not produce enough toxin to produce symptoms. In the second instance, however, the still living germ, being now in a suitable medium, might multiply rapidly in the bile and finally produce a cholecystitis. Is not this a probable explanation of those rare cases in which a typhoid cholecystitis with or without gallstones is found without any previous history of typhoid fever?

The better to picture to myself the interrelation of these different factors of infection and immunity, I have been accustomed to compare their interaction to that of sulphuric acid upon zinc with the resulting evolution of hydrogen gas. In such a comparison the destructive immune substances correspond to the sulphuric acid, the bacilli with their contained endotoxins to the zinc; the released endotoxin to the hydrogen gas and the body to a gas receiver. A stop-cock in the gas bag, which allows a constant escape of a small amount of gas, typifies whatever power the body may have for the elimination of toxins through feces, urine, skin, respiration, etc. If now we follow out the parallel in a series of cuts we get quite a concrete picture of what the typhoid process probably is. In Figure 1 is represented the condition of health with its greater or smaller amount of natural immunity or resistance (H_2SO_4). There is no infection, no bacilli to be destroyed (Zn), hence there is no production of poison (H). The gas bag remains flat.

Suppose now that the bacillus enters the circulation and is neither destroyed nor eliminated, but continues to multiply. What happens? The immediate effect may be *nil*, for according to our theory there is no intoxication until there is bacillary destruction. It is, therefore, conceivable that the body should contain bacilli in large numbers and still show no signs of disease. This condition is represented in Figure 2. The acid and the zinc are separated by a glass plate, i. e., the destructive agencies do not for some reason act upon the bacilli. There is, therefore, no gas (toxin) production. The individual remains well. The truth of this assumption has been shown recently by the cultivation of bacilli from the blood of individuals who had been exposed to the disease, but had as yet shown no signs. This has been spoken of as a "latent" development of the bacilli, and goes on very probably for several days previous to the occurrence of a relapse as well as at the beginning of the disease.

If now we suppose that the multiplication of bacilli has been going on without symptoms, the future course of the disease will depend, first, upon the extent of this multiplication, and, secondly, upon the vigor with which the body, once aroused, attacks the invading organism. If the number of bacilli is small and the destructive agencies, once aroused, act firmly and sharply, we shall have as a result a short intoxication of marked intensity. (See Fig. 3.) With the same number of bacilli and a less concentrated attack from the forces of immunity the disease would be milder but longer. (See Fig. 4.) In case the number of bacilli was very large and the attack upon them was very sharp, or, if the multiplication of the bacilli more than kept pace with the growth of the immunity, then the increasing destruction with its resultant increasing intoxication would soon reach a point at which life would be no longer possible.

Fig I

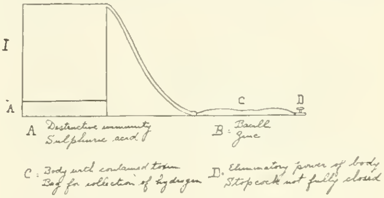

A
C
D
A Destructive immunity
Sulphuric acid
B = Bacilli
Zinc
C = Body with contained toxin
Bag for collection of hydrogen
D. Eliminatory power of body
Stopcock not fully closed

Fig II

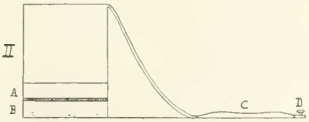
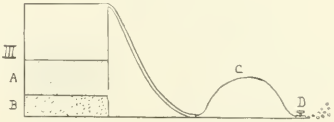


Fig III



Indeed, given a body already invaded by a large number of typhoid bacilli, a rapidly increasing and energetically acting immunity might be actually inimical to its own proper purpose, and destructive to life, because it set free too much intracellular poison within too short a space of time. In fact this has seemed to me a probable explanation of the fulminating type of typhoid, and, possibly, of other bacterial diseases. The immunizing apparatus once aroused, acts *too* well for the good of the individual. The powers of elimination, through skin, lungs, urine and feces, are limited, and excessive toxin production means rapid accumulation within the body. (See Fig. 5.) If, however, with the same power of elimination, this toxin production be spread out, let us say, over a period of three weeks instead of one, then the toxic condition will be comparatively mild and not dangerous, perhaps, to life. Finally in Figure 6 we have pictured the bodily condition after the disease process is over. There is, then, a large store of specific acquired immunity, sufficient, except in rare instances, to prevent any reinfection.

These points have an important bearing on the question of specific therapy, for, in the absence of a true antitoxin for the typhoid poison, we have been more and more tempted to introduce into the diseased body substances which should stimulate an increased destruction of the bacilli. This procedure is justified in cases not already very severely poisoned. In the cases, however, already hyper-intoxicated, the indication may well be, not to increase the rate of destruction of the bacilli, but, if possible, in some way, to hold it up.

Fig IV

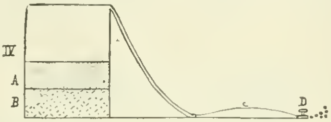


Fig V

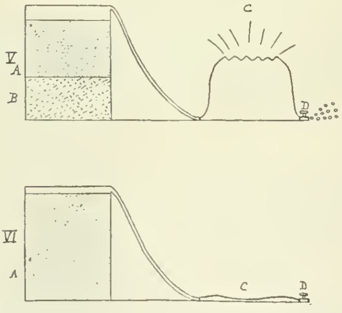
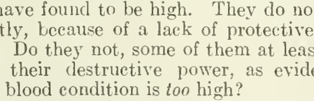


Fig. VI



The blood serum of persons who die of typhoid is strongly protective in animal experiment. The opsonic index of persons moribund with the disease, I have found to be high. They do not die, apparently, because of a lack of protective substances. Do they not, some of them at least, die because their destructive power, as evidenced by their blood condition is *too* high?

In the treatment of a series of cases with the non-toxic residue of the typhoid bacillus as prepared by Professor Vaughan of Ann Arbor,[1] it seemed to me that the cases were longer but milder than the ordinary run of cases. If this was true, was it not due to the fact that this non-toxic residue of the typhoid germ, with its specific affinity for typhoid antibodies, diverted the destructive substances from the living, toxin-laden bacilli, and thus made the process longer but less severe? Furthermore, cannot this idea be used as a possible explanation of the beneficial effects of cold baths in typhoid fever? The destruction of the invading germ, whether it be through bacteriolysis or phagocytosis, is accomplished largely through digestive ferments, whose action becomes much impaired in the presence of low temperatures. The cold bath, then, inhibits the action of the destructive ferments over the large expanse of skin, and toxin production is thus decreased. The temperature drops, the patient feels better, and the tissues have a few hours' respite from hyper-intoxication.

For the same reason the exhibition of drugs calculated to lower cellular activity might well be indicated. Quinine is such a drug. Its use in large doses in pneumonia has been recommended and might be justified by this reasoning.

As long as there is bacillary destruction, so long will there be evidence of intoxication. It is said that bacilli have been cultivated from the blood a certain time after the cessation of symptoms. This phenomenon must be rare, but goes to prove my contention, that the typhoid organism causes little trouble till it is dead and disintegrated.

This picture of the essential nature of the disease makes a number of phenomena observed in typhoid fever more readily comprehensible. Take, for instance, the chill, which, though in general rare, in individual cases may be very common. According to my theory this represents a *sudden* destruction of bacilli as contrasted with the more evenly distributed production of toxin seen under ordinary circumstances. Thus the cases with sudden onset are apt to begin with a chill, their course is commonly unusually severe and their mortality is high. As stated above, it seems very probable that, in these instances, the protective substances act *too* well, and the individual is overwhelmed with toxin as a result of his excessive zeal in destruction.

In the treatment of typhoid patients with filtrates of living bouillon cultures (*loc. cit.*), chills were very common, and due, in my opinion, to sudden stimulation of the protective apparatus. Following the chill there occurred frequently a marked fall in temperature. This, to my mind, means that a period of over-stimulation was followed by a resting stage, and that, in the absence of toxin production, the temperature had to fall.

The same explanation would hold for those curious drops in temperature which, with no apparent cause, occur in typhoid fever, under routine forms of treatment. The intercurrent relapse may represent not a variation in the intensity of the infection, but a variation of the powers of resistance. Indeed, in the cases of true relapse, it is very possible that during the afebrile period, the bacilli are still there, perhaps increasing in numbers in the absence of resistance. Only when the body takes up again the work of destruction do symptoms appear. The fact that many cases which relapse retain their enlarged spleen would bear out further the idea that bacilli have persisted.

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[1] On the treatment of typhoid fever with specific sera, filtrates and residues (Vaughan). Boston Med. and Surg. Jour., Oct. 3, 1907.

Further, I think the characteristic temperature curve of typhoid is susceptible of explanation by the use of our theory. In the beginning we have the step-like rise in the fever, inasmuch as more endotoxin is set free than can be eliminated. It collects, therefore, in the body, the degree of intoxication receding slightly each morning only to go still higher as the result of that day's destructive activities. Having reached a high level, the intoxication is so intense that the comparatively small amount excreted has no appreciable effect upon the general condition. In the later weeks, however, when there are comparatively few bacilli in the body, then, although the daily toxin production is sufficient to carry the temperature up to a high figure, the degree of intoxication is really small, and is more than counterbalanced by the toxin excretion. Receding morning temperatures necessarily follow.

SUMMARY.

Typhoid fever is essentially a septicemia. Mere blood invasion, however, does not produce evidence of disease. Intoxication occurs mainly through the destruction of the bacilli by the body cells and fluids. Intracellular poisons are thereby set free, and the individual then first shows signs of disease.

The intensity of the intoxication will depend upon the rate of destruction, modified, of course, by varying efficiency in elimination.

Rapid destruction of a few bacilli will cause a short, sharp attack of fever, ending perhaps by crisis.

Rapid destruction of a large number of bacilli will cause intense intoxication of longer duration. This produces the fulminating type of the disease and is frequently fatal.

Slow destruction of moderate numbers of bacilli will cause moderate intoxication of longer duration — the true " slow " fever.

If the gradually increasing immunity does not, within a reasonable time, check the growth of the bacilli, then the intoxication must gradually increase and the individual finally die.

As regards specific therapy in typhoid fever: In the absence of a true antitoxin we have had to fall back on the use of various bacterial products which have had for their aim the stimulation of the individual to destroy the invading bacilli with greater intensity.

Such treatment is suitable for those cases only which are not already hyper-intoxicated. In the presence of severe typhoid poisoning the indication may be to *check* in some way bacillary destruction. This might be accomplished (*a*) by inoculation of the nontoxic typhoid substances to divert destructive agents from the living toxin-bearing bacilli, or (*b*) by cold baths, to combat, by low temperature, rapid phagocytosis and bacteriolysis, or (*c*) by giving drugs which shall lower metabolic activity (quinine, etc.).

PRIMARY SARCOMA OF THE PLEURA.

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(From the Laboratory of the Department of the Theory and Practice of Physic, Harvard University.)

The following case is of interest on account of the great rarity of sarcoma primary in the pleura. The history of the case is unattainable other than that there was a tumor removed from the thyroid region at an earlier date, which proved to be a benign adenoma, and that for some time before this there were signs of fluid in the left chest with increasing dyspnea, for which the woman came to the hospital. The autopsy * showed the following:

Body of a large, well-developed, well-nourished woman. Diaphragm, right side to a height of fifth rib, on the left side to seventh rib. On the left side the diaphragm bulges down as compared with the normal dome shape.

Pleural cavities: Right pleural cavity is free from fluid. Pleura is smooth and glistening. Left pleural cavity is distended with a large amount of clear straw-colored fluid. This could not be measured but exceeded several liters. The entire pleural cavity on the left side is lined with a grayish layer, nowhere smooth, though its surface is very glistening. In general, the surface is coarsely granular and in places thrown into coxcomblike folds, some several centimeters in length. This is more marked in that portion of the pleura lying in apposition with the pericardium. This tissue is firm and on section is seen to be on the average 3 mm. in thickness, and overlies a considerable layer of fat tissue. In this fat tissue adjacent to the mediastinum there are present a few lymph nodes grayish in color from 1 to 1½ ccm. in greatest diameter. Pleural cavity on the left side extends well to the median line and consequently part of the inner surface of the sternum is lined by this above-described tissue. The lung itself is greatly compressed and lies as a flattened mass along the spinal column. Pericardial cavity free from fluid and normal in appearance. Heart is of normal size, myocardium dark red in color; valves are normal. Coronary arteries show a moderate degree of thickening and in one there is a small calcified plaque.

Lungs: Right lung is voluminous; its surface is smooth; has the usual carbon marking. Scattered over its surface are a few small, firm, slightly projecting, rounded, grayish white areas. Section of these shows them to be small grayish white masses of solid, firm, though not hard, tissue. From the cut surface of the lung exudes a large amount of frothy fluid. Portions of the cut surface are gray, other portions grayish-red in color. There are a few scattered whitish nodules as described on the surface, none exceeding 5 mm. in diameter. The bronchi contain a small amount of muco-purulent material; the mucous membrane is slightly congested.

The left lung: The left lung is compressed into a flabby, wrinkled, solid mass. Its pleura is slightly thickened and presents an appearance similar to that described for the parietal pleura, though the process on the visceral pleura is not so marked. The lung is airless. Its cut surface is gray or yellow-gray in color. Scattered through it, particularly along the lower posterior border, and extending from there up to the point of the entrance of the bronchi and larger vessels, there are irregular masses of firmer tissue, in general grayish or pinkish-gray in color, not sharply circumscribed from surrounding lung tissue. Elsewhere in the lungs there are a few small grayish nodules. Near the root of the lung there is an irregular cavity containing grayish-yellow puriform material, smears from which show cells of varying size and shape, some with mitotic figures. Some of these cells are well preserved, others necrotic. One lymph node in this region is of a cheesy consistence and a yellow color, like that of a hard-boiled egg. The bronchi on this side are similar to those on the right.

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* The autopsy was made by Dr. Henry A. Christian.

Abdomen: Stomach, intestines and pancreas normal. Spleen is slightly enlarged, purplish in color with smooth surface. Cut surface is dark red; Malpighian bodies are visible as grayish areas 1 to 2 mm. in diameter. From the cut surface a small amount of pulp can be easily scraped away.

Liver of normal size. Surface is smooth. Visible on the surface are a few small white or grayish areas, scarcely at all elevated above surrounding tissue. The largest of these lie in the superior surface of the left lobe and measure one cubic centimeter in diameter. The section of this latter shows a soft white tissue. Cut surface of the liver is of a uniform brownish gray color and of firm consistence. On close inspection numerous narrow grayish bands of connective tissues can be seen running along the lobules. This appearance is uniform and nowhere is there any marked connective tissue increase. On the cut surface a few small, grayish areas can be made out.

Gall bladder normal.

Kidneys show no evidence of metastases.

Uterus normal except for a few fibromyomata.

Tubes and ovaries normal.

Organs of neck: High upon the right side beneath the ramus of the jaw there is a tumor mass about 5 ccm. in diameter, of firm consistence, which extends around to the internal carotid artery and reaches to the soft tissues posterior to the pharynx. In the region of the normal site of the thyroid no thyroid tissue could be found; the muscles apparently lie in close opposition to the trachea. Low down in the neck, just above the notch of the sternum, there is firm tissue similar to and continuous with that described in the pleura and which partially filled the anterior superior mediastinum, though there is no evidence of pressure on trachea or esophagus.

Larynx normal.

Esophagus normal.

Tongue normal. Trachea in lower half somewhat congested, otherwise normal.

ANATOMICAL DIAGNOSES.

Tumor of thyroid.

Extensive tumor growth in left pleura with hydrothorax and atelectasis of left lung.

Metastases in liver and lung.

Moderate cirrhosis of liver.

Fibromyomata of uterus.

MICROSCOPIC EXAMINATION.

Liver: There is a moderate diffuse increase of the connective tissue at the periphery of liver lobules. In some lobules a considerable amount of fat is present in the liver cells in the peripheral half of the lobule.

Spleen: In some of the Malpighian bodies are small rounded masses of a hyaline material. In the pulp are scattered cells containing coarse granules of bright yellow pigment. Stroma not increased.

Kidney appears normal.

Tumor of neck: Nodule from submaxillary region is an adenoma papillomatous in character in most parts. In the simple parts we have small rounded spaces lined by a single layer of low cuboidal epithelium and filled with colloid. In the papillomatous parts ingrowth has taken place into larger spaces, so that they are almost completely filled by masses composed of a narrow connective tissue stalk, covered by epithelium similar to that lining the gland spaces.

Here the property of forming colloid is retained to a certain extent. Throughout the epithelium is regular and shows no evidence of rapid growth. The stroma in all parts is non-cellular and slow growing.

Tumor of pleura is of sarcoma type, made up of irregularly-shaped cells of varying size, the majority presenting a spindle shape. (Figs. 1 and 2.) However, there are many cells, round, oval or irregular in contour, large and small, some with one nucleus, others with several nuclei. In places large cells like giant cells can be seen. (Fig. 2.) In several places the spindle cells are quite closely packed, but for the most part the structure is loose and has very little intercellular substance to form a connective tissue stroma. Mitoses are numerous. The tumor forms a distinct layer along the pleura and everywhere invades the subpleural adipose tissue, the tumor cells arranging themselves in whorls around the fat cells. (Fig. 1.) The tumor is quite vascular and many small blood vessels can be seen running irregularly through the tumor mass. These vessels are very irregular in shape. Tumor metastases in the lung are of same general type. The lung also shows an inflammatory process with leucocytes filling many alveoli. Tumor metastases in the liver are made up of the irregular cells with few of spindle shape and there is almost no stroma.

Tumors in uterus are both leiomyomata and fibromyomata. †

The literature contains very few references to sarcoma primary in the pleura, and by far the greater number of the reports are so meager and so indefinite that it is impossible to be sure of the primary site of the tumor or of its exact nature. A few reports are inaccessible to me.

The literature shows the following ten cases where the diagnosis can be made without reasonable doubt.

Case I. Hofmokl[1] reports the following case in a child three and a half years old. Autopsy showed the left pleural cavity filled for the most part with a new growth consisting of numerous rounded masses varying in size from a half inch to three inches in diameter imbedded in dark red blood clot. The masses have the consistency of hard blood clot and are slightly resilient, their color is light to dark red, some slightly yellowish. On section they are red with yellowish-gray mottling. Blood vessels are small and thin walled. The whole tumor is enclosed in a sac of pseudo-membrane closely attached to the pleura. The tissue throughout the tumor consists of round cells closely packed together. The ground substance cannot be seen except in places where it is nearly homogenous and slightly fibrous. Blood vessels thin walled, wide, and in places very numerous. Diagnosis: Round celled sarcoma.

Case II. Regnault[2] reports the following case of primary sarcoma in left pleura in a man fifty-seven years old. Autopsy showed left pleural cavity contained five or six liters of clear fluid. Pleura, visceral and parietal, is covered with small tumors not ulcerated, varying in size from a few millimeters to 1½ ccm. On cutting these tumors a milky substance exuded. Examination of this substance showed round or oval cells with large nuclei. On section the tumors are formed

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† I wish to express my thanks to Dr. Christian for his permission to report this case.

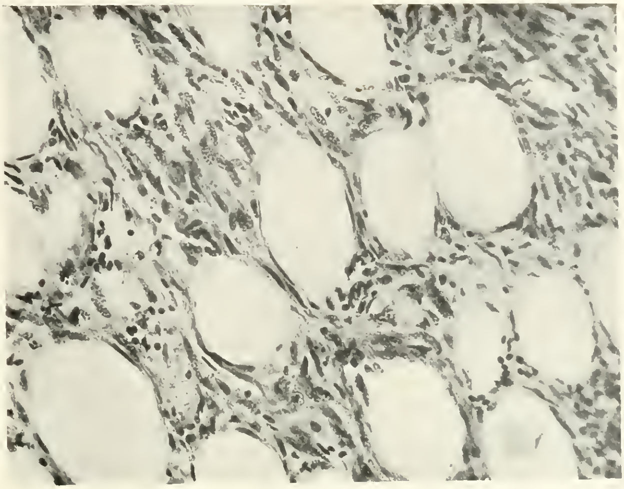

Fig. 1.

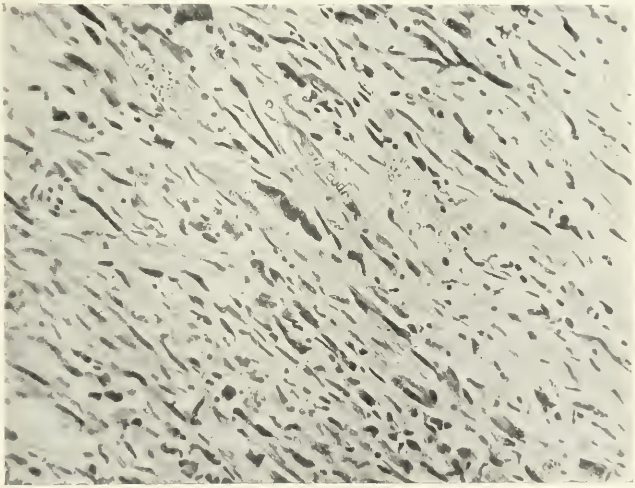

Fig. 2.

of embryonal cells, closely packed without any interstitial substance. The majority of the cells are round with large nuclei. Some are oval and many show two prolongations at the poles.

Case III. Schwalbe[3] reports a case in a woman of twenty-three. Autopsy shows large tumor, filling up whole of left pleural cavity. Section through tumor shows that left lung is surrounded by the growth. Surface of tumor smooth, reddish yellow and of firm consistence. Tumor consists of greatly thickened pleura, 4 cm. in thickness. Cut surface grayish-red in color. Fibrous structure in which there are many cells, round and spindle-shaped. Bronchial glands enlarged. Metastasis in left lung, right eye, diaphragm and liver.

Case IV. Leube[4] reports a case in a man of thirty years of age. Diagnosis established at autopsy.

Case V. Stewart and Adami[5] report a case in a man thirty-four years old. Autopsy shows a soft mass extending from upper extremity of left thorax down to level of sixth rib. Upper part of growth firmly attached to costal pleura. Below where the border is free, the wall of the tumor is thick, dark blue in color, resembling a cyst containing blood. Heart displaced downwards and to left. The mass of tumor is very soft and on breaking capsule a large amount of semisolid material of a dark purplish color easily passed out through the opening, about fifteen hundred cubic centimeters in all. The appearance is that of soft, breaking down blood clot. The mass is closely connected with the lung but no actual communication is demonstrable. Tumor thought to have started in a sac left after old adhesions. Microscopic examination shows lower mass almost pure blood clot. Denser parts show lobules of sarcomatous tissue. Many greatly dilated vessels of embryonic type in the denser tissue with very delicate walls. Cells are oval with oval well-staining nuclei separated in places by extravasation of blood. The costal pleura has undergone great fibroid thickening and infiltrated throughout with sarcoma cells.

Case VI. Kidd and Habershon[6] report a case of myxosarcoma in left pleura in a girl of eighteen. Autopsy showed an enormous mass filling left thorax; heart lying entirely to right of middle line. Pleural cavity almost entirely obliterated by soft spongy adhesions. Left lung displaced backward and almost entirely hidden. When the mass was removed it was seen to be a somewhat lobulated growth loosely attached to left upper lobe of lung and more firmly to lower lobe. The whole tumor is covered with a thin pleura-like membrane. On section the tumor is shown to consist of coarse fibrous network enclosing large blood cysts. Cystic spaces contain viscid puriform material and toward sternal border there are a few soft yellowish-white masses of growth. The blood cysts which were a predominant feature of the growth contain fluid and coagulated blood. The softened puriform material on microscopic examination proved to consist of stellate and pyriform cells. Some sections show coarse fibrous net work enclosing red blood corpuscles in its meshes and many large thin-walled vessels filled with blood. In its more solid parts the growth is composed of closely packed round cells with very scanty stroma. Many of the individual cells contain clear rounded spaces or drops, apparently the result of mucoid degeneration. Many branching cells are seen with clear mucoid drops in them. No metastasis in any other organ.

Case VII. Finlay[7] reports a case in a man sixty-seven years old. Autopsy showed bloody fluid in left chest. Left pleura easily stripped from chest wall. Both layers thickened, 5 mm. in thickness. Inner surface studded with nodules of white or reddish color, which on section are uniformly white and juicy. The nodules are from 5 mm. to 30 mm. in thickness, 8 to 60 mm. in diameter. Left lung is collapsed. One bronchial gland slightly enlarged, no metastasis in other organs. Microscopic examination shows the tumor to consist of large irregular-shaped, multinuclear cells with smaller round and oval cells between. Stroma not evident. Blood channels visible between rows of cells. Diagnosis, myeloid sarcoma.

Case VIII. Kaufman[8] reports a case in a woman of twenty-nine years, where sarcoma, the size of a child's head, of soft consistency, was found in the right pleural cavity in the lower part. The diaphragm was involved in the growth. Microscopic examination showed a polymorphic cell sarcoma. The cell masses were arranged like mantels around wide thin-walled vessels. The vessels in many places were thrombosed and the tumor tissue was necrotic in many places. Small metastases in spleen, kidney and liver.

Case IX. Oelrick[9] reports a case in a man fifty-nine years old. Autopsy shows left lung pushed up to top of thoracic cavity entirely above third rib. Heart pushed to right beyond median line and the rest of the cavity taken up by a great sac formed by the pleura, which contained about three liters of a dark reddish semi-fluid material, which in lower part is more of a yellowish color and very sticky. The parietal pleura is greatly thickened and covered with nodules of tumor tissue and is infiltrated throughout with tumor cells. Microscopic examination shows growth to consist of a mixed cell sarcoma. The left lung contains metastases and there are metastases in pericardium, heart, right lung, liver and both kidneys.

Case X. Busse[10] reports case in a man forty years old. Autopsy showed the right thorax filled with an enormous growth. The tumor is firmly fastened to the chest wall. The lung is completely surrounded by the growth. The growth consists of very thick pleura, one to three cubic centimeters on section. The inner surface showed rounded nodules, some of which are 10 cm. in diameter; in places the tumor is as hard as cartilage; in places there is calcification and also in many places softening with cysts in which there is myxomatous material. Upon section the tumor has a honeycomb structure. The septa are firm tissue in which are blood vessels. The tissue between the septa is made up of cells lying in a very homogeneous substance resembling hyaline cartilage, and with its consistency. In other places the tumor is softer and has the character of myxomatous tissue. The cells are round or oval with large nuclei and easily staining protoplasm.

Diagnosis: Chondro-myxo-sarcoma.

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GENERAL STREPTOCOCCUS INFECTION THROUGH UNRECOGNIZED CHANNELS: A REPORT OF TWO CASES.

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Streptococcus septicemia is not apt to be considered in the differential diagnosis of a case which does not present signs of local sepsis or chronic wasting disease. The following cases are presented to show the diagnostic importance of streptococcus septicemia in cases of obscure and severe infection.

Case I. W. W. F. was admitted to Dr. Fitz's wards in the Massachusetts General Hospital on Jan. 11, 1908, and gave his history as follows: He was an American, white, thirty years of age, married, a waiter by occupation.

Family history: Father died at sixty-three of Bright's disease. Mother died at fifty-four of asthma and bronchitis. Wife and three children well. Two children died in infancy. One other child died of trauma. No history of consumption.

Past history: He remembered no past diseases excepting gonorrhea ten years ago. He had concussion of the brain several years ago after being kicked in a gymnasium. Appetite, sleep, bowels, micturition, normal.

Habits: Five cups of tea a day. No coffee, little alcohol. Seldom smokes.

Present illness: Seven days before entrance he went to bed at night feeling well. He awoke at 3 A.M. in a chill, shivering so that he shook the bed. During the remainder of the night he had frequent chills, but he did not feel feverish or sweat. He remained in bed until noon, when he rose feeling almost well. The following morning he went to work, but he soon fainted. He was brought home and put to bed where he remained. Two days before entry he rose from the bed and fainted. For five days before entrance he had felt feverish. He had no cough, sore throat, pain in chest or vomiting. Bowels were constipated for a few days. Urine dark in color. On the morning of the day of entrance he had considerable tenderness and some pain in his left lower leg.

Physical examination: The patient entered the hospital with a mouth-temperature of 100.4°, a pulse of 104, and respiration of 20. He was abnormally alert, slightly delirious, and talkative. He was willing to lie quietly in bed and was able to give his own history. All his motions were tremulous.

He was well developed and nourished. His skin and mucous membranes were moderately pale. His skin was hot and he perspired freely. His pupils were equal and reacted to light and distance. His tongue was dry and clean in the anterior portion, coated and white in the posterior. The pharynx was dry and bright red. Teeth good, several missing.

His heart was normal in size, and the sounds were of fair quality, regular and rapid. No endocardial murmurs. The radial pulse was regular, rapid, of small volume, and of very low tension. Artery wall was not palpable.

The lungs were normal.

The abdomen presented nothing abnormal. Liver and spleen were not made out to be enlarged.

He had slight hypospadias. His knee-jerks were normal. The plantar reflexes were not obtained.

Scattered over his extremities were the following lesions. The extensor surface of his right upper arm was red, swollen and tender. The circumference of the right upper arm was 10½ in.; of the left, 9½. Just below the external condyle of the right humerus was a fluctuant swelling 1½ in. long, not red or tender. Just below the right elbow on the inner surface was a dark brown, slightly tender spot, ½ in. in diameter, surrounded by diffuse swelling and tenderness, extending 3 in. below the spot and up to the elbow. There was a similar small brown spot 3 in. above the right elbow on the extensor surface. Over the right ulna, just above its middle, was a red, firm, tender swelling half an inch in diameter. On the back of the right hand from the wrist to the middle finger was a red, slightly tender, fluctuant swelling 2 in. wide. The fingers and wrist can be moved with slight pain. On the back of the left hand near the wrist was a red, fluctuant swelling 1 in. in diameter.

On the right buttock near the thigh was a flat reddened area half an inch in diameter and slightly tender. Just above the right popliteal space was a similar spot, which was not tender. In the middle of the left shin was an area 4 in. long of moderate edema, slight redness and considerable tenderness. This area extended inward so as to include the middle third of the inner aspect of the lower leg. In this area, 1 in. to the right of the tibia, was a round, dark, brownish-red spot, 1 in. in diameter, slightly whitened at the center, very tender. The circumferences of the calves 3½ in. below the tubercles of the tibiæ were, right 11 in., left 12½ in.

Progress of case. — A few hours after admission the patient's rectal temperature was 104.4°, his pulse 108, and his respirations 32. His hemoglobin by the Talqvist scale was 90%. His leucocyte count was 8,000. He became more delirious and tried to get out of bed. He was talkative, affable and mentally stimulated. He lived about fourteen hours after entrance, and during that time his rectal temperature rose steadily to 107.5°, his pulse rate to 180, and his respirations to 52. His pulse grew progressively weaker and was not palpable at the wrist for four hours before death. Almost up to his very death, long after his forearms and lower legs were pulseless, blue and cold, the patient's mind was alert, his eyes bright, and his face smiling, and he was talkative and delirious.

A blood culture was taken immediately after death. The blood was withdrawn from a vein under unfavorable circumstances. Both streptococci and staphylocci developed in the culture.

Autopsy. — The autopsy was performed by Dr. Oscar Richardson, seven and three-fourths hours postmortem.

The meninges, vessels of Willis, sinuses, middle ears and brain were not remarkable.

The skin presented many small and large areas of purplish-red discoloration. The lesions described in the physical examination at entrance were but little changed except that they were purplish and some were larger. Section into the lesion in the vicinity of the right knee showed that the deep tissues were infiltrated with sero-sanguineous, gelatinous-like fluid. The muscle tissue in this situation was dark, sloppy and looked as if it were somewhat necrotic. On opening the right knee-joint much sero-sanguineous gelatinous-like fluid escaped. A cover-glass smear taken from this fluid showed on microscopical examination many streptococci. Section into the lesion of the left lower leg showed a condition similar to that in the tissues in the region of the right knee. Section of the tibia showed nothing remarkable in the bone or in the marrow.

Subcutaneous fat moderate in amount. Muscles not remarkable.

Peritoneal cavity free from fluid. Peritoneum, appendix, position of liver, diaphragm, not remarkable.

Pleural cavities free from fluid. The lungs were bound down everywhere by old membranous fibrous adhesions. The bronchial lymphatic glands, the tongue and the larynx were not remarkable. The trachea and bronchi contained a moderate amount of bloody, mucus-like material. In the upper part of the upper lobe of the right lung there was a fibrous, indurated mass about 5 cm. in each dimension. The mass showed, scattered through it, smaller and larger fibro-calcareous masses. The apex of the left lung showed a similar mass. The lungs elsewhere showed no areas of consolidation, but they were infiltrated with considerable blood-like material.

Pericardium not remarkable. Heart weighed 240 gm. The heart was rather small. On section the myocardium was firm and slightly pale and cloudy. The valves and cavities were not remarkable. The foramen ovale presented an oval opening about 1 cm. in its greatest dimension. Coronary arteries free and smooth. The aorta showed a smooth intima with areas of purplish staining.

The liver weighed 1,530 gm. On section the tissue was firm, rather homogeneous and of pale, brownish-yellow color. No stones in gall bladder. Bile ducts free. Pancreas and duct of Wirsung not remarkable. The spleen weighed 135 gm. and was purplish and mushy. Adrenals not remarkable.

The right kidney weighed 114 gm. The capsule was stripped easily, leaving a pale surface with areas of depression. On section the pelvis showed moderate dilatation. Several of the calices were considerably dilated, and the calices generally showed moderate dilatation. About the calices which were most dilated there was considerable atrophy of the kidney tissue. In places only a narrow layer of the cortical portion of the kidney remained. The small areas of depression noted above were over the atrophied portions of the kidney. The markings of the kidney were plain. The section surfaces were somewhat purplish and cloudy. The pelvis contained a moderate amount of thin cloudy fluid. The first portion of the right ureter was slightly dilated, and at a point about 3 cm. from the pelvis, this ureter was completely occluded by an ovoid stone, measuring about 1.5 cm. in greatest dimension. The left kidney was not remarkable except for the section being purplish and cloudy.

Bladder, prostate, seminal vesicles and testes on section were not remarkable. In the situation of the urinary meatus there was a deep crevice-like depression which ended blindly and had no communication with the urethra. The urethra opened in the skin a little below this crevice.

Esophagus, stomach and intestines presented no lesions.

Cultures on blood-serum culture medium from the heart's blood, the spleen, the tissues of the right knee, and from the right knee joint showed profuse growth of the streptococcus pyogenes.

Anatomical diagnosis. — Septicemia (streptococcus), phlegmon of left leg, right knee and right hand. Soft spleen. Stone in the right ureter with occlusion of ureter. Hydronephrosis of the right kidney, chronic pleuritis, obsolete tuberculosis of the lungs, hemorrhagic edema of the lungs. Defective closure of the foramen ovale. Hypospadias.

The above report of the autopsy has been condensed from Dr. Richardson's record.

Case II. A little girl, one and one-half years old, was brought into the accident room of the Massachusetts General Hospital on the evening of Jan. 27, 1908, and was admitted to the wards of Dr. Fitz. The parents were Russian Jews. The child was born in Boston.

Family history: Father, mother and sister well. No history of tuberculosis.

Past history: Child had been well and plump since birth. She ate, slept and moved her bowels normally. She seemed perfectly well up to day of entrance.

Present illness: In the early morning she felt cold and shivered and later seemed feverish. She was fussy during the day, and she vomited once in the afternoon. Her bowels moved twice during the day and the stools were loose and somewhat green and slimy. No cough or coryza or convulsions.

Physical examination: A plump, well-developed child. Skin and mucous membranes of good color. Child lay on accident-room table with head slightly retracted and back straight. Temperature by rectum was 103.5°, pulse 180, respirations 44. Anterior fontanelle was about 1 in. in diagonal diameter, not bulging. Pupils equal and react to light. Movements of eyes normal, except for an occasional quiver of the eyeballs. Nostrils showed a few dry crusts. Alæ nasi moved with respiration. Four teeth, two upper and two lower. Tongue was bright red and clean at the tip, coated in the posterior part. The throat was bright red, otherwise normal.

Heart not enlarged. Sounds regular, rapid, of good quality, no murmurs. Pulses synchronous, equal, regular, of good volume and tension.

Lungs were normal.

Abdomen was normal in appearance, soft, tympanitic. There were no masses or tenderness. The liver dullness extended from the sixth rib to ½ in. below the costal margin, where the edge was indistinctly felt. The splenic dullness measured 1¾ by 1¼ in., and the edge was not palpable.

The knee-jerks and plantar reflexes were normal. Kernig's sign was absent. No edema. No enlargement of lymphatic glands was made out. There was slight redness and roughening of the skin over the buttocks and thighs. There were many small excoriated papules on the skin of the body and limbs, including the soles of the feet.

A stool passed during the physical examination was small, soft, greenish-white, and contained considerable mucus.

The child cried when her head was brought forward into line with her body. Pressure on the back of her neck caused spasmodic movements of her legs and made her cry out as if in pain. Occasionally the child made a spasmodic movement of its body. The child was conscious, but she paid little attention to her surroundings.

During the examination the child had a severe convulsion, lasting about three minutes. The whole body became rigid, the eyes were turned to the left, and there were spasmodic movements of the arms and legs. The breathing was noisy and the child was cyanotic.

Progress of the case: After admission the child had no more convulsions. Her bowels were cleared and her stools became yellow, with little mucus. Nevertheless, the child grew progressively worse. On the day after entrance her neck was flaccid and not retracted, and it remained so. The child frequently held its arms rigid, sometimes with its elbows, wrists and fingers flexed. At times her breathing or crying was stridulous, suggesting stenosis of the trachea or larynx. The thymus dullness measured 1⅞ by 1⅛ in. Dr. A. Coolidge, Jr., saw the case in consultation and reported that the pharynx and larynx were reddened and that otherwise there was nothing definite found in the throat or larynx. Dr. H. L. Morse reported on the condition of the ears as follows: "Ears negative as a cause for temperature. Membrani both pink. Left one pricked. No fluid obtained." Culture from the throat was negative for the diphtheria bacillus and showed streptococci and staphylococci as predominating organisms. Lumbar puncture done on the day of her death showed a clear fluid with a few shreds, no cellular elements, no bacteria, negative culture.

The temperature rose irregularly to 106.5° and fell to 104° on the day of her death, the sixth day of the disease. The pulse rose to 205 and the respirations fluctuated between 40 and 60. On the day of death the pupils became unequal, a conjunctivitis appeared in the right eye, and the spleen was made out to be enlarged to percussion. The child seemed blind and deaf, but was annoyed when moved. No stiffness of neck.

Immediately after death a blood-culture was taken, the blood being withdrawn from the heart with a long needle. Autopsy was refused.

The blood culture showed an abundant growth in pure culture of the streptococcus pyogenes.

The occurrence of these two cases in Dr. Fitz's wards in the same month raised the question whether streptococcus septicemia without discoverable point of entry and without preceding severe disease was not much more common than generally supposed. Search through the records of one thousand autopsies done in the Massachusetts General Hospital between Oct. 19, 1896, and Jan. 13, 1903, revealed no such case. In about one tenth of the cases cultures were not taken from the heart's blood. Streptococci were found in the heart's blood in 76 cases; in pure culture in 62 cases, and accompanied by other organisms in 14 cases. Not one of these cases was free either from some evident point of entry for the infection, as a wound, ulcer or abscess, or else from some severe and, in most cases, chronic disease for which the septicemia was terminal. Among the 62 cases which gave pure cultures 41, or about two thirds, had suppurating foci or wounds to explain the infection, and in the remaining 21 the infection was terminal to some severe disease. Of the 14 cases of mixed infection all but one showed a suppurating point or a wound. Thus it appears that a streptococcus blood infection is usually uncomplicated by the presence of other organisms when the infection is through some unknown portal and that, on the other hand, when there is a wide gateway such as an open wound or an abscess, more than one variety of bacterium are apt to enter.

In each of the cases reported a healthy person was taken sick and died of profound toxemia within eight days from the onset. One case showed the beginning local suppuration of pyemia, but the abscess stage was not reached. In both cases clinical observation, and, in one, autopsy failed to reveal the source of infection. Both patients had inflamed throats which may have been the place of entrance, but it seems plausible that the throat affection was secondary.

Although the infection of the blood with streptococcus is rare except as a complication, the differential diagnosis in obscure cases of severe infection is incomplete without consideration of streptococcus septicemia.

THE ORIGIN OF URINARY CASTS; AN EXPERIMENTAL STUDY.

BY R. M. SMITH, M.D., BOSTON,
Medical House Pupil, Massachusetts General Hospital, 1908.
(From the Laboratory of the Department of the Theory and Practice of Physic, Harvard University.)

It has been demonstrated by a good many experimenters that kidney lesions simulating very closely nephritis in man may be produced in animals by the injection of various irritants. Only a few of these investigators, however, have given any account of the urinary findings, with special reference to casts, or of the origin of casts from the diseased kidney. Wallerstein[1] reports from studies of experimental nephritis in rabbits that urinary casts arise from epithelial cells, and that hyaline casts are an end result in the process of cell necrosis and degeneration.[2] The experiments here reported were undertaken at the suggestion of Dr. Henry A. Christian and were carried out in the division of the laboratory of the Department of the Theory and Practice of Physic, which is under his direction. The work was done in the hope of throwing further light on the question of cast formation.

The irritants used for producing nephritis were the same as those employed by previous experimenters for this purpose, with the addition of trypan red. All were given subcutaneously. Uranium nitrate was the first substance used, and it proved the most satisfactory. It was given in doses varying from one to five milligrams, but preferably in repeated doses of one milligram rather than in a single larger dose, since some of the animals were unable to survive one dose of one milligram. Potassium bichromate was given in doses of one half to one cubic centimeter of a 5% solution. Trypan red was used in saturated aqueous solution in doses of from one to five cubic centimeters. Arsenic was administered as Fowler's solution, in one to five minim doses. The last drug employed was cantharidin, given in doses of one milligram of a 1 to 2,000 solution.

Rabbits were used in all the experiments. They were kept in cages having an inclined bottom leading to a center, and by a tube into a bottle, so that all the urine was collected. Urinalysis was done daily, but only the excretion of albumin and casts was studied with any degree of thoroughness. It was often found difficult, in fact impossible in some cases, to get the urine perfectly clear. The presence of large numbers of bacteria, whose growth is favored by the alkaline urine, together with the precipitates of carbonates and phosphates, is largely responsible for this turbidity. Antiseptics were put into the collecting vessels with the hope of inhibiting the growth of bacteria, but the result was not gratifying. If a strong acid is added to the urine to neutralize it, such a violent reaction occurs with the liberation of CO_2 as to destroy the casts and interfere with filtration. The turbidity was most satisfactorily overcome by adding to the urine to be centrifugalized a small amount of very dilute acetic acid solution. This is not strong enough to cause the liberation of CO_2 and yet helps very much in the examination of the sediment. To get the urine clear for determining albumin, the same dilute acetic acid was used and the urine filtered several times if necessary. Care must be taken not to add too much acid, a drop or two in a half wineglass of urine is usually sufficient, for the urine becomes turbid again with an excess of acid.

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[1] Zeitschr. für klin. Med., 1906, lviii 296.

[2] For the recent literature on experimental nephritis, see Christian: Theory and Practice of Medicine, BOSTON MED. AND SURG. JOUR., 1908, clviii, 416.

Each animal was watched for a day or two when first put into the cage before it was given any injections, for it is well known that in confinement rabbits often show albuminuria and cylindruria. In every instance the rabbit was allowed to become albumin- and cast-free before starting the experiment. To prove that this was necessary a rabbit which had received no injections, but had albumin and casts in the urine, was killed, and the kidney on section showed marked cloudy swelling of the epithelium of many of the convoluted tubules in certain areas, but this process was not as general as in the earlier stages of the toxic nephritis, and no tubules showed actual necrosis.

In general, the examination of the urine for albumin did not reveal anything remarkable. In regard to the appearance of casts, however, it is to be noted that the fine, granular casts were the first to appear in every instance, with one or two exceptions. The hyaline casts came later. There was a greater variation in the size and shape of the casts than is commonly seen in human nephritic urine, and there was a tendency for the casts to appear in showers, only a few or even none might be seen on one day and great numbers the next. These cast-showers were usually accompanied by a corresponding rise in the quantity of albumin. As one would expect, the animals in which the main kidney lesions were glomerular did not show so many casts in the urine as those in which the tubules were primarily affected, but they did show a relatively large amount of albumin.

Whenever possible, the animal was killed, not allowed to die, and by this means post-mortem changes were eliminated and the better sections from fresh tissues were secured. In this study the description of the kidney sections was limited to those phases of the process associated with cast formation and many epithelial changes and cellular infiltrations neglected, as they had no bearing on this particular phase of the subject. It is hoped that a careful study of the sections may be reported at some other time. All tissues were hardened in Zenker's fluid and embedded in paraffin. The sections were stained with eosin and methylene blue.

URANIUM NITRATE.

The various stages of the process of cast formation were clearly shown in the kidney sections from animals which had received injections of this drug. The first change noted was a swelling of the cells composing the convoluted tubules, by which process the cell boundaries are lost and the lumen of the tubule obscured. (Fig. 1.) The straight tubules were also affected in a similar manner, but to a much less extent. From this swelling the cells went on to a marked degeneration in which the whole tubule often became destroyed and in its place there remained a granular necrotic mass, staining a dark pink with eosin and methylene blue. (Fig. 2.) Scattered through this mass the cell nuclei could be made out, often nearly normal in appearance, but in many instances altered so that their fine, reticular structure was entirely lost and the chromatin granules massed together in a single dark speck. The distal convoluted tubules appear to be affected by the degenerative changes earlier than are the proximal. This is shown in Fig. 8, in which an almost normal tubule is seen at its origin from a glomerulus, whereas tubules more distant show degenerations. Later, both groups of convoluted tubules show injury. At this stage of the process there were no casts to be seen in the collecting tubules, showing that their origin is not co-incident with the lesions in the convoluted tubules, but is dependent upon it. These stages are well illustrated in many of the animals and are seen exclusively in those given a single injection and killed at the end of twenty-four hours.

The following are illustrative protocols:

Rabbit No. 5. First day. 1,040 gm., rabbit caged.

Second day. Urine showed no albumin, no casts. Given .005 gm. of uranium nitrate subcutaneously.

Third day. Urine showed albumin, very slight trace. No casts. Animal killed.

Kidney: macroscopically normal. Microscopically, glomeruli apparently normal. Cells lining the convoluted tubules necrotic, many times cell boundaries completely lost and lumen filled with a granular material. The nuclei are very prominent, some of them have lost their characteristic appearance and look simply like a dark mass, with eosin and methylene blue stain. No fine reticular structure can be made out. The collecting tubules do not show any variation from the normal, their lumen is free from granular material.

Rabbit No. 2: First day. 635 gm., rabbit caged.

Second day. Urine: no albumin, no casts.

Third day. Urine: no albumin, no casts.

Fourth day. Urine: no albumin, no casts. Given .004 gm. uranium nitrate subcutaneously.

Fifth day. Urine: albumin, slight trace. Rare cast with cells adherent. Given .004 gm. uranium nitrate subcutaneously.

Sixth day. Urine: albumin, slight trace. Rare granular cast.

Seventh day. Urine: albumin, slight trace. Few granular casts. Animal found dead.

Kidney: Macroscopically, dark colored and the markings distinct. Microscopically, glomeruli apparently normal. Convoluted tubules everywhere necrotic, cell boundaries and lumen indistinct; in many places the whole tubule is a mass of granular material with nuclei scattered through it. Epithelium of collecting tubules normal. In some of the tubules at some distance from cortex the lumen contains the degenerated cells, but less granular in appearance, and only rarely is a nucleus seen. These tubules take deeper stain with eosin and methylene blue stain.

Rabbit No. 9. First day. 930 gm., rabbit caged.

Second day. Urine: no albumin, no casts. Given .002 gm. uranium nitrate.

Third day. Urine: no albumin, no casts.

Fourth day. Urine: no albumin, no casts. Given .002 gm. uranium nitrate.

Sixth day. Urine: albumin, trace, occasional granular cast, some with cells adherent.

Seventh day. Urine: albumin, large trace, rare granular cast.

Eighth day. Urine: albumin, slight trace, no casts. Animal found dead.

Kidney: Macroscopically, appears slightly pale, seems boggy. On section tissue is injected, but markings are distinct. Microscopically, glomeruli appear normal. In cortex convoluted tubules are necrotic; in some places there is almost no evidence of the lumen, and when intact the lumen is often filled with granular detritus. The straight tubules are involved in the destructive process to a slight extent. The epithelium of the collecting tubules is mostly intact, but the lumen often contains a granular plug or cast.

A further stage in the process of cast formation was seen in tubules in which the epithelium was necrotic, but the cell boundaries remained for the most part distinct. The lumen of those tubules was preserved, but filled with a granular detritus similar in appearance to the material composing the necrotic cells lining the tubules. Apparently this was the result of the necrosis of the cells of the tubules, for it was not found in a single mass, but was broken up into segments or sections representing in outline degenerated epithelial cells, and most of these had a darkly staining mass within them, the remnant of a destroyed nucleus. (Fig. 3.)

The following animal illustrates this point well:

Rabbit No. 1. First day. 1,350 gm., rabbit caged.

Second day. Urine: no albumin, no casts.

Fourth day. Urine: no albumin, no casts. Given .005 gm. uranium nitrate.

Fifth day. Urine: albumin, trace. Few casts, some of them only very slightly granular, with cells adherent. Very rarely an epithelial cast. Given .005 gm. uranium nitrate.

Sixth day. Urine: albumin, large trace. Considerably many granular casts, rarely with cell adherent. Given .005 gm. uranium nitrate.

Seventh day. Urine: albumin, large trace. Numerous granular casts, some with cells adherent.

Kidney: Macroscopically, firm and pale. Markings not very distinct. Microscopically, glomeruli appear normal. Epithelium of the convoluted tubules necrotic, cell boundaries and lumen often obscured. Certain tubules, especially those removed from the cortex, are better preserved and their lumen filled with granular material. This is often separated into irregular divisions, appearing like the remnants of cell divisions, and partially degenerated nuclei may be seen within the segments. Some tubules, themselves normal, contain a nearly homogeneous mass, separated from the lining epithelium by a clear space, evidently a hyaline cast. Collecting tubules are normal, but contain a good many casts.

The next stage in the process of cast formation was seen in sections which show in the tubules farther removed from the cortex a much less marked necrosis of the epithelium, but the lumen contains granular material. This had lost its sectional or broken-up appearance and the necrotic remains of the individual cells had become much more closely massed together, though in many instances the cell boundaries could be distinguished. (Fig. 4.) Next, the cast appeared as a very finely granular mass in which no remnant of the cell origin was evident (Fig. 5), and finally the granular characteristic of the casts was less prominent and the hyaline nature appeared. (Fig. 7.) It is interesting to note that the more granular the cast the less well preserved was the epithelium of the tubule in which it was found. The necrotic material coming from the convoluted tubule is apparently forced along by the urinary stream and molded into shape by the tube through which it passes. At first the detritus is very loosely formed and coarsely granular, but as it passes down the tubule it comes together into a compact mass and becomes more finely granular and eventually hyaline. It is possible also that some change is taking place at the same time in the material which composes the cast and that this results in a fusion of the original granular substance into a homogeneous mass. Certain sections showed cells attached to the granular plug within the lumen of the tubule. (Fig. 6.) These appear to have been deposited on the partially formed cast as it moved downward in the urinary stream.

This stage is shown in the following animals:

Rabbit No. 3. First day. 825 gm., rabbit caged.

Second day. Urine: no albumin, no casts. Given .004 gm. uranium nitrate.

Third day. Urine: albumin, very slight trace. Very many granular casts, occasionally with cells adherent. Given .004 gm. uranium nitrate.

Fourth day. Urine: albumin, trace. Many casts, many with cells adherent. Given .004 gm. uranium nitrate.

Fifth day. Urine: albumin, trace. Few granular casts. Animal killed.

Kidney: Microscopically, pale, rather firm and edematous, markings moderately distinct. Microscopically, glomeruli apparently normal. Convoluted tubules near the cortex very necrotic, the lumen destroyed, and tubule replaced by a finely granular mass with nuclei fairly well preserved. Farther from the cortex the epithelium of the tubules is somewhat less necrotic, but for the most part granular, and the lumen contains a granular plug. The collecting tubules show a normal epithelium, but casts within the lumen separated from the lining cells by a free space. The casts in some instances appear like swollen, degenerated cells, the boundaries between which can be faintly made out and the remnants of nuclei seen.

Rabbit No. 7. First day. 1,020 gm., rabbit caged.

Second day. Urine: no albumin, no casts. Given .005 gm. uranium nitrate.

Third day. Urine: albumin, slight trace. Considerably many granular casts, occasionally with cell adherent.

Fourth day. Urine: albumin, large trace, many granular casts.

Sixth day. Urine: albumin, large trace, many granular casts.

Seventh day. Urine: albumin, slight trace, no casts. Animal killed.

Kidney: Macroscopically, slightly pale. Markings distinct. Microscopically, glomeruli appear normal. Cells of convoluted tubules are necrotic, but lumen is fairly well preserved; many casts in collecting tubules, many of them showing cells adherent. A considerable number of casts are denser and darker staining. Many mitotic figures are seen throughout the section.

The epithelium of the collecting tubules was in most instances normal, but the lumen contained casts carried along by the urinary stream. These casts appeared much more uniformly granular and were entirely distinct from the lining of the tubules, being separated from it in most instances by a clear space. Occasionally the cast had lost its granular appearance and become homogeneous,

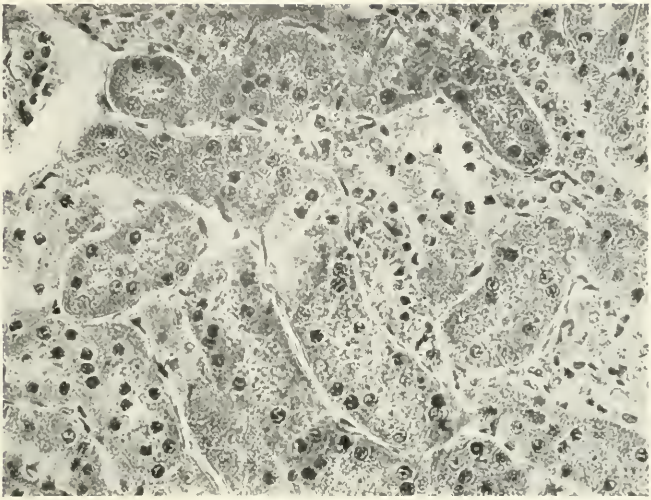

FIG. 1.

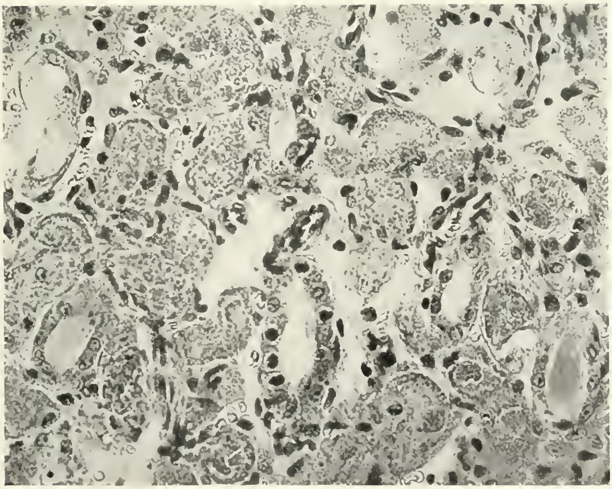

FIG 2.

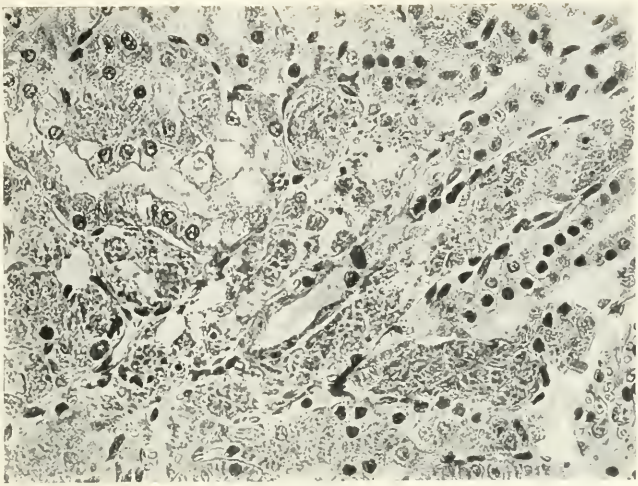

Fig. 3.

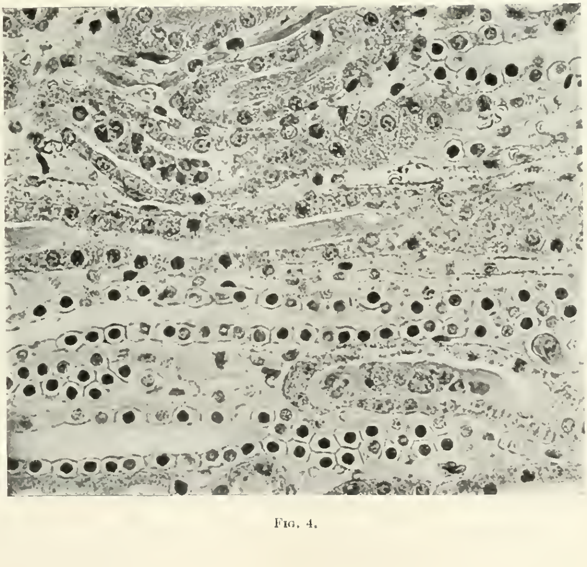

Fig. 4.

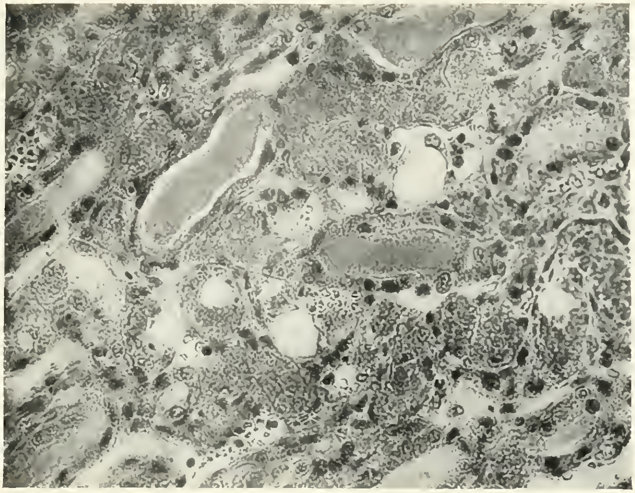

Fig. 5.

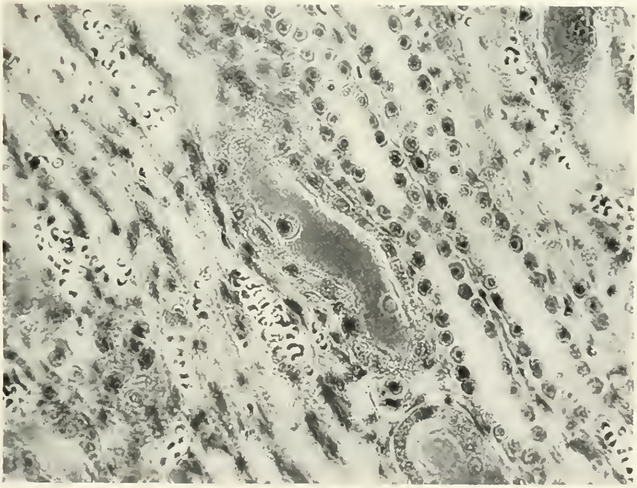

Fig. 6.

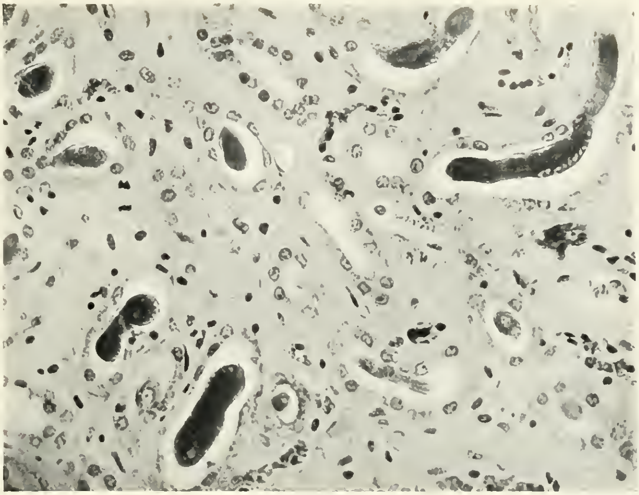

Fig. 7.

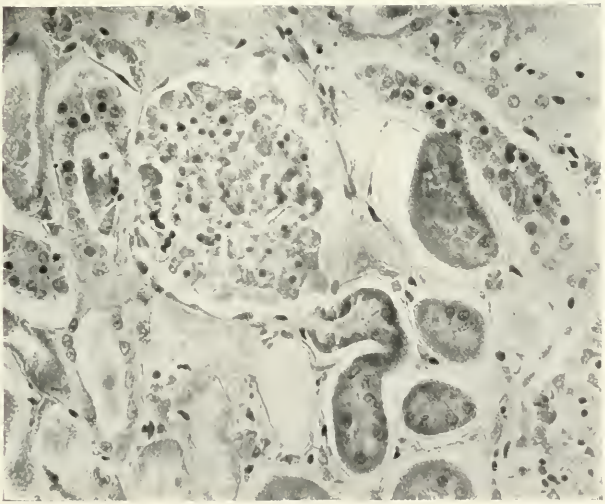

Fig. 8.

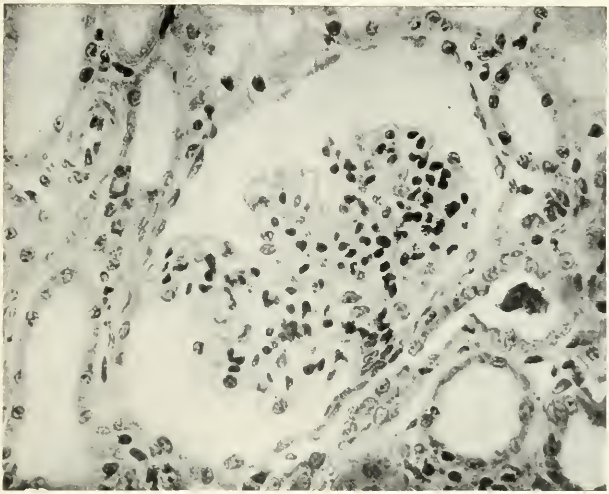

FIG. 9.

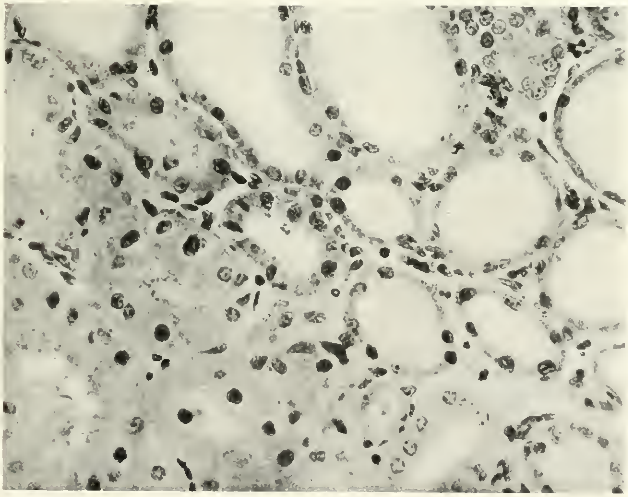

FIG. 10.

taking a darker stain with eosin and methylene blue; in other words, it was a hyaline cast.

The following animal showed this:

Rabbit No. 11. First day. 985 gm., rabbit caged.

Second day. Urine: no albumin, no casts. Given .001 gm. uranium nitrate.

Third day. Urine: no albumin, no casts.

Fourth day. Urine: albumin, slight trace, many fine granular casts.

Fifth day. Urine: albumin, slight trace, many fine granular casts:

Sixth day. Urine: albumin, trace, few granular casts, some with cells adherent. Animal dead.

Kidney: Macroscopically, rather dark, markings distinct. Microscopically, glomeruli apparently normal. Convoluted tubules show necrosis of the epithelium as in previous sections, but in much less marked degree. Collecting tubules contain only a very few casts, but these are separated from the lining epithelium by a clear space and are not connected with those cells in any way. The casts are for the most part granular, but occasionally hyaline.

The kidney sections from an animal[3] allowed to run for a long time showed very different lesions, simulating closely those of chronic interstitial nephritis. There was considerable increase in the connective tissue, much dilatation of the tubules and glomerular spaces and some apparent increase in the cellular elements of the glomerular tufts. (Figs. 9 and 10.) The convoluted tubules which were not dilated showed some necrosis. In these the lumen was mostly obscured and the tubule filled with the granular material as described in connection with the more acute processes. Only a very few of the collecting tubules showed any casts, and those present were much more homogeneous in appearance, a few were hyaline.

This animal showed the following:

Rabbit No. 10. First day. 800 gm., rabbit caged.

Second day. Urine: no albumin, no casts. Given .001 gm. uranium nitrate.

Fourth day. Urine: no albumin, no casts. Given .001 gm. uranium nitrate.

Sixth day. Urine: albumin, trace. Rare fine granular cast. Given .001 gm. uranium nitrate.

Seventh day. Urine: albumin, trace. Rare fine and coarse granular cast.

Eighth day. Urine: albumin, trace. Very rare cast.

Ninth day. Urine: albumin, large trace. Very rare granular cast.

Tenth day. Urine: albumin, trace. Occasional granular cast.

Eleventh day. Urine: albumin, very slight trace. Occasional granular cast.

Thirteenth day. Urine: albumin, very slight trace. Occasional granular cast.

Fifteenth day. Urine: albumin, slight trace. Rare hyaline cast.

Seventeenth day. Urine: albumin, slight trace. Rare hyaline and fine granular cast.

Nineteenth day. Urine: albumin, slight trace. Very rare granular cast.

Twentieth day. Urine: albumin, slight trace. Occasional granular cast.

Twenty-first day. Urine: albumin, slight trace. Rare fine granular cast.

Twenty-third day. Urine: albumin, slight trace. No casts.

Twenty-sixth day. Animal killed.

Kidney: Macroscropically, small, pale, slightly granular and markings not very distinct. Microscopically, considerable increase in the connective tissue and in the cellular elements in the glomerular tufts. The tubules are much dilated and there is an increase of the space within the capsule of the glomeruli. The epithelium of the convoluted tubules which are undilated show a fair amount of necrosis, with obscuring of the lumen and filling of the tubule with granular material as seen before. Only a few of the tubules show any casts, but they are more homogeneous than in other sections and a few are hyaline.

POTASSIUM BICHROMATE.

Potassium bichromate produces lesions which in the main are like those of uranium nitrate; that is, the convoluted and straight tubules are attacked and the glomeruli remain normal. In most cases with potassium bichromate there was a more general destruction of the tubular epithelium, and in some instances the collecting tubules were also involved in the necrosis. The process of cast formation could be seen here also. The granular detritus coming from the broken-down epithelial cells of the convoluted tubules was massed together and had taken on the form and shape of the tubule through which it passed. In the early stages of the process, and high up in the secretory system, the casts were always granular, but later and farther along they became either more homogeneous or truly hyaline.

These animals are typical of a number of experiments with injections of potassium bichromate.

Rabbit No. 30. First day. Rabbit caged.

Second day. Urine: no albumin, no casts. Given 1 ccm. of 5% solution of potassium bichromate.

Third day. Urine: albumin, slight trace. No casts. Animal killed.

Kidney: Macroscopically, normal in appearance. Microscopically, glomeruli appear normal. Marked necrosis of the convoluted tubules and to slight extent of straight tubules. Often there is complete destruction of the tubules and the place taken by a granular mass with nuclei in the midst. No casts seen in collecting tubules.

Rabbit No. 12. First day. Rabbit caged.

Second day. Urine: albumin, slightest possible trace. No casts.

Third day. Urine: albumin, slightest possible trace. No casts.

Fourth day. Urine: albumin, slightest possible trace. No casts. Given ½ ccm. 5% solution of potassium bichromate.

Fifth day. Urine: albumin, very slight trace. Very rare granular cast.

Sixth day. Urine: albumin, very slight trace. Occasional granular cast.

Seventh day. Urine: albumin, very slight trace. Occasional fine and coarse granular cast.

Eighth day. No urine. Animal found dead.

Kidney: Microscopically, glomeruli apparently normal. Very widespread destruction of tubular epithelium, only few areas where there is normal epithelium The convoluted tubules are necrotic and lumen obscured, their place being taken by granular material. The straight tubules are less affected, though some of them are granular in appearance and the lumen is usually filled with casts in the process of formation. The collecting tubules contain many granular casts and a rare hyaline cast; these latter are always in tubules whose epithelium is normal.

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[3] In this case a spontaneous chronic lesion cannot be absolutely excluded. Confirmation of other experiments is needed to prove the assumed relation between the uranium and the lesions.

Rabbit No. 15. First day. Rabbit caged.

Second day. Urine: no albumin, no casts. Given 5 ccm. of 5% solution of potassium bichromate.

Third day. Urine: albumin, very slight trace. Rare granular cast.

Fourth day. Urine: albumin, very slight trace. Rare granular cast. Given .5 ccm. of 5% solution of potassium bichromate.

Fifth day. Urine: albumin, very slight trace. Rare granular cast.

Sixth day. Urine: albumin, large trace. Very many fine granular casts of various sizes. Few hyaline casts, mostly of large caliber.

Eighth day. Urine: albumin, trace. Many casts, fine and coarse granular, few with cells adherent. Few hyaline casts.

Ninth day. Urine: albumin, slight trace. Many casts, fine and coarse granular, and hyaline. Some cells and fat on casts.

Tenth day. Urine: albumin, large trace. Many casts, hyaline predominating. Animal found dead.

Kidney: Macroscopically, apparently normal. Microscopically, glomeruli apparently normal, though they seem rather cellular. There is necrosis of the cells of the convoluted tubules, especially those close to the capsule. In most cases the lumen is preserved, but filled with granular material. There are many casts, most of them granular, some hyaline.

TRYPAN RED.

The urinalysis of animals which are given injections of trypan red did not show many casts, but the casts had a tendency to appear in showers, great numbers one day and very few the next. A few hyaline casts were seen. The albumin was not present in large amounts and the animals did not seem sick, so that it was inferred that the experiments might not prove very satisfactory. Study of the kidneys confirmed this to a certain extent. All the tissue appeared very red and the markings were not distinct. On microscopic examination of the kidney sections the most striking thing was the great increase in cellular elements, especially in the glomeruli in the early stages and in the connective tissue in the cases of longer standing. The blood vessels contained a great many red blood corpuscles. There was very little necrosis of any of the tubular epithelium, but in a few places the casts in process of formation could be seen. Some of the cells showed the initial swelling with the loss of cell boundaries and destruction of lumen, and in other places real necrosis was present. Then further along the granular material was seen within the tubule, and finally a well-formed cast.

This experiment may be given as typical of those performed with this substance.

Rabbit No. 19. First day. Animal caged. Given 20 minims trypan red.

Second day. Urine: no albumin, no casts.

Third day. Urine: albumin, slightest possible trace. Rare granular cast.

Fourth day. Urine: albumin, slightest possible trace. Rare granular cast. Given 20 minims trypan red.

Fifth day. Urine: albumin very slight trace. Occasional granular cast.

Tenth day. Urine: albumin, slight trace. Occasional granular cast. Given 20 minims trypan red.

Twelfth day. Urine: albumin, trace. Many granular and occasional hyaline casts.

Fifteenth day. Urine: albumin, very slight trace. Occasional hyaline and fine granular casts.

Seventeenth day. Urine: albumin, very slight trace. Few hyaline and fine granular casts. Given 20 minims trypan red.

Twentieth day. Urine: albumin, very slight trace. Occasional granular and rare hyaline cast.

Thirty-second day. Urine: albumin, very slight trace, no casts. Given 80 minims trypan red.

Thirty-fourth day. Urine: albumin, very slight trace. Rare granular cast.

Thirty-sixth day. Urine: albumin, slightest possible trace. Many fine granular casts.

Thirty-eighth day. Urine: albumin, very slight trace. Occasional granular casts.

Fortieth day. Urine: albumin, very slight trace. Many granular casts. Animal killed.

Kidney: Macroscopically, very dark red, markings not distinct. Microscopically, section is very cellular, especially the connective tissue. The glomeruli contain in addition to the increase in the cellular elements many red blood corpuscles. The tubules are very well preserved, but a few scattered necrotic tubules may be seen. They are almost entirely the convoluted tubules, rarely the straight tubules. Only a very few casts can be found.

ARSENIC.

The experiments with Fowler's solution were also unsatisfactory. Very few casts were found in the urine and the kidney sections revealed little of interest relative to cast formation. The glomeruli appeared very cellular, but there was only slight necrosis of the tubular epithelium. There was a good deal of blood pigment seen in the sections. This case will illustrate the experiments with arsenic.

Rabbit No. 18. First day. Rabbit caged.

Second day. Urine: no albumin, no casts.

Third day. Urine: no albumin, no casts. Given 1 minim Fowler's solution.

Fourth day. Urine: albumin, slightest possible trace. Rare granular cast. Given 2 minims Fowler's solution.

Fifth day. Urine: albumin, slightest possible trace. No casts.

Sixth day. Urine: albumin, slightest possible trace. Occasional fine granular cast.

Seventh day. Urine: albumin, slightest possible trace. Very rare granular cast. Given 2 minims Fowler's solution.

Eighth day. Urine: albumin, slight trace. No casts. Animal found dead.

Kidney: Microscopically, glomeruli very cellular, filling whole space. Very little necrosis of convoluted tubules and only a small amount of granular detritus. Rarely can any casts be seen. There is a considerable amount of blood pigment free in the tubules.

CANTHARIDIN.

Cantharidin produces lesions in the glomeruli and tubules, but not of the same character as the other irritants. There was very little necrosis of the tubular epithelium and consequently little chance to study cast formation. Many single cells are seen free in the tubules evidently broken away from the lining epithelium. The whole section is cellular, especially the glomeruli, and the blood vessels are everywhere very distinct. One experiment is cited.

Rabbit No. 29. First day. 600 gm., rabbit caged.
Second day. Urine: albumin, slightest possible trace. No casts. Given .001 gm. cantharidin.
Third day. Urine: albumin, slightest possible trace. No casts.
Fourth day. Urine: albumin, very slight trace. No casts. Given .001 gm. cantharidin.
Fifth day. Urine: albumin, trace. Considerably many casts, fine granular, sometimes with cells adherent, occasionally blood adherent.
Sixth day. Urine: albumin, large trace. Many casts, fine granular and hyaline with cells and blood adherent. Some highly refracting.
Seventh day. Urine: albumin, large trace. Only very rare granular cast. Animal killed.
Kidney: Microscopically, section appears very cellular, and many red blood corpuscles may be seen. The lesion of the convoluted tubules is apparently a desquamative one, for large numbers of cells are free in the tubule, but there is very little necrosis of the cells composing the tubule. Very few casts may be seen.

These experiments with trypan red, arsenic and cantharidin are valuable in this connection, not because they furnish material for study of cast formation, but because they furnish negative evidence in support of the described histogenesis of the process. These animals had albuminuria, but very few casts in the urine, and the kidney sections showed few casts in the tubules. The lesions only to a very slight extent involved the tubular epithelium, but were largely in the glomeruli and connective tissue. As far as it goes this is in support of the theory that it is from the necrosis and destruction of the tubules and not from albumin excreted through the glomeruli that casts arise. This theory of cast formation is positively supported by the histological evidence adduced in connection with the degenerative lesions of the tubular epithelium and by the results of urine analysis.[4]

CONCLUSIONS.

From these experiments it would seem that the following conclusions may be drawn:

1. It is possible by the injections of uranium nitrate and other irritants to produce in rabbits an albuminuria and cylindruria dependent upon lesions of the kidney simulating nephritis in man.
2. Granular casts are the first to appear in the urine when the kidney is attacked by an irritant.
3. Casts are more common in the urine when the kidney lesion is primarily a necrosis of the tubular epithelium.
4. Casts arise from the degeneration and necrosis of the cells of the tubular epithelium of the kidney. Entire necrotic cells may desquamate and at first remain distinct from one another, then become massed together, and finally formed into a definite plug, taking the shape of the tubule in which it is formed. The same process takes place with cell fragments and granular material derived from disintegrated cells. The casts are all granular at first and later become hyaline as they pass down the tubule in the urinary stream.

DESCRIPTIONS OF PLATES.

Fig. 1. Shows swelling of cells of convoluted tubules, with a loss of cell boundaries and obscuring of lumen.
Fig. 2. Shows necrosis of cells of convoluted tubules and the necrotic mass breaking away.
Fig. 3. Shows necrotic material within tubules, broken or sectional in appearance; few nuclei evident in the mass..
Fig. 4. Casts within tubules, appearing as solid plugs, but showing origin from cells.
Fig. 5. Granular casts within tubules.
Fig. 6. Granular cast within tubule, cell adherent to cast.
Fig. 7. Hyaline casts within normal tubules.
Fig. 8. Apparently normal gomerulus and a normal tubule leading from it.
Fig. 9. Shows a glomerular tuft in a dilated glomerular space.
Fig. 10. Shows dilated tubules in a chronic case.

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AGE IN ITS RELATION TO ARTERIOSCLEROSIS AND DEATH FROM ARTERIOSCLEROSIS.

BY WILLIAM H. SMITH, M.D., BOSTON,
Medical House Pupil, Massachusetts General Hospital, 1897; Visiting Physician to the Out-Patient Department of the Massachusetts General Hospital.

(From the Clinico-Pathological Laboratory of the Massachusetts General Hospital.)

Of the two thousand cases coming to autopsy at the Massachusetts General Hospital in the past ten years, 442, or 22.1%, showed more or less arteriosclerosis. Two facts must be considered in regard to this material; first, cases received at this hospital are chiefly acute cases or cases suffering from acute exacerbation. It is in no sense a hospital for chronic disease. Second, post-mortem examination of the head is limited chiefly to those cases with head symptoms. Were it possible to obtain permission for a complete examination of the head in all cases, the number showing arteriosclerosis of the cerebral vessels might be much greater. It may then be said that about one fifth of all cases coming to autopsy at the Massachusetts General Hospital, where acute cases are chiefly admitted and post-mortem examination is somewhat restricted, show more or less arteriosclerosis. In all of these 442 cases the arteriosclerosis was sufficient to warrant it being included in the anatomical diagnosis.[1]

	Male.	Female.	American.	Foreign.	Colored.	?
Sex and Nationality,	329	113	214	187	23	18

In this series of 442 cases arteriosclerosis was nearly three times as common in men as in women, and about equally frequent in Americans and foreigners.

Age.—A glance at Chart 1 will show that in this series the age in approximately one fifth of the cases was between forty and fifty years; in one third between fifty and sixty, and nearly one third between sixty and seventy.

Fifty-nine of these cases gave history of father or mother dying late in life from apoplexy, cardiac or renal disease.

Habits.—There were 135 who used alcohol in

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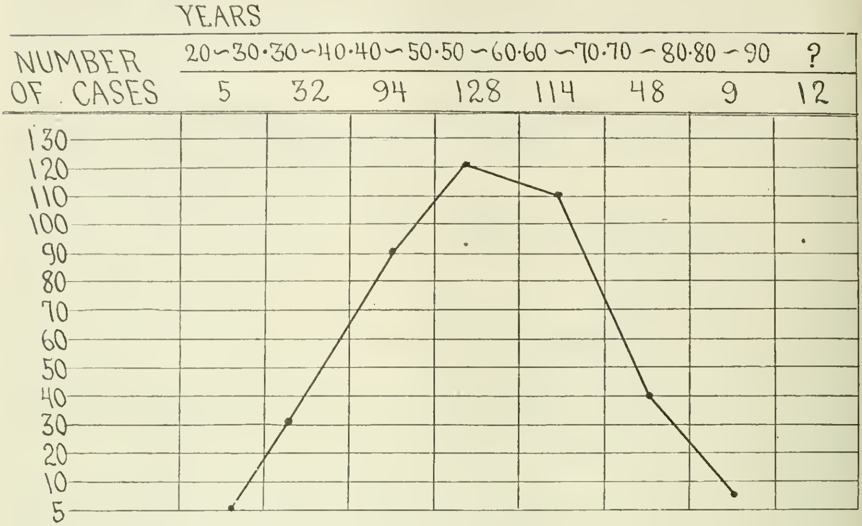
[4] I wish to express my thanks to Dr. Christian for his constant interest in the experiments, and also for his kind assistance in the preparation of this report.

[1] The proportion of males to females admitted to the Massachusetts General Hospital in the last ten years is not quite 3 to 2.

CHART 1



moderation; 57 in excess. Nearly 50% of the 442 cases used alcohol to some extent. Syphilis was acknowledged or present in 44 cases, nearly 10%. In 10 cases lead as a predisposing factor had to be considered. In none was gout apparently an antecedent.

Previous illness.— Of the acute infections, rheumatism was recorded in 64, influenza in 42, typhoid in 40, pneumonia in 31, diphtheria in 21, scarlet fever in 15; 73 had had gonorrhea. No definite deductions as to the part acute infections played in the production of arteriosclerosis were attempted. That rheumatism damaged the arteries as well as the heart valves was strongly suggested from the analysis of these cases in several instances. Arteriosclerosis and glomerulo-nephritis were associated frequently enough to suggest a common factor in their production.

Deductions.— From a study of these 442 cases, in which arteriosclerosis was present at autopsy, the following facts were ascertained: Arteriosclerosis was three times as common in men as in women, and about as frequent in Americans as foreigners. Two thirds of these cases occurred between fifty and seventy years of age. About the same number between the ages of fifty and sixty, and from sixty to seventy. It is a disease of the fifth decade, as well as of the sixth and seventh decades.

It occurred no earlier in the colored race than those of other nationalities in this series. An inherited, or syphilitic, background was present in 14, and 10% of the cases, while 50% used alcohol.

Fatal cases.— Inasmuch as only a small number of these patients died as a result of their arteriosclerosis, an analysis of the clinical[2] and autopsy records was made to determine how many of them died directly or indirectly from the disease. There were 182 cases. A group of prostatic cases, 22 in number, was omitted, owing to the impossibility of determining what part the arteriosclerosis played in causing death. These were cases of prostatic adenoma, or carcinoma with cystitis, ureteritis, pyelitis, pyelo-nephrosis, hydronephrosis, suppurative and chronic nephritis. In some of these prostatic cases death was due to cardiac or renal disease, in a smaller group to septicemia.

These 182 cases for the purpose of analysis will be considered under four groups:

1. Cardio-renal.
2. Cerebral.
3. Aneurysmal.
4. A, gangrene; B, gangrene with diabetes; *C*, diabetes alone.

Of the cardio-renal group, there were 124 cases; of the cerebral, 26; of the aneurysmal, 19; of the gangrene, 13.

Careful analysis of the clinical and autopsy records was made in assigning cases to the various groups.

Group 1, Cardio-Renal Group 124 cases.

	Male.	Female.	American.	Foreign.	Colored.	?
A,	67	30	47	4	7	3
B,	25	2	15	10	2	
	92	32	62	50	9	3

Just as in the whole series of 442 cases, three times as many men as women had arteriosclerosis, so in the fatal cases this proportion holds. There was no marked difference between those foreign and American.

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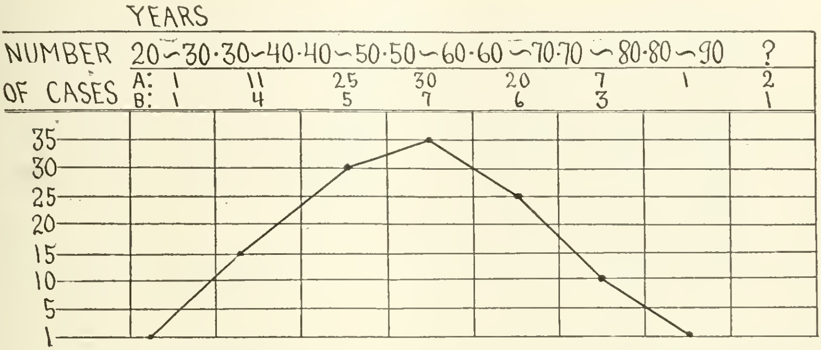
[2] I wish to thank Dr. C. L. Overlander for his abstracts of the clinical records.

Age.—The age chart in this cardio-renal group is of interest.

CHART 2



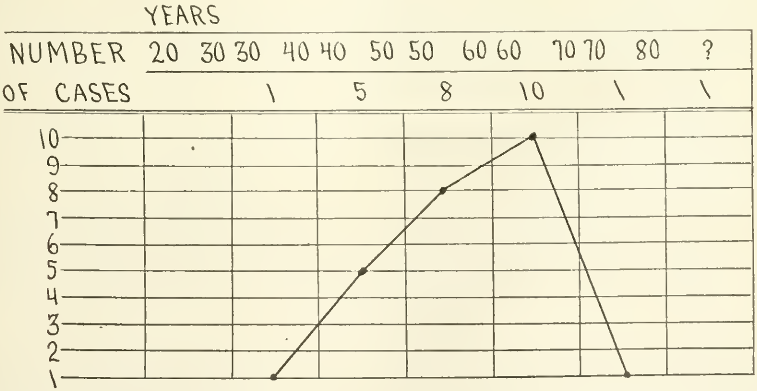
By this chart it will be seen that 37 of the 124 cases died between the ages of fifty and sixty; thirty of the 124 cases died between forty and fifty. In other words, 50% of the cases dying of cardio-renal manifestation were in the fourth and fifth decades, nearly as many in the fourth decade as in the fifth.

Group 2, Cerebral Group.

Male.	Female.	American.	Foreign.	Colored.	?
20	6	13	9	3	1

Of these 26 cases, 24 had cerebral hemorrhage, two thrombosis. In this group males were three times more affected than females.

CHART 3.



The maximum number of deaths occurred between sixty and seventy years in the cerebral group. Nearly as many between fifty and sixty. Nearly one half of the cerebral hemorrhages occurred in the fifth and sixth decades. Whereas the cardio-renal group reached its maximum fatality in the fourth and fifth decades, the cerebral hemorrhage fatality was greatest in the fifth and sixth.

It is interesting in connection with this group to note that in 6 of these cases there was a previous history suggestive of cerebral hemorrhage from three years to six months before the final attack, while in 5 of the cardiac cases in which the brain was examined there was evidence of previous cerebral hemorrhage. In one case in the renal group an apoplectic cyst was found.

Group 3, Aneurysmal Group.

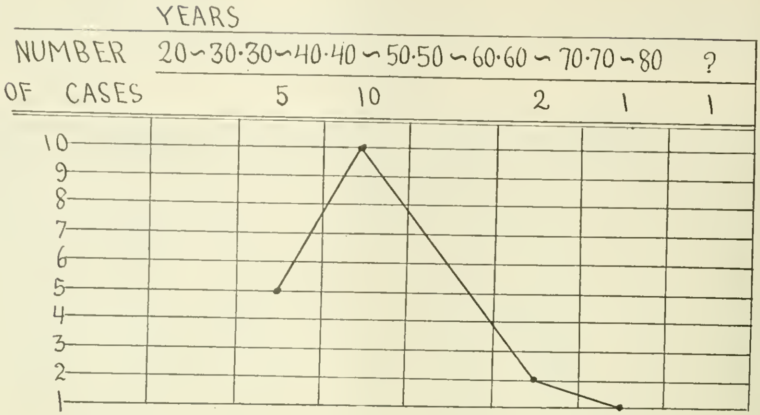
Male.	Female.	American.	Foreign.	Colored.
19	0	7	11	1

Of these 19 cases, all were males.

The deaths, as may be seen from Chart 4, were greatest in the third and fourth decades; 15 of the 19 cases died before the age of fifty.

Syphilis was acknowledged in 5 of this group;

CHART 4.



5 denying syphilis acknowledged gonorrhea. There were 3 sailors, 3 painters, in this series of 19 cases. In possibly three others their occupation subjected them to prolonged strain. There were 22 aneurysms in this group of 19; 10 of the arch, 5 of the thoracic aorta, 3 of the abdominal aorta, 1 of the innominate, 2 of the right iliac and 1 of the right femoral.

In 14 cases death resulted from rupture of the aneurysm; thrice into the trachea, thrice into the mediastinum, twice each into the left bronchus, pulmonary artery and pericardium, and once each into the retroperitoneal tissues and into the tissue of the thigh. In 7 cases of the cardio-renal group, there was some dilatation of the arch, but not sufficient to be classed as aneurysmal.

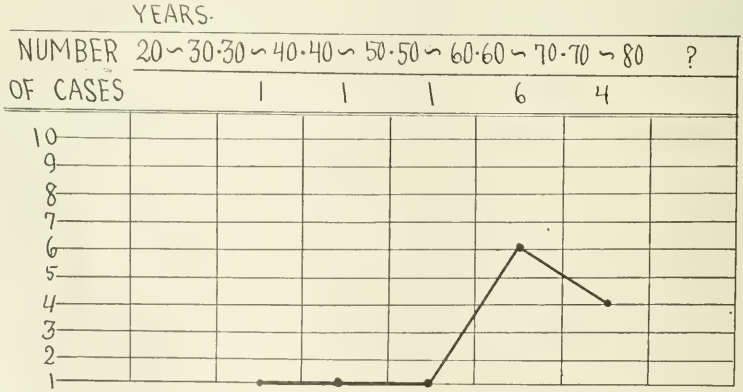
Group 4. Gangrene Group.

This group is made up of

A. Gangrene.
B. Gangrene with diabetes.
C. Diabetes.

	Male.	Female.	American.	Foreign.	Colored.	?
A,	5	1	3	2	0	1
B,	1	4	3	1	1	
C,	1	1	2	0	0	
	7	6	8	3	1	1

CHART 5.



Ten of the 13 cases included in this group died between the ages of sixty and eighty.

Gangrene alone, singly or in combination with diabetes in this arteriosclerosis series, caused death late in life. It occupies the sixth and seventh decades.

The distribution of the gangrene in Group *A* was in the right foot in 3 cases, in the left in 2, in both feet in 1; 5 of the 6 cases required amputation. In 1, with thrombosis of the left popliteal artery, death resulted from coronary thrombosis. In 4 of the 5 operative cases, death was directly due to the arteriosclerotic condition. In the fifth there was a terminal bronchopneumonia, with pneumococcus septicemia.

The distribution of gangrene with diabetes in Group *B* was as follows: right foot in 3 cases, left foot in 1, left hand in 1. Four of these cases died in coma; one post-operative.

The condition of the pancreas was as follows: in one case it was normal, in one there was postmortem change with no evidence of hyaline degeneration of the islands of Langerhans. In two, these islands showed hyaline degeneration; in one there was also chronic interstitial pancreatitis.

Group C: Diabetes Group.

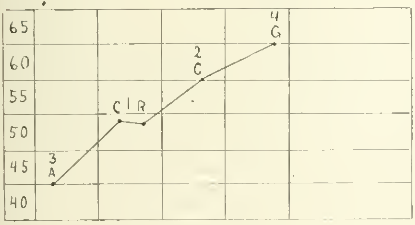
Both patients died in coma; one had in addition terminal streptococcus septicemia.

The pancreas in both of these cases showed some change; in one hypoplasia, with slight chronic interstitial pancreatitis; in the other, slight fatty infiltration with chronic interstitial pancreatitis.

The average age of the patients in these four groups may be seen in the following chart:

CHART 6

AVERAGE AGE OF DEATH IN GROUPS 1,2,3&4.



1. Cardio-renal. 2. Cerebral. 3. Aneurysmal. 4. Gangrene.

CONCLUSIONS.

In this series of 2,000 autopsies, 442 cases, or 22.1%, showed more or less arteriosclerosis.

Arteriosclerosis was three times as common in the male as in the female. It occurred no earlier in the colored race in this series. The average age of the cardio-renal group was nearly fifty-five. The average age of the cerebral group was nearly sixty. Fifty per cent of the cases of cerebral hemorrhage occurred in the fifth and sixth decades and was three times as common in the male as in the female. All the cases of aneurysm were in males. The average age of death was nearly forty-five. Death from gangrene and diabetes was incident to the last decades, the sixth and seventh; the average age nearly sixty-five.

I wish to thank the visiting physicians of the Massachusetts General Hospital for permission to use their records, and Dr. James H. Wright for the privilege of access to the autopsy records.

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TUBERCULOUS PERITONITIS.

A STUDY OF 122 CASES TREATED AT THE MASSACHUSETTS GENERAL HOSPITAL BETWEEN 1900 AND 1907.

BY ARTHUR K. STONE, M.D., BOSTON,
Assistant in Theory and Practice of Physic, Harvard University; Physician to Out-Patients, Massachusetts General Hospital; Physician to House of the Good Samaritan.

TUBERCULOUS peritonitis is a subject about which cluster many unsolved problems, although much has been written since König's second paper in 1892. The swing of the pendulum of opinion has been extreme. First there was the general feeling of hopelessness in regard to the outcome of cases diagnosed as tuberculous peritonitis, and then followed a period of extreme hope for all such as were seen in time to have a surgical operation. Many cases were found to recover. But as more and more operations were done, and men with large clinics were able to follow their results, it was found that all cases were not cured, so that by 1901 Borchgrevink, a Swedish surgeon, took extreme ground against operation, saying that operations were not curative but were harmful and delayed healing. Other foreign writers, surgeons for the most part, have since 1900 taken a decidedly conservative ground. Animal experiments have been introduced to show that early operations were of more than doubtful value. In the United States, Murphy and Mayo and Douglas have urged " aggressive surgery " on the ground that it materially influences the prognosis favorably.

Not only is there division among the writers in regard to operations as a therapeutic procedure but also there are wide differences of opinion as to how the infection is introduced to the peritoneum; whether it comes from the blood, from the passage of the bacilli through the intestinal wall, or from the Fallopian tubes to the peritoneum. The Gynecological Congress at Rome, in 1902, discussed but did not settle these questions.

The operators who believe that surgical interference is an actively remedial therapeutic measure are hopelessly divided as to the reason why a simple incision through the abdominal wall should bring about the destruction of the bacilli of tuberculosis in the tubercles covering the peritoneum. Neither is there any universality in the technic employed by the surgeons to accomplish their results. For the most part such methods, as attempting to disinfect the peritoneal cavity with antiseptics, have been given up as well as that of having the operation take place in the direct sunlight. Most operators advise against trying to separate adhesions of any density. Mayo, however, advocates careful search for the primary focus, in spite of adhesions.

The exudate in cases of tuberculous peritonitis has been considered as a harmful substance which should be removed. Bacilli have sometimes been found in the fluid, and it has been taken for granted that by means of the fluid the organisms were still more widely disseminated throughout the abdominal cavity. Others have held that the fluid contained toxins, and others have removed it for the discomfort produced, and Mayo would remove it that the ends of the Fallopian tubes might seal up so that the bacilli should not escape into the abdominal cavity from these organs. Gelpke and others advance the theory that the exudate rather contains bactericidal bodies and is an effort of nature to effect a cure and therefore should not be removed or, at least, until such time should have elapsed that would make it probable that the fluid was no longer potent when it should be removed with the hope that a new and more powerful exudate would re-form and the process of cure thus be accelerated.

The question of frequency in sex is in dispute, although it had been supposed that it was settled that women were more prone to be attacked than men.

From this very brief survey of the subject it will be seen that much more will have to be written before the questions of tuberculous peritonitis will be settled.

My personal interest in this subject was aroused by the opportunity which I had, during 1907, to follow for a long period of time several cases of tuberculous peritonitis that had not been operated upon. In these cases I saw patients with well-marked ascites, after some time, suddenly begin to improve, the fluid to disappear, the patient to take on flesh and strength and to appear perfectly well. In one of these cases there was an opportunity, after the lapse of several months, to inspect the peritoneum, which was opened for an intercurrent disease. At this time it was found that the intestine and omentum were still thickly coated with miliary tubercles. In another case fluid distending the belly quickly disappeared, and the patient (against my advice) was playing golf within four weeks, after a change of residence. This case has since had no return of the ascites.

From these patients it was evident that rapid improvement could take place in the exudative form of tuberculous peritonitis which, had an operation been performed, would have been attributed to the effects of the operation. This led me to a partial review of the literature; and it was clear that since 1900 there was much greater conservatism than formerly among the foreign surgical writers as to the curative value of simple operations. Even the Mayo brothers, though asserting that simple incision and drainage aids recovery in a remarkable way, were evidently dissatisfied with their results and began to substitute mutilating operations in order to obtain still better results. First they did total removal of the uterus, tubes and ovaries, but in their 1905 paper advocate only the removal of the Fallopian tubes. Therefore, we must conclude that they, to a degree, are in harmony with the conservative foreign writers.

It must be admitted at the outset by any one who wishes to advocate a conservative line of treatment in tuberculous peritonitis that he must show good and sufficient reason for so doing, as the statistics up to date have, for the most part, shown much better results for the cases treated surgically than for those which have been treated without surgical intervention.

If one stops for a moment to think, there are many reasons why this should have been so in the past. The medical world owes much to König, in that he first brought forcibly to the attention of the profession the fact that tuberculous peritonitis was a common and also curable condition.[1] Previous to that, the hospital physicians, who have been the teachers, had with few exceptions seen only the last stages of tuberculous peritonitis in their wards. They knew it only as a hopeless condition. Most of the milder cases passed unrecognized by the practitioners, and either got well spontaneously or gradually passed into a hopeless condition, when they sought refuge for their last days under the sheltering roof of some hospital or almshouse. Even of late years the list of so-called medical cases includes a number of rejected surgical cases, — cases where even enthusiastic operators have seen that surgical interference would be inadvisable. Medical treatment many times has consisted in simply making a diagnosis, possibly withdrawing the fluid by tapping, and then sending the patients to their homes again, with very general advice as to manner of life, etc. The medical treatment of the future will, I believe, consider the patient with tuberculous peritonitis as seriously as one with incipient tuberculosis of the lungs is now considered, and most careful attention be given to home surroundings and personal hygiene, fresh air, good food, and last but not least, supervision of work or exercise.

To get really valuable statistics will take at least another decade. But when the various plans of state and municipal registration and oversight of tuberculosis, in whatever form it may appear, is carried to its completion we may hope for much more reliable statistics as to the value of the results of our so-called medical measures of cure.

In the meantime, statistics of a series of cases may help to emphasize some of the questions which the operator and the observer must try to answer in order that he may contribute his mite to the solution of this complex problem.

Dr. Frederick C. Shattuck reported in 1902 the cases of tuberculous peritonitis appearing at the Massachusetts General Hospital from 1889 to 1900, 98 in number. I have been over the cases of tuberculous peritonitis from 1900 to October, 1907. I am indebted to the various members of the staff of the Massachusetts General Hospital for the permission to study their cases.

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[1] It is interesting to know that one of the first, if not the first, operation done in this country was performed by Dr. Z. B. Adams, of Framingham, in 1884, the same year as that in which König's first paper appeared. The patient is still alive and well.

The total number of cases that I have considered is 122.

Sex. There were 62 males and 60 females. If we deduct the 16 children under 10 years of age, of whom 10 were males and 6 females, we have 52 males and 54 females. That is to say, in a general clinic where men, women and children are treated there was no discrimination as to sex. This coincides with the 28 Boston City Hospital cases reported by Bottomley.

This is very different from some of the statistics furnished from other clinics, as, for example, at the Mayos' clinic there were 4 women to 1 man. This is the most extreme disproportion that I know of as being reported from a general clinic. The large amount of gynecological operating would probably account for the disproportion of 2 women to 1 man which has been the generally accepted ratio in the past.

Age.— As would be expected from our knowledge about tuberculosis no age is exempt, but the third decade of life furnishes the greater number of victims.

Up to five years of age there were 10 cases. Seven of these were males and 3 females. The youngest of these was one year and seven months old and the next youngest two years old, both boys.

From six to ten years of age there were 6 cases, 3 males and 3 females.

From eleven to twenty years of age there were 34 cases; of these 21 were males and 13 females. Two females and one male were married.

From twenty-one to thirty years of age there were 48 cases. Of these 21 were males and 29 were females, of whom 9 were married, and 20 were single. Of the men 6 were married.

From thirty-one to forty-five years of age there were 17 cases, of whom 5 were males and 12 were females. All of the males had been married, and 10 of the females had been married.

From forty-six years old and upward there were 4 cases, all men, the oldest of whom was seventy-three years of age. In these cases all were married.

Color.—There were 8 colored patients among the 122 cases.

In the out-patient department during the past two years, 1906–1907, there have been 1,038 cases of tuberculosis reported, and of these 33 have been colored persons. The percentage has therefore been about twice as great as would have been expected from the general proportion of colored patients having tuberculosis that come to the general clinic.

Operative and Non-Operative Cases.

Cases treated surgically,	71:	Males, 34;	Females, 37.
Cases treated without operation,	51:	Males, 28;	Females, 23.

Of the 71 operative cases 38 were transferred from the medical wards, where they entered, to the surgical wards. In a few instances, cases that entered as surgical patients were sent to the medical wards as being unfit for operation. In a number of cases the surgeons, though called in consultation, declined to operate.

Mortality.— Of the 122 cases 10 died in the hospital, about 8%. Six cases died in the medical wards, and the autopsies showed:

1. Mitral disease of the heart, as well as tuberculosis of the upper lobe of the left lung in addition to the peritonitis. The patient was apparently doing well, when the heart suddenly gave out.
2. General miliary tuberculosis of the lungs and hemorrhage from the bowel.
3. Died of perforation of the bowel. A child very sick on admission.
4. Died in ten days after entry. Great emaciation, *purpura.* Tuberculous ulcers about cecum. Old foci at apices.
5. General cachexia, — tuberculosis of the lungs with cavities.
6. General decline, with persistent diarrhea. Tuberculous ulcers were found in large intestine. An old focus was found at the left apex, and mesenteric glands enlarged.

None of these patients could be considered for surgical treatment when seen at the hospital; the diseased condition had advanced so far that death was the only possible outcome.

The four surgical cases died under the following conditions:

1. The patient became septic, the wound breaking down and discharging foul pus. Purulent peritonitis had been found at the operation. The patient had been attacked suddenly seven weeks before entrance to the hospital.
2. There was a general increase of pain and tenderness and an outbreak of purpura. Purulent peritonitis was found at the operation. The symptoms had existed for about one month.
3. The wounds broke down and patient became generally septic. The abdominal cavity could not be entered so dense were the adhesions. Symptoms had developed within six weeks.
4. Abscess resulting in a fecal fistula developed after the operation. Much clear fluid had been found and many adhesions. Several cheesy nodules were removed from the large intestine; there was also a general distribution of tubercles. The symptoms had appeared suddenly only twelve days before.

The previous histories of these cases made the findings unexpected, though when found the result was obvious.

Subsequent history. — So far as the after histories of the patients have been followed it has been found that of the 112 who left the hospital alive 27 have since died.[2]

Of these 12 were treated without operation, 15 with operation.

The duration of life in the 15 surgical cases was as follows:

1 month or less,	3
1–2 months,	2
3 months,	3
7–8 months,	1
8–10 months,	2
1–2 years,	2

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[2] Since the above was written two medical patients were reported to have died soon after leaving the hospital.

One lived five or six years, had married, and died of some sudden cerebral condition. One lived five years and died of phthisis at the end of that time.

The duration of life in the medical cases was as follows:

1 month or less,	2	both *in extremis*, when taken from the hospital,
1–2 months,	3	two apparently favorable (both refused operation, and one of phthisis.
4 months,	2	
5–6 months,	3	one of whom was operated upon one month later in Colorado: one died of phthisis.
8 months,	1	
2 years +,	1	died of "cough."

It has been possible to find out about the present (February, 1908) condition of 28 living patients, 25%, or one quarter of those leaving the hospital alive. There are undoubtedly others as 28 letters remain unanswered while 19 letters have been returned as undelivered.

Of the 28 who have reported as being alive, surgical cases numbered 17, medical cases numbered 11.[3]

Of the 11 medical cases 6 have been out between one and two years (many of these nearly two years), one between three and four, 1 over five years, 2 over six years; 1 over seven years.

With two exceptions all report themselves in good health. One of these has had a pleuritic exudate in the left chest which has since disappeared. The other is reported as a slim, pale child, though complaining of nothing. One patient who was tapped and had masses in the abdomen after a period of nearly two years writes: "A more healthy, robust girl never lived than I am at the present time."

Of the 17 surgical cases, those reporting themselves, have been out of the hospital as follows:

Under 1 year,	2
1–2 years,	2
More than 2 years,	4
" " 3 "	3
" " 4 "	3
" " 6 "	3

One patient has returned to Ireland and though well has not worked since the operation, over three years ago.

One has a cough and is out each day; the wound still discharges (nearly three years).

One reports in fair condition but has loss of weight and night sweats if she overworks.

One (of a year's standing) is stronger and gaining; the wound still discharges.

One of only a few months' standing feels well, but belly is tender.

In addition to these there are ten others who have been heard from since leaving the hospital, but have not replied to recent letters.

One heard from four months after leaving the hospital. Perfectly well. Little discharge from the scar.

Seven patients were heard from one year after leaving the hospital. One patient had gained 20 lb. No abdominal pain. Had a cough and expectoration.

One reported poor health with pains in lungs and back.

One had been very sick for twelve weeks in another hospital, but was in good condition.

One reported wound broken down and discharging.

One had gained 18 lb., felt well and was in Ireland.

One reported her general condition excellent. Six months later she was operated for cystitis; no bacilli of tuberculosis found in the urine.

One has had no trouble since operation.

One, four years after the operation, came for distress in stomach to the out-patient department. Nothing was found on examination. Patient was in good physical condition.

One patient came to the out-patient department for headaches and vertigo, four years after the operation.

The last two cases belong in the *cured* class.

Of the seven cases reporting at the end of a year two were evidently in poor condition and one other had a cough and expectoration, nevertheless in good condition.

To recapitulate: Of the 122 cases treated there were in February, 1908:

Dead,	39
Alive, 1908,	29
Heard from, but not in 1908,	10
Letters returned,	19
Not answered,	25
Total,	122

Of the 44 of whom there has been no report whatsoever, the conditions at discharge make it very probable that in a number there has been a fatal ending.

It is specially unfortunate that 25 letters should remain unanswered, as this large number would have made the statistics so much more valuable.

The family history.— In 10 cases only was there any account of tuberculosis in the family, and in but 5 of these cases there was exposure to cases of phthisis possible, while the other 5 were not exposed to family contagion.

The previous history.— Those who reported themselves as being well up to the time of the present illness were 42 in number.

Those who had been sick with other conditions previously to the present attack were 63 in number.

There were 6 cases in which there had been typhoid fever, and in 4 of these, at least, it was reasonable to suppose that the fever had been rather a tubercular fever. Likewise, some of 4 cases of malaria were of doubtful character.

Grippe was spoken of 6 times.

Diarrhea is mentioned as a symptom in 32 cases, and of these 8 had had this symptom for over one year. Six more had had diarrhea for at least a month before entrance.

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[3] Since the above was written 1 medical case has reported herself alive and well, 7 years after discharge.

In 74 there had been no diarrhea, and 9 of these stated that they were usually constipated.

In the remaining 16 cases no mention of the bowel condition is made.

Hemeter in his report of autopsies on 56 cases of tuberculous enteritis states that in but 2 was there tuberculous peritonitis present.

In the two cases above mentioned when ulcerations were found at autopsy in the intestines, there was not a general tuberculous peritonitis present, although other foci of tuberculosis were found in the body. Also in a patient of my own where there was very extensive tuberculous enteritis there was no general deposit of tubercles upon the peritoneum.

In spite of the fact that there was diarrhea present in about one quarter of the cases, it does not seem probable that tuberculous enteritis is an important factor in the production of general tuberculous peritonitis.

Ascites was present in two cases, eight and six years previously, and "peritonitis" once at the age of six months.

Pleurisy was spoken of in 4 cases.

Whooping cough was mentioned 10 times, and in several instances, long duration is mentioned.

In 2 instances a miscarriage was attributed as the starting point.

One patient was brought to the hospital septic, in the second week after parturition. The peritonitis was found to be due to a tuberculous process.

The *sputum* was examined for the presence of the bacilli of tuberculosis in 24 cases, sometimes repeatedly. The bacilli of tuberculosis were found in but 3 of these cases.

The *stools* were likewise examined seven times, all with negative results.

Leucocytosis.—The white count was 10,000 or less in 58 cases. It was between 10,000 and 14,000 in 21 cases; it was 14,000 in 2 cases; 15,000 in 3 cases, 16,000 in 2 cases, 17,000 in one case, 18,000 in 2 cases, 20,000 in 1 case, 21,000 in 1 case, 22,000 in 2 cases, and in 1 each 27,000, 28,000 and 40,000.

The patient with a 40,000 white count had no fluid, but tuberculous ulcerations in the large intestine and probable secondary infection. The patient with 28,000 had an abscess rapidly develop which brought her to operation; probably a mixed infection. The case with 27,000 had an acute attack of vomiting and diarrhea for several days before the belly had swollen, and is one of the few cases of acute accumulation of fluid which would bear out Murphy's statement that a high leucocyte count is usual in tuberculous peritonitis. One of the 22,000 cases had little fluid but considerable tenderness about the tubes. The other case was that of two weeks' standing and there was blood in the stools. The case of 21,000 developed with a chill and the right tube was filled with foul pus; again a secondary infection. The same is true of case with 20,000. Foul pus was also found in one case with 18,000; the other was a child where there was rapid development. The case of 17,000 was one of five months' standing and with probably a general miliary tuberculosis. One of the cases with 16,000 entered the surgical wards with chill and pain in the appendix region, and the other was a case that had been operated upon elsewhere, but had a rapid re-accumulation of free fluid.

Thus, for the most part, the high leucocyte count is accounted for by the presence of septic infection, and, on the whole, the leucocytosis corresponds with the general rule for tuberculosis, namely, a low count.

Onset of symptoms. — There seems to be a general feeling that the symptoms leading to the presence of peritoneal tuberculosis are of an insidious character. The invasion may be unheralded though extensive, but the open outbreak is often sudden and stormy. Gelpke in his recent article states this, though in a note he says that he and others have found that one quarter to one third begin acutely. This coincides with the cases here reported, 36, or 29%, developing suddenly. Bottomley found 13 in his group of 28 cases began acutely, and F. C. Shattuck found 29 of his 98 cases.

Acute symptoms appeared both in the cases where fluid was present and where it was absent. In the latter class the symptoms were frequently so acute as to simulate appendicitis, i. e., sudden pain and tenderness localized in the right iliac region, usually accompanied with vomiting. Other cases simulated acute inflammation of the Fallopian tubes. The most interesting group was that where the attack was sharp, with abdominal pain or cramps usually accompanied with vomiting, and within a few days the abdomen became tense with fluid.

A typical account is this: the patient had felt tired for a month, then had a sudden attack of pain and the abdomen three days later was distended. In another there was a sudden pain coming on before breakfast. She was weak and feverish for three days, having a little cough and at the end of that time the belly was found swollen.

Another patient that I had the opportunity to see a few days ago had had pleurisy five years ago, and, five days before I saw her, the belly began to swell and when seen it was distended and tense.

The fact that fluid can accumulate suddenly is not emphasized to any extent, but it certainly should be borne in mind.

In several cases that have been under my observation the converse has been true and fluid has been seen to disappear rapidly, but not so rapidly as it has been said to accumulate. In 2 of the cases who reported themselves as being well, both state that they got worse after leaving the hospital when one "took up Christian Science" and another was given "a medicine," and within a couple of weeks' time the fluid had disappeared in each case and they were able to be about again. A third went to his doctor in New York State and was quickly cured. The presence of acute symptoms, therefore, does not militate against the diagnosis of tuberculosis of the peritoneum, and sudden improvement is not rare.

Tubercles.— The extensive distribution of tubercles in most of the cases that were operated upon demonstrated that the disease has been in progress for some time. Two of the cases specially show this; in one, tuberculous peritonitis was unsuspected, but found in the course of an operation for hernia; the other, a longshoreman who fell into the hold of a vessel and who, when operated upon for what was supposed to be the result of his injuries, was found to have extensive tuberculous peritonitis. Neither of these patients had symptoms pointing to this disease. A young girl who was operated upon for appendicitis, having had tuberculous ascites six months before, was found to have her "intestines swathed in tubercles," yet she had been in apparently perfect health for over four months.

These cases go to show that the processes may be present and give no symptom, but that variations in the patient's physical condition may call forth the exudate.

The peritoneum may have a perfectly typical appearance of tuberculous peritonitis, being everywhere studded with miliary tubercles and have either no fluid at all or have it present in large amounts, and this fluid can accumulate rapidly and also disappear rapidly. All this points to the fact that the ascites is not a symptom to be met with the knife without some special indication for so doing.

Masses.— Indefinite masses were felt in the abdomen in 21 of the cases. This does not include enlarged tubes that were felt by the vagina. These latter were, however, mentioned but three times. The irregular-shaped masses were several times discovered after tapping, and when an operation was performed, were usually found to be rolled up omentum and intestines. Sometimes a very great amount of adherent bowel was found which had given no evidence of its existence from the outside, neither had there been any history of abdominal pain.

Pleuritic effusion.— Evidence of fluid in the chest was found in 19, or 15%, of the cases. In one case there was fluid in both sides of the chest and in the abdomen. A year later, after apparent recovery, fluid reappeared in the left side of the chest, but disappeared again within a few weeks. In another case, mentioned before, but not included in this group of 122 cases, there had been pleurisy with effusion five years before the belly had been attacked.

Fluid in the chest is of no uncommon occurrence, but appears to have no bearing on the prognosis of the case.

Signs of phthisis.— Modification of the normal respiratory signs, all the way from harsh breathing with prolonged expiration to well-marked signs of pleurisy or consolidation, were found 59 times, or 48%, of the 122 cases; that is, abnormalities could be found in the course of the examination of the chest in nearly one half of the cases.

Tuberculin. — The tuberculin reaction was tried in 31 cases; 5 did not react, and in 2 the reaction was of doubtful character, and in one no report was made. Two of the five not reacting were proved to have extensive tuberculous peritonitis at operation. The others were unoperated upon. The tests were usually made by the injection of a single dose of the old tuberculin.

Surgical cases.— In 19 of the 71 surgical cases nothing more was done than to wash out the peritoneal cavity as far as possible with salt solution or to wipe it dry with gauze sponges. In ten more of the cases nothing whatever was attempted more than to look into the abdominal cavity, and then to close the wound again. Adhesions at times prevented the cavity from being opened.

In 4 cases the adhesions were broken up as far as possible.

In 6 cases abscesses or distinct foci of cheesy material were removed. One of these was an external abscess with a deep sinus. In one there was a single broken down retroperitoneal gland, and one presented multiple pus pockets among the adherent intestines.

In 5 cases the appendix was removed. In 3 of these there were no tubercles seen on the appendix itself, though there were many in the peritoneal cavity. In another case there was a section of tuberculous gut found while searching for the appendix which was also removed, no mention being made as to its condition. In the fifth case the tip of the appendix was thickened and filled with pus, and on the surface there were a few ulcers. The ascending and transverse colon were also thickened, and the description reads like a case of cecal tuberculosis with involvement of the appendix, rather than a general diffuse tuberculous peritonitis.

In some of the other cases the condition of the appendix was noted as being not abnormal or else tied up in dense adhesions. Nevertheless, only 5 were removed and of those only 1 could be taken as the starting point of the infection and that was not a general infection. In 1 other case where a sinus had persisted after an appendectomy, the secondary operation disclosed a tuberculous lesion at the bottom of the sinus. But here again there was no diffuse process.

Tubes and ovaries. — In 14 cases Fallopian tubes were removed, 11 times both tubes being removed, and in 3 cases only one tube was removed. In 4 cases the ovaries were also excised at the same time. The tubes were many times found filled with pus, in some with cheesy débris. In one case where the tubes were practically converted into a cheesy abscess and pus was oozing into the peritoneum, no other tubercles were reported than those in the wall of the tube. In other cases, the interior of the tube was not involved at all although the peritoneal surface was studded with tubercles as was the rest of the peritoneum. There was no case where the condition in any way could be said to be fairly described as a "lupus" of the mucosa.

The tubes may be a source of infection, but it cannot be said that they are the most common source. Rather than any routine removal of the tubes a much more consistent course seems to be to carefully inspect the tubes, and unless specially involved to return them unharmed to their places. In one case where this was done, and although there had been some sharp attacks which would lead one to suppose the tubes were diseased, and the inspection showed that the tubes were somewhat thickened, the patient nevertheless recovered and has remained well and has had no return of discomfort at the menstrual periods which have been regular.

Fluid in the abdominal cavity. — Fluid was reported as present in 84 cases, or nearly 69%. This was demonstrated by operation and tapping 57 times. And also in 22 cases there were undoubted signs of fluid, as shifting dullness, fluid wave, many of the cases having also a distended abdomen and protruding navel. In 5 other cases there was but little fluid and possibly some doubt as to its presence.

In 35 cases there was no fluid to be made out by the physical signs (except in two cases where doubtful wave or shifting dullness has been found). This was verified 23 times by operation and once at autopsy.

In the remaining 3 cases there was no record made, or else no definite statement as to the presence or absence of fluid. These are to be included probably among the dry cases, as any amount of fluid would probably have been recognized and recorded.

The amount of the ascites fluid varied from a comparatively few ounces to "several gallons"—10 qt., 8 qt., 10 pt. One patient had 10 qt. withdrawn, again over 8 qt. and 10 qt. more were found at the operation, and a certain amount reappeared after the operation. This patient lived five or six years after the operation. With very few exceptions the fluid found was noted as either clear or yellow, or straw colored. It was reported as purulent 3 times, as cloudy once, as dark once, as bloody once, and in another case blood came towards the end of the tapping when previously it had been clear.

By most authorities the dry cases are supposed to be the least favorable as to prognosis, yet 4 only, or 11%, out of the 35 "dry" cases are on the list of those reported as dead. This makes the deaths among the 84 cases with ascites 33, or 39%. Nineteen of the "dry" cases are among those reported living in February, 1908; 13 of these being of the operative cases.

Three more of the "dry" cases heard from at the end of a year, 2 in excellent condition, 1 in poor health and with a cough. These are also operative cases. Three others reporting after the lapse of a year were medical cases. The other 12 cases have not been heard from. In the operative cases the tubes were removed 6 times; twice the appendix was removed, once as being tubercular, the other being chronic appendicitis with tuberculous nodules on the rest of the peritoneum. Twice the operation was for exploration of a sinus and once the draining of a retroperitoneal gland. One other case might be included here when at the first stay at the hospital there was much fluid present, but eight months later when operated upon for an appendicitis there was no fluid in the belly. In the 23 operative "dry" cases there was general tuberculosis of the peritoneum 16 times, and once of the intestine. Certainly this group of cases makes it seem as though the "dry" cases were rather favorable than otherwise. The question naturally arises, What is a "dry" case? or, in other words, may not many of the cases have passed through the active stage like the last patient whom I have mentioned, and become in the process of healing a "dry" case with only the scars and degenerations of the tuberculous process left behind, to be found by the operator? The data for the solution of these questions is not at hand.

Tubercles.— Tubercles were found present more or less generally distributed over the parietes, and the peritoneum covering the intestines and pelvic organs in 56, or 78%, of the surgical cases. Of the remainder, in one septic case no note is made. In one case the tubes were mentioned as alone having tubercles and within, the tube was practically a cheesy abscess. In one case the only tuberculous lesion mentioned was the four inches of intestine which was resected. In a number of cases the presence of general distribution of tubercles was not mentioned. Several times the attempt to open the abdomen was futile on account of the dense adhesions, and at others only a pocket was opened, and the general cavity could not be explored.

Adhesions. — In the 71 cases in which the abdomen was examined adhesions were found 54 times while 17 times no mention is made in the records, though from the context their presence may be inferred in at least 3 of these 17 cases. Five of the 17 cases are among those from whom reports have been received. One was the hernia case that had no symptoms of peritonitis and was accidentally discovered and was well when last reported, over four years after the operation. One, also of four years' standing, had both ovaries and tubes and also the appendix removed, and the general tuberculous infection was very extensive. The next case was one in which 4 in. of gut was excised, and was reported in good condition a year later. A fourth case was one where the abdomen was opened and closed, large-sized tubercles being seen. Still another was one in which a tuberculous sinus persisted in the scar after an operation for appendicitis, and the bowels were found studded with tubercles. One case of seven years' standing had no adhesions. Only one case without adhesions is among the list of dead.

On the other hand, among the patients reporting themselves alive at the time of writing, one, where over four years have passed since the operation, had the intestines bound up into a mass and the pelvis walled off so that the ovaries and tubes were not seen by the operator. A patient, reporting herself in good health, had a tumor which turned out to be a "wab of intestine"; in another, reporting likewise, the intestines were matted together, and still in another of nearly seven years' recovery the intestines were firmly matted together. One case reporting nearly three years after the operation had the intestines and omentum adherent to the pelvic organs.

These are taken as examples of cases with extensive adhesions that have remained well over considerable periods of time and showing that such adhesions may exist without any marked hindrance to general comfort and well being.

Menstruation. — Notes regarding menstruation were recorded in the histories of 36 of the women. It was noted as usually regular in 29 cases; irregular in 5, and absent for a space of nine to thirteen months in 2 cases. Several other cases had not menstruated for two or three months before coming under observation. Nine patients had pain at the time of the catamenia and 9 had no dysmenorrhea. In 13 the amount of blood lost was excessive. Three cases out of the 36 had evidently severe disturbance at the time of the menstrual period.

Of the women of whose after history we have any knowledge 8 have reported in regard to their menstruation, and of 4 others inference may be made, two, speaking of themselves in perfect health and two others having been at the out-patient department several times with no record as to dysmenorrhea. One patient, having the ovaries and tubes removed, reported regular catamenia for six months which then stopped; while another, in like condition, reports that she is "all right monthly." One patient where the tubes were covered with tubercles and thickened but were not removed reports her "periods all right." Three only have dysmenorrhea, one, "some pain before catamenia," one, pain and profuse flow one month, the next, normal, and the other, "painful but not much."

Reaccumulation of fluid.— The reappearance of the ascitic exudate after operation is frequent, and according to some surgeons considered practically universal. Gelpke is inclined to ascribe to such a reaccumulation the real advantage that may be hoped for by simple operation, on the ground that the new fluid contains active bactericidal properties which make for cure.

Large accumulations do occur after operation, as was seen in one of this series of cases where the patient had been operated upon in Naples, and had had to be tapped two months later and was operated upon a second time having the abdomen again distended with fluid.

Among the operative cases 13 are noted as having a reaccumulation, 18%, a rather small number as compared with the observations of others.

Four cases are recorded as having a large amount reaccumulate, of two small amounts were noted and of the remainder the re-formed exudate probably was not large.

Accidents. — In 3 cases accidents were recorded as taking place during the operation. In one case the cecum which was thickened and tied down by adhesions was opened by the exploring finger. An anastomosis of the intestines was immediately done. There was general tuberculosis of the intestine and peritoneum, and bacilli of tuberculosis were found in the sputum. A letter was returned unopened a year after the operation. Another case where there were dense adhesions, and the ovaries and tubes were removed, the small intestine was torn into in the course of the operation. This patient, though not answering the circular letter recently sent out, was alive five years after the operation. The third patient had pain in the region of the appendix, and as the coils of intestines were being pushed aside, one of them ruptured. Four inches of tuberculous gut were resected. This patient, though she had a hard and prolonged recovery, with abscesses and sinuses, was reported at the end of a year in "splendid condition." No report has since been obtained.

Sepsis, abscess and sinus formation after operation. — There are reports of general sepsis, breaking down of wounds, with the formation of sinuses and, in a few instances, of fecal fistulæ, in no less than 19 cases, or 26.7% of those cases operated upon. Four of these cases died while still in the hospital with diffuse sepsis. In 3 of the 4 cases the wounds broke down before death, and in one there was an outbreak of purpura. Deducting these desperate cases from the above 19 cases leaves 15, or 21% of the cases who survived the operation who have had sinuses develop after the operation. In 2 of the cases a fecal fistula formed. In a few cases the sinuses closed before leaving the hospital; others report discharge from the sinus for four months, six months, a year, and one case had a discharging wound for two years, which finally closed after going to Colorado. Still another reports a discharging sinus nearly three years after the operation. In two cases abscess and sinuses did not appear till after leaving the hospital.

In only a few instances is there record of the use of any drainage after the operation. The wounds after a varying length of time simply broke down with a resulting sinus. Defect in the catgut is ascribed in one case, but in the light of the general frequency of such results it seems hardly fair to accuse the catgut, especially as the resulting sinus lasted for two years.

To the advocate of operation the danger of a breakdown of the wounds with a sinus and possibly a fistula must be taken into consideration. It has been supposed by some surgeons that the frequency of sinuses after operation for tuberculous peritonitis was confined to the operations of the last century, but the above figures show that the percentage is still high and that operation, even exploratory operation, cannot be advised with the same freedom that is possible in most other abdominal conditions.

Pathological reports. — Pathological reports are found in 38 of the 71 operative cases, or 50%.

With two exceptions tuberculosis was demonstrated. In one of these cases where many tubercles were present, the piece removed for examination showed only thickened and hypertrophied tissue. It is evident that no real tubercle was sent to the pathologist. In another case the appendix alone was sent, and this showed no tuberculosis, although there were many tubercles on both the parietal and visceral peritoneum and also on the omentum.

Whenever the tubercles were examined microscopically the typical changes due to tuberculosis were found. The examination of the ordinary macroscopic tubercles in almost every recorded instance, not only here, but in other clinics, gives proof of tuberculosis, and only rarely do cases of pseudo-tuberculosis occur as in the case recently reported by Farrar Cobb, where foreign bodies were found within the tubercles. Cobb, however, makes it plain that pseudo-tuberculosis of the peritoneum is frequent enough to make it practically necessary to clinch the diagnosis in every case with a microscopic examination.

In one case when the microscopic examination showed the typical tubercles the exudate injected into a guinea pig did not kill it. In only a single case were the bacilli of tuberculosis demonstrated in the tubercles.

CONCLUSIONS.

This series of cases presents a number of interesting points.

First, being a general clinic, and drawing from a large and mixed population, the fact that the males and females were in about equal numbers is significant, and is probably nearer to the truth than the figures furnished from the more special clinics.

Second, the onset of symptoms is often sudden and stormy, both in the cases where there is ascitic fluid present and where it is absent.

Third, fluid can go quickly, and improvement take place very rapidly both with and without an operation.

Fourth, tuberculous peritonitis can be latent, unsuspected, so far as symptoms are concerned, and it can remain apparently unchanged for months after active symptoms have subsided and the patient returned to apparent health.

Fifth, foci for the infection of the general peritoneum have not been found in the Fallopian tubes or in the vermiform appendix in this group of cases.

Sixth, operation should only be undertaken when there is some distinct indication; in the cases with fluid exudate, unless there is distress from the distention, it is better to wait for a period with the patient at rest and under the same hygienic conditions to which any case of pulmonary tuberculosis would naturally be subjected, namely, rest, fresh air, good food and, later, moderate regulated exercise. If after six to eight weeks there is no improvement in the symptoms operation should be considered.

Seventh, the patients, when once the disease is arrested, whether by operation or hygienic methods of treatment, must be taught to regulate their lives with the same care that they would had the disease been located in the lungs.

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ON THE EARLY DIASTOLIC HEART SOUND (THE SO-CALLED THIRD HEART SOUND).

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If one place the hand in the region of the cardiac apex of a young individual with a chest wall not too thick, the systolic impulse of the heart is easily palpable. A slight shock may also be felt at the time of closure of the aortic valves. On auscultation one hears the two heart sounds; the first, more prolonged and low pitched but with a clearly defined ending; the second, short, definite, high pitched, clean cut. In the long pause between the close of the aortic valves and the beginning of the next systole, there is often silence. This, however, is not always the case. As I have already pointed out in another communication,[1] a third sound is not infrequently audible, especially in young people with thin chest walls. The sound is softer and of lower pitch than the second sound; sometimes it is a dull, distant thud; sometimes merely a hum; it occurs shortly after the second sound, that is, at the beginning of the long pause. It is, however, always appreciable at a time later than that occupied by a true reduplication of the second sound, and it is audible only or with greatest intensity at or near the apex. In some cases it may be heard over the lower part of the right ventricle. At times, the sound is followed by the faintest suggestion of an echo resembling a slight, early mitral diastolic murmur. This resemblance has, in some cases, been sufficiently striking to suggest that the phenomenon might be due to a similar mechanical cause; so much so, indeed, that I have long been in the habit of maintaining that the entrance of blood from auricle into ventricle is associated in some instances with a slightly audible sound. This early diastolic sound may be associated with a shock which is just perceptible to the palpating hand. The condition is rendered more readily appreciable, and may be brought out in cases in which it is not otherwise audible by a simple manœuvre. If the patient turn well upon the left side in such a position that the chest overhangs the edge of the bed, the apex impulse of the heart which is thrown more directly against the chest wall, becomes more forcible and may be more easily studied by the hand and the stethoscope. On palpation of a heart in this position it is not very uncommon to feel, first, the systolic impulse, then a slight suggestion of the shock accompanying the closure of the aortic valves and second sound, and then, with the relaxation of the ventricle, a third impulse following rather closely after the second sound. In some cases in which an impulse is palpable auscultation reveals no actual well-defined sound. One is, however, sensible of a slight shock to the tympanic membrane analogous to that which is felt with the palpating hand. The sound and shock may be more appreciable at the end of expiration.

This sound is certainly not an abnormal phenomenon. It has been familiar to me for over twenty years, and I have frequently mentioned it to my students. It has always been a matter of interest to me that an event so definite, one which must be familiar to many clinicians and physiologists, has not been more generally recognized.

Barié,[2] indeed, in 1893, says: " If one auscult a large number of healthy individuals, one perceives that the long pause is not absolutely free from sound but that there may be heard a slight rudimentary sound, barely perceptible, which if exaggerated will give rise to gallop rhythm." Within the last year the sound has been noted by several observers. Hirschfelder, in an article on " Some Variations in the Form of the Venous Pulse,"[3] describes two cases in which a wave was observed in the jugular pulse immediately after the fall following the so-called *v* wave — i.e., the fall following the opening of the auriculo-ventricular valves — between this and the *a* wave of auricular contraction. In one of these cases, " . . . the heart sounds were loud and clear, but at the end of expiration a very faint third sound, coinciding with the time noted in protodiastolic gallop rhythm, was audible in the tricuspid area, at the time when the venous pulse was taken. This sound was not loud enough to be definite, and none of the tracings which I have made at other times upon cases with gallop rhythm have shown this peculiar variation; so that as yet no definite conclusions as to the relations of this unusual wave of the venous pulse to either the closure of the tricuspid valve or the gallop rhythm are warrantable." Hirschfelder, however, calls attention to the probable correspondence of this wave with the shoulder of the cardioplethysmogram and the time at which the mitral and tricuspid valves are, according to Henderson, closed by the floating together of the cusps.

Recently, an interesting note has appeared by Einthoven,[4] " On a third heart sound." While studying the heart sounds by means of his string galvanometer, Einthoven met with a case in which vibrations were recorded occurring at a period in diastole similar to that in which our sound is audible. These vibrations began on an average 0.13 (.11–.15) second after the beginning of the second sound, and 0.32 second before the beginning of the following first sound, that is, somewhat before the end of the first third of diastole with a pulse rate of 73.

A. J. Gibson,[5] of Oxford, has also observed and well described a similar sound. Gibson's article is interesting, not only because of his excellent description of this sound, but because, although approaching the subject from a somewhat different standpoint, his conclusions as to the probable cause of the phenomenon are similar to ours which were reached quite independently from him and before the publication of his article; they are also similar to the explanation hinted at by Hirschfelder. Gibson met with the sound in the course of some studies upon a wave of the jugular pulse similar to that described by Hirschfelder. At approximately the same time at which this wave appears, he detected in two cases, " . . . a third sound between the second sound and the succeeding first sound. It was heard only at the apex in one, while in the other case it was heard at the apex and over the jugular pulsation in the neck. The sound is by no means easy to hear; extraneous sounds must be eliminated as far as possible and special attention paid to the interval in which the sound is expected. Nor is it possible to hear the sound at every systole; from my own observation it is best heard in the short interval between expiration and inspiration. The quality of the sound is low pitched and clear with no suspicion of harshness or anything suggesting a murmur. Except for the pitch it recalls in type the second sound as heard in fat persons. It is slightly increased in intensity and raised in pitch by pressure on the abdomen."

Our interest in this subject was accentuated in November last in the course of some studies which we were making upon the dog's heart. At this time it was accordingly determined to note all cases in which an early diastolic sound and shock were observed in apparently normal hearts. The results of some of these observations which form the basis of this communication were presented before the Æsculapian Club in Boston in December, 1907, but are now published for the first time.

During four months, in the course of ordinary ward visits and in my consulting room, I have met with 24 cases in which an early diastolic sound was heard in an otherwise apparently normal heart.

The condition of the patients at the time of examination was as follows:

Incipient tuberculosis (afebrile),		1
Convalescents, on the eve of discharge from hospital:		
From slight arthritis,	3	8
,, appendicitis (operation),	1	
,, typhoid fever,	2	
,, catarrhal jaundice,	1	
,, obscure hæmaturia,	1	

These patients were, to all intents, healthy individuals.

Healthy individuals, — A physician (Hirschfelder's case),

A healthy hospital employee in whom the third sound had been discovered while convalescent, some weeks before, from influenza,

A laboratory assistant in whom the sound was discovered after the man had been

used as an example of a normal individual in the preparation of the tracings shown in Fig. 2,	
A healthy boy of fourteen brought to my consulting room by an over-anxious parent,	4
Cyclic albuminuria, with normal heart and blood pressure,	2
Exophthalmic goitre, a mild incipient case with an apparently normal heart and pulse rate,	1
Chronic tonsillitis,	1
Neurasthenia,	1
Overwork and debility,	1
Chronic appendicitis,	1
Cholelithiasis, in a period of rest,	1
Rather delicate girl with suspected tuberculosis,	1
Nervous, but otherwise healthy boy of fifteen,	1
Chronic adenitis (Hodgkin's disease?),	1
	24

The *ages* of these patients were as follows:

First decade,	1
Second "	11
Third "	8
Fourth "	2
Fifth "	2

The youngest individual was five years of age; the oldest, forty-four.

The *pulse*, of normal rate in all cases, tended rather to be slow than rapid; the rate ranged between 50 and 88 to the minute.

The blood pressure was within normal limits in all cases, tending to be rather low than high.

The averages for each decade were as follows:

	Maximum.	Minimum.
First decade,	100–115	(1 case)
Second decade,	106.6 (9 cases)	78.8 (7 cases)
(In the seven cases in which the minimal pressure was taken the maximal pressure averaged 110.)		
Third decade,	114 (8 cases),	77.5 (6 cases)
(In the six cases in which the minimal pressure was taken the average maximal pressure was 119.6.)		
Fourth decade,	135 (1 case)	95 (1 case)
Fifth decade,	120 (1 case)	78 (1 case)

In some of these cases the sound was heard only when the patient was lying on his back or on his left side, disappearing in the erect posture. In some it was heard in all postures. In most it was increased in intensity in the left lateral decubitus. In all cases the sound was loudest at the point of maximal impulse in the region of the apex; in several it was heard to a lesser extent over the right ventricle. In none was it audible at the base.

In several cases it was associated with a distinctly palpable shock limited to the point of maximal impulse. This shock was actually visible in a few of these instances. While examining one case in which the third sound was especially clear (the case from which the tracing in Fig. 4 was taken), the stethoscope was handed to a second-year student who had never examined a heart, and was quite unaware of the existing conditions. The student heard the sound and described it accurately.

The early diastolic sound in the dog.— But it is not only in the human heart that a sound may be heard at this period. I have three times observed similar sounds in the normal dog's heart. To the first case reference has already been made, — a dog studied with Dr. MacCallum two years ago. In this instance cannulæ had been inserted in the left femoral artery, the appendage of the left auricle and into the peripheral part of a severed branch of the pulmonary artery. By so doing the heart was slightly rotated over toward the right, while the left auricle was held rather tensely in position by the cannula in the auricular appendage. There then became audible in the left auricle and just below the valves a first, second, and then, after a momentary pause, a third sound, a diastolic rumble in every way similar to the early diastolic murmur heard in some cases of mitral stenosis. Gradually the murmur disappeared, and one heard only a thud which became clearer with the decreasing rate of heart's action. One was able to observe systole of the ventricle, immediately followed by the second sound which occurred while the ventricle was still in a state of contraction. Then followed the sudden dilatation of the ventricle which occurred abruptly with a distinct shock, having altogether the appearance of an active muscular process. Synchronously with this shock occurred the third sound, the character of which was precisely that of the sound in protodiastolic gallop rhythm heard under so many circumstances. We were able in this case practically to see the association of this sound with a definite moment in the heart's cycle, that is, the shock of what seemed almost like an active diastole.

Since this time Dr. Stewart and I have had two similar experiences. In the first case, at the outset of some observations upon the heart of a small fox terrier, the sounds were found to be perfectly clear. During the process of opening the chest there was an unusual amount of hæmorrhage. When the heart was exposed, with a pulse rate of about 100, a distinct third sound was audible over the left ventricle; it was not heard over the right chamber. This was exactly like the early diastolic sound in the human being, a slight dull thud following the second sound after a period somewhat less than that which separates the first from the second sound. In this instance the dilatation of the ventricle with diastole appeared to be rather rapid but by no means as strikingly so as in the previous case. An attempt was made to study the effects of vagus stimulation. The response was curiously slow and unusual. Stimulation at first produced no result, but, after removing the electrode from the nerve, the heart stopped. With resumption, the first fifteen or twenty beats were very slow, and during these beats, the third sound was more distinct. On large doses of strychnine the heart was seen to draw itself together visibly. The diastolic relaxation was much diminished; the rate rose to about 120; the sound wholly disappeared. Necropsy showed no abnormalities.

In another dog in which this sound was present, a slight interruption in the dilatation of the ventricles could be seen if one fixed the attention on a bit of epicardial fat on the surface of the right ventricle as it moved under the unopened pericardium. The sound appeared and disappeared at various times during the observation, and the auscultatory changes could always be controlled by the appearance or disappearance of this slight irregularity in diastole. It was evident that the first part of the filling of the ventricle, that before the interruption, was by far the most rapid, and the third sound occurred clearly in association with this rapid filling.

* * *

How may we account for this early diastolic sound and shock heard and felt so often in human beings and observed in these three instances in dogs? Although during the last twenty years I have often heard the sound in apparently healthy individuals, the explanation of the phenomenon has never seemed clear. Two years ago both Dr. MacCallum and I were struck by its association with what appeared to be a very sudden diastole, so sudden that it seemed to us as if it might almost be an active muscular process, and we asked ourselves whether it might not be a muscular sound due either to active diastole or to the tension of a distended ventricle associated with the sudden entrance of blood from the auricle. The conception of an active muscular diastole we may probably dismiss. There is no direct evidence to support the idea.

In considering the cause of this sound and shock in early diastole it may, however, be interesting to inquire into:

(1.) The exact time relations of the sounds.

(2.) The relation of the third sound and shock to the events observed on the cardiogram.

(3.) Their relations to the jugular pulse.

(4.) Their relations to the volume curve of the distending ventricle.

(5.) Their relations to sounds and shocks heard and felt at this period under various pathological conditions.

(1.) *The time relations of the sound.* — As to the first of these points it will be impossible to speak until we shall have obtained a registration of the heart sounds such as is possible only with an instrument analogous to Einthoven's string galvanometer. Einthoven in his case, in which the pulse varied from 73 to 81 to the minute, found that the average time between the beginning of the first and that of the second sound was 0.33 second. The relation of the length of systole to the length of the whole cardiac cycle was as 0.33 : 0.80 or about as 41 : 100. The beginning of the third sound which, it should be remembered, was in this case inaudible, occurred 0.13 second (0.11–0.15) after the beginning of the second sound, and 0.32 before the beginning of the following first sound. The length of the first sound was 0.08; of the second, 0.05; of the third, 0.02–0.03 second.

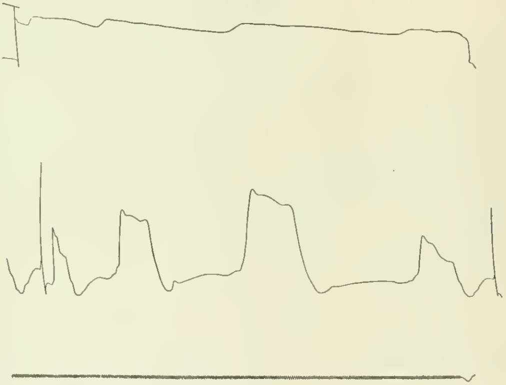

Fig. 1. Normal cardiogram showing protodiastolic and presystolic elevations.

(2.) *The relation of the third sound and shock to the events observed on the cardiogram.* — An approximate estimation of the position of the third sound in diastole may be obtained when we take into consideration the events observed upon the cardiogram. If one consider, now, the normal cardiogram, an excellent example of which is shown in Fig. 1, which is reproduced from a tracing taken by my assistant, Dr. Stewart, from a patient with exposed heart from the clinic of Prof. F. Müller, in Munich, it will be seen that there are two slight elevations during diastole, one closely following the katacrotic limb of the systolic elevation, the other preceding the onset of systole. These waves were pictured and described by Marey,[6] who ascribed the early diastolic wave to the influx of blood from the auricle, the presystolic elevation to the increased rapidity of its flow as a result of auricular systole. It is with the early diastolic elevation that we are especially interested. Now in our cases in which an early diastolic sound was heard in apparently normal hearts, this elevation was invariably prominent, so much so that in some cases it could be observed by the hand, the ear and the eye; it was well recorded on the cardiogram in all of 12 cases in which tracings were taken.

As to the relation between the sound and the shock there can be little doubt. They are equally appreciable by the ear and are clearly synchronous. The comparison of that which one feels, hears and sees with what is registered on the cardiogram can leave no doubt in one's mind that the third sound is closely connected with this early diastolic elevation, and it is difficult to avoid the assumption that the two phenomena are associated with the same causal elements.

At what time in diastole does this elevation occur? In eight tracings from seven cases, the approximate duration of systole estimated by measuring the distance from the onset of the systolic elevation to the shoulder of the cardiogram, was 0.32 second (0.28–0.345). The beginning of the protodiastolic elevation occurred 0.1+ (0.085–0.14) second and the summit 0.18+ second (0.155–0.215) from the shoulder of the cardiogram. The length of diastole, estimated by measuring the period between the shoulder of one systolic elevation and the onset of that succeeding, was, on an average, .594. The average rate in these cases was a little over sixty-five per minute. The sound, then, must occur somewhere within the period occupied by this protodiastolic elevation, between 0.1 and 0.18 second after the end of systole. This is very closely analogous to the time at which Einthoven detected the vibrations in his case, namely, 0.11–0.15 second after the onset of the second sound.

(3.) *The relations of the protodiastolic sound and shock to the jugular pulse.* — Assuming, as we are clearly justified in assuming, that the early diastolic sound is synchronous with the protodiastolic elevation on the cardiogram, we have sought to determine the time of its occurrence on the curve of the jugular pulse. As a result of the study of seven simultaneous cardiographic and venous tracings taken from six individuals, with apparently normal hearts, in whom an early diastolic sound was audible, it has been possible to determine, within fairly definite limits, the events in the venous pulse which correspond to the protodiastolic elevation.

The normal jugular pulse (Figs. 2, 3, 4) shows three marked elevations. The *a* wave which corresponds to the auricular systole, is closely followed by the *c* wave which marks the onset of ventricular systole. The *c* wave is succeeded, during systole, by a deep depression associated with the emptying of the heart and the pulling down of the auriculo-ventricular valves by the papillary muscles. This depression is followed by an abrupt rise, the so-called *v* wave, near the base of the ascending limb of which occurs the closure to the aortic valves. The summit of the *v* wave at which point occurs the opening of the auriculo-ventricular valves, is followed usually by a sharp fall and then a plateau or a slight gradual rise up to the time of the next *a* wave. Other waves may occur during this period. One which has been pointed out especially by Hirschfelder, and subsequently by Gibson, may occur immediately after the depression following the *v* elevation. This has been called by Hirschfelder the *h* wave.

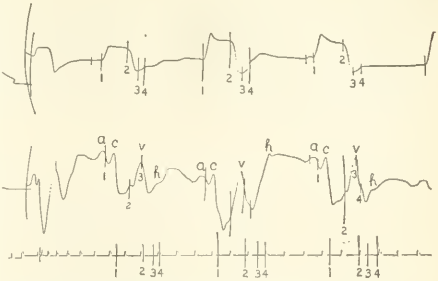

Fig. 2. Cardiogram and jugular curve from a healthy man of nineteen who showed a slight early diastolic sound.

a, *a* wave. *c*, c wave. *h*, *h* wave. 1, beginning of systole. 2, approximate end of systole. 3, beginning of protodiastolic wave of cardiogram. 4, summit of protodiastolic wave of cardiogram.

Transmission time may be estimated by measuring the period between 1 and the beginning of the *c* wave on the jugular curve. Time marked in $\frac{1}{5}$ seconds.

In these six cases the onset of the protodiastolic elevation on the cardiogram, during which the third sound occurs, is found when allowance is made for transmission time, to correspond invariably to a point somewhere on the katacrotic limb of the *v* wave. Sometimes this is near the summit; usually nearer the base; sometimes almost at the base. The summit of the protodiastolic elevation corresponds, after allowing for transmission, to the base of the *v* wave or to a point on the plateau or elevation following this. It is interesting that in five of these six cases an *h* wave was present.* Four times it was a well-marked elevation; once it was but slight and inconstant. In the sixth case in which the third sound was but slight, there were, at one or two points, slight suggestions of an *h* wave. In three of the tracings the summit of the protodiastolic elevation, with allowance for transmission, reached, with some beats, a point on the anacrotic limb of the *h* wave.

(4.) *The time relations of the sound and shock and protodiastolic elevation on the cardiogram to the cardio-plethysmogram.* — The important observations of Yandel Henderson[7] have demonstrated that diastole is, in most instances, a considerably more rapid process than has generally been assumed. His observations, which have been confirmed in many points by Stewart,[8]

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* On looking over our tracings a few days before sending our manuscript to the printer, it was found that there was no record of a jugular pulse showing the *a*, *c* and *v* elevations alone, which was suitable for publication. Dr. Eyster and Dr. Stewart accordingly kindly consented to take the tracing which is shown in Fig. 2, from a healthy laboratory assistant of nineteen. On examination of the tracings, a well-marked proto-diastolic elevation was found on the cardiogram, and an *h* wave in the venous pulse. As Dr. Stewart informed me that he had not made a careful examination of the man's heart, I asked him to come to my consulting room at the end of his day's work. He was found to have a most characteristic third sound.

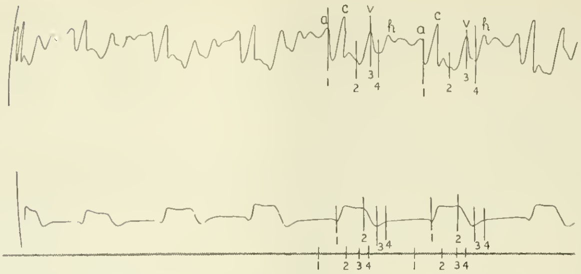

FIG. 3. Cardiogram and jugular tracing from a healthy physician of thirty-five who showed an early diastolic sound (Hirschfelder's original case).

a, *a* wave. *c*, *c* wave. *v*, *v* wave. *h*, *h* wave. 1, beginning of systole. 2, approximate end of systole. 3, beginning early diastolic wave. 4, summit of early diastolic wave.

Transmission time may be estimated by measuring the period between 1 and the beginning of the *c* wave on the jugular pulse.

Time marked in 1-50 seconds.

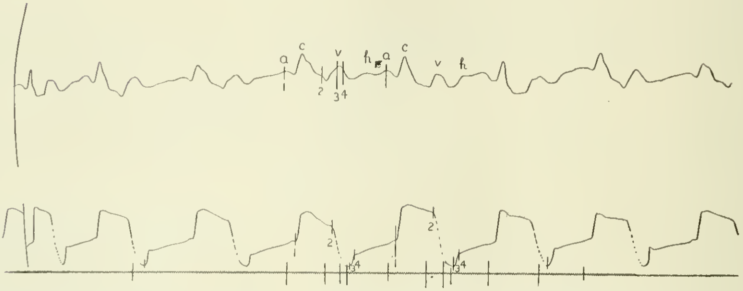

FIG. 4. Cardiogram and jugular tracing from a healthy individual of eighteen with an early diastolic sound of great distinctness.

a, *a* wave. *c*, *c* wave. *v*, *v* wave. *h*, *h* wave. 1, beginning of systole. 2, approximate end of systole. 3, beginning of protodiastolic wave of cardiogram. 4, summit of protodiastolic wave of cardiogram.

Transmission time may be estimated by measuring the period between 1 and the beginning of the c wave on the jugular tracing.

Time marked in 1-50 seconds.

in his studies of aortic insufficiency in the dog, show that a large part of the filling of the ventricle may, in some cases, occur in the first moments of diastole in a very short period of time, the plethysmogram showing an abruptly ascending limb indicating a rapid dilatation of the ventricle, followed by a fairly definite shoulder, after which the filling is more or less gradual up to the time of auricular systole when there is again a slight rise in the volume curve. Occasionally, the filling is so complete in the early part of diastole as almost to justify Henderson's somewhat schematic division of the long pause into *diastole* and *diastasis*. In such plethysmograms the ascending limb of the volume curve rises almost vertically to a point nearly as high as that maintained at the end of diastole, and terminates in a sharp shoulder, the summit remaining nearly flat until the slight rise associated with auricular contraction.

The evidence offered by the plethysmogram of a sudden change in the rapidity of dilatation of the ventricle occurring in the early part of diastole, appeared to me interesting in connection with the time of occurrence of the early diastolic sound and shock with which we have been concerned. And, indeed, on studying various plethysmograms made by Dr. Stewart from the hearts in dogs with and without aortic insufficiency, and plotting on these, the time at which the various events of the heart's cycle should fall, it was found that an abrupt shoulder, when present, coincided closely with the period at which the protodiastolic elevation is observed on the cardiogram. The period of time elapsing between the foot of the ascending limb of the plethysmogram, at which time aortic closure should occur, and the shoulder amounted, in one instance, to a period as short as 0.15 in a pulse of 85. This may be compared with our Case VII, in which, in a little girl five years of age, with a pulse of 87, the summit of the protodiastolic elevation fell 0.15 second after the shoulder of the cardiogram.

In an attempt to throw further light on this question the plethysmogram of a normal dog's heart was taken by Henderson's method, while synchronous records were made of the carotid pressure and of the pressure in the right auricle by means of a Fredericq sound introduced through the jugular vein. Unfortunately, the heart's action was very rapid and diastole so shortened that it was impossible to study the relations properly. With vagus stimulation, however, some observations were made which, while they must perhaps be accepted with reserve, are yet not devoid of interest. In such curves, where the early part of diastole is rapid and the shoulder on the cardiogram is well defined, the *c* wave in the venous pulse corresponds exactly with the beginning of the systolic fall. The dicrotic notch on the carotid tracing occurs, with allowance for transmission time, just at the foot of the ascending limb of the plethysmogram. The *v* wave of the venous pulse begins just before the end of systole, while its summit falls at a point a little way up the ascending limb. The shoulder of the volume curve falls on the katacrotic limb of the *v* wave near the beginning of or on a shoulder analogous, apparently, to the *d* wave of Bard. In other words, the relations of the cardio-plethysmogram to the jugular pulse tend also to show that the shoulder of the volume curve corresponds closely, as to its time of occurrence, with the summit of the protodiastolic elevation of the cardiogram.

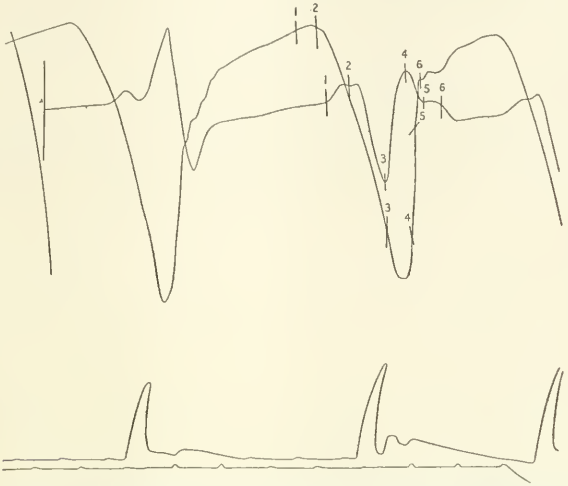

Fig. 5. Cardioplethysmogram, right auricular pressure and carotid pressure of a dog. It will be seen that the shoulder of the plethysmogram (6) falls at a point on the katacrotic limb of the *v* wave (6) approximately in the same position as in a human being. The shoulder on the katacrotic limb of the *v* wave is not dissimilar to the *d* wave of Bard.
The second shoulder immediately following 6 corresponds exactly with the base of this wave.

(5.) *The relations of the normal protodiastolic sound and shock to similar events observed at this period in various pathological conditions.* — When one considers the time at which this additional sound and shock occur, as well as the character of the sound, one is immediately struck by the analogy which exists with sounds heard during the long pause of the cardiac cycle in a variety of pathological conditions.

(*a*) *The so-called opening snap of mitral stenosis.* In mitral stenosis the diastolic murmur begins often shortly after the closure of the aortic valves, with a short, sharp sound associated with a shock closely analogous to that occasionally observed in normal hearts. Although as a rule the sound is sharper than the normal third sound, there are instances in which its character is very similar. Sometimes this "opening snap," as it is called, is distinct in the absence of a murmur. This sound was first noted by Sansom, who says:[9] "It is a sound of tension due to the first inrush of blood into the ventricle, such inrush being more sudden and forcible than under normal conditions, from the increased blood pressure in the left auricle, due to the constriction of the mitral orifice." The sound is well described by Potain:[10] "After the second sound of the heart the diastolic silence begins; during this silence the mitral valve opens; the blood passes from the auricle into the ventricle. Normally there is nothing to indicate the succession of these phenomena. In mitral stenosis, and especially if the stenosis be of moderate degree, the mitral valve, through the adhesion of the leaflets at their extremities, is arrested in the act of opening, and at this moment is thrown into a sudden tension by the action of the blood rushing through the auriculo-ventricular orifice. This sudden tension determines then the sound, distinct, short, snapping, which follows the second sound of the heart and is of maximum intensity at the apex. These characteristics distinguish it from reduplications of the second sound, the maximum intensity of which is at the base. It is through failure to make this distinction that certain authors have been led to assert that this reduplication is sometimes heard best at the apex. It is evident that in the cases observed by them there was a normal second sound followed by an opening snap. These same characteristics distinguish it also from gallop rhythm. The sound is clear; that of gallop rhythm, dull. . . . From the standpoint of diagnosis the opening snap is a part of the other signs of mitral stenosis, preceding always a more or less marked diastolic rumble."

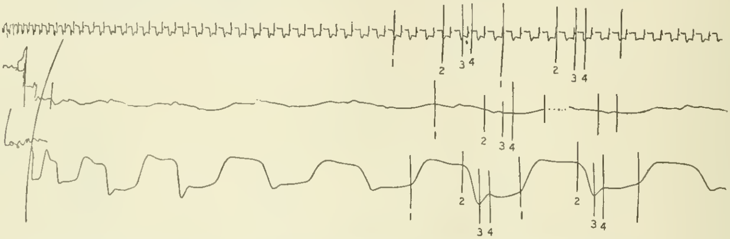

Fig. 6. Cardiogram from a case of mitral stenosis showing a well-marked protodiastolic elevation.
1, beginning of systole. 2, approximate end of systole. 3, beginning of protodiastolic elevation. 4, summit of protodiastolic elevation.
The venous tracing is of no value.
Time marked in 1-10 seconds.

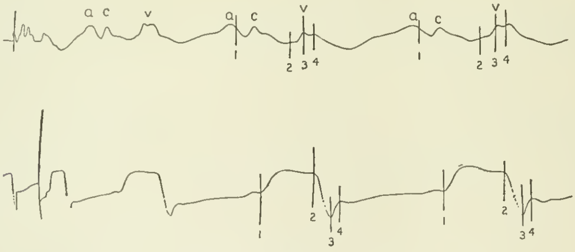

Fig. 7. Cardiogram and jugular tracing from a man about twenty-five, with acute polyarthritis showing a protodiastolic gallop rhythm and shock.
a, *a* wave. *c*, *c* wave. *v*, *v* wave. 1, beginning of systole. 2, approximate end of systole. 3, beginning of early diastolic wave. 4, summit of early diastolic wave.
Transmission time may be estimated by measuring the period between it aud the beginning of the *c* wave of a jugular pulse. The *v* wave of this tracing has a peculiar bifid summit. There is no distinct *h* wave.

Although Potain's hypothesis might well explain the origin of the sound in rather highly developed constrictions with great thickening of the valves, it is difficult to see how it could well apply to those cases in which there is but moderate stenosis. The valve here could hardly be "arrested in the act of opening." In many cases the actual narrowing of the valve is not very great although the shortening of the chordæ tendineæ may be considerable. In the course of diastole in the normal heart it is probable that with the first rush of blood into the ventricle and the rapid dilatation of its walls, the valves, borne up on the entering blood, are brought rather suddenly into a position at least approaching apposition. If then, as is true in most cases of mitral stenosis, there is a greater or less shortening of the chordæ tendineæ, it would seem easily conceivable that with the initial rush of blood from an engorged auricle, the valves might be arrested in their upward course and thrown into a tension sufficient to produce this sound. And this moment would be just that at which the mitral diastolic murmur should begin, associated with the further passage of blood through the then narrowed orifice.

It has seemed to me that in some cases of mitral stenosis the opening snap followed the second sound at a period somewhat earlier than that at which one ordinarily hears the early diastolic sound.

The cardiogram of mitral stenosis with opening snap shows a well marked exaggeration of the protodiastolic elevation. We have not a sufficient number of satisfactory tracings to justify the expression of an opinion as to whether this elevation follows the second sound more closely than in a normal cardiogram. This was not the case in the patient from whom the cardiogram in Fig. 6 was taken. It would be well worth while to study the relation in time of the protodiastolic elevation to the shoulder of the cardiogram in a series of cases of mitral stenosis.

(*b*) *Protodiastolic gallop rhythm.* — Potain,[11] fifteen or twenty years ago, pointed out clearly that there were two distinct, principally different, forms of gallop rhythm, the one *presystolic* in time, the other *protodiastolic;* the one associated on the cardiogram, with a wave which immediately precedes the systolic elevation, the other associated with a wave which follows closely upon the base of the katacrotic limb. H. Chauveau[12] and F. Müller[13] have called attention to the fact that "these two points in the diastolic part of the cardiogram in which higher waves are seen in gallop rhythm, are also usually marked on the apex curve of the normal heart by evident but smaller elevations; and one must assume that the larger waves which distinguish the cardiogram of gallop rhythm represent a pathological exaggeration of movements which are also appreciable in the normal heart."[4] Protodiastolic gallop rhythm is observed in some dilated hearts, especially in aortic insufficiency, as well as in certain cases in which there is reason to believe that there are myocardial changes, notably in the course of or just after acute infections, as in typhoid fever.† The third sound occurs shortly after the second at the same period in which the early diastolic sound is sometimes observed in normal hearts. (Fig. 7.)

In *aortic insufficiency* the sound is often associated with a well-marked shock at the apex, a shock which may frequently be accurately timed by placing one hand at the apex of the heart and another over the pulmonic valves. It then becomes possible to make out the 1, 2, 3 rhythm which is audible at the apex: (1) the long, slow, systolic impulse, the so-called *choc en dome*, associated with the dull, humming first sound of aortic insufficiency; (2) the closure of the basic valves, easily felt by the hand in the pulmonic area, which is synchronous with the feeble second sound heard at the apex, and in this area often unaccompanied by the early diastolic murmur audible over the right ventricle, at the base and in the axilla; (3) the sudden relaxation of the ventricle followed rapidly by a definite shock which is coincident with the third sound. In some cases this sound is distinct and well defined; in other instances, dull and thudding. Just about the apex it is often followed, in aortic insufficiency, by the humming, echoing Flint murmur. In the axilla where the Flint murmur, even if present over the ventricle, is often absent, the third sound frequently becomes clear, giving rise to a distinct protodiastolic gallop rhythm. In aortic insufficiency then, the sound varies from a loud echoing rumble to a fairly well defined, short sound or a slight distant hum more appreciable to the ear as a shock than as an actual sound. In other words, it is sometimes exactly similar to the third sound heard in normal hearts. Cardiograms from cases of aortic insufficiency with early diastolic sound and shock show a well marked protodiastolic elevation. In the tracings from L. B. (Fig. 8) it was found that the onset of the elevation occurred 0.15 and the summit 0.22 second after the shoulder of the cardiogram. On the venous tracing the protodiastolic elevation corresponds to a part of the katacrotic limb of the *v* wave, the summit occurring usually toward the base of the anacrotic limb of an *h* wave, just as was observed in the normal cases.

(*c*) In *adherent pericardium* a third sound is frequently associated with a well-marked shock occurring in early diastole. This shock, often ascribed to a thoracic rebound, has been shown by Brauer[15] to occur as well when thoracoplasty has been performed. As shown in Brauer's tracings, the elevation on the cardiogram corresponding to the protodiastolic shock may be the most striking feature of the record. In Figs. 9 and 10 may be seen the cardiogram, carotid and jugular tracings from a case of adherent pericardium with protodiastolic gallop rhythm. The period between the second and third sounds in this case was notably short.

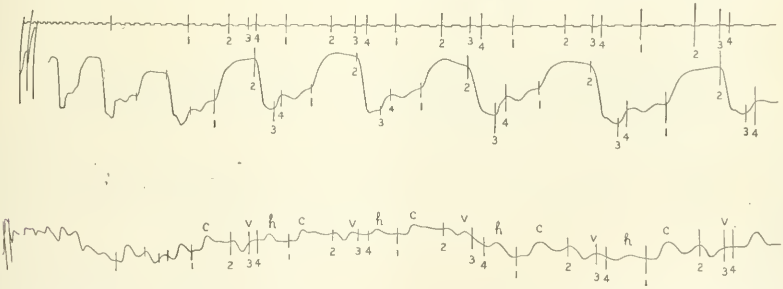

Fig. 8. Cardiogram and jugular tracing from L. B., a man with aortic insufficiency, early diastolic gallop rhythm and Flint murmur.
c, *c* wave. *v*, *v* wave. *h*, *h* wave. 1, the beginning of systole. 2, approximate end of systole. 3, beginning of protodiastolic elevation. 4, summit of protodiastolic elevation.
Transmission time may be approximately estimated by measuring the period between it and the beginning of the *c* wave on the jugular curve.
There is evidently a considerable carotid element in the venous curve.

The systolic retraction, easily detected by the eye and finger, is evident in the tracings. The enormous protodiastolic elevation begins shortly after the closure of the aortic valve and, when allowance is made for transmission, is represented on the venous tracing by a marked fall. The summit of the protodiastolic elevation, which occurs 0.165 second after the dicrotic notch, corresponds to the foot of the anacrotic limb of an abrupt and lofty elevation of the venous pulse.

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† Further studies as to the relations between presystolic and protodiastolic gallop rhythm, and especially concerning the clinical conditions under which each form occurs, are highly to be desired.

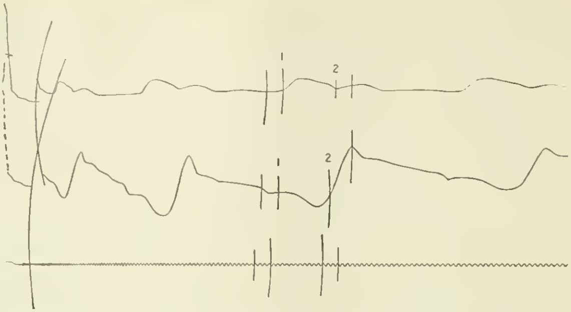

FIG. 9. Cardiogram and carotid tracing from M., a man of about forty, with adherent pericardium, early diastolic sound and shock.

The onset of systole, if *Anspannungszeit* and transmission time be allowed for, may be seen to precede immediately a depression on the cardiogram. Aortic closure with allowance for transmission time comes at the bottom of, or just before, the bottom of the systolic depression. This is followed by an exceedingly abrupt elevation, the summit of which is reached .16 to .17 second after the aortic closure. The marking on the tracing which was made to represent the beginning of systole, i. e., that preceding the line marked 1, is at least 0.02 too near 1. As much as .10 should be allowed for *Anspannungszeit* and transmission.

Time marked in 1-50 seconds.

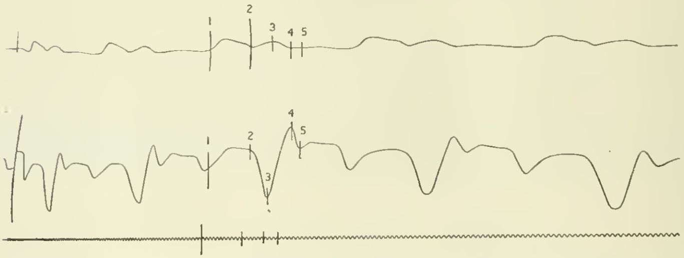

FIG. 10. Carotid and venous tracing from M., a man of about forty with adherent pericardium, early diastolic sound and shock. The aortic closure, when allowance is made for transmission time, is followed soon by a very sharp depression. The base of this depression corresponds in time to the summit of the protodiastolic elevation on the cardiogram. This point falls on the jugular curve just at the base of a very abrupt and high wave, the summit of which is marked by the figure 4.

If now we consider that which has gone before, the following assertions appear to be justified:

(1.) In healthy young individuals a third heart sound is often audible in the early part of diastole.

(2.) This sound is not infrequently associated with a shock which may be not only palpable but visible.

(3.) The sound and shock are evidently closely connected with the protodiastolic elevation of the cardiogram which was well marked in all of our tracings.

(4.) The onset of this elevation occurred, in our tracings, at a period about 0.1, the summit, about 0.18 second after the shoulder of the cardiogram, or 0.42 and 0.5 respectively from the onset of systole in a cardiac cycle, the average duration of which was .914, i.e., a pulse of 65+.

(5.) The protodiastolic elevation on the cardiogram, when allowance is made for transmission time, corresponds in time to a part of the katacrotic limb of the *v* wave of the jugular pulse, its summit reaching, often, a point somewhat beyond this.

(6.) In five out of six of our cases the *v* wave was followed by an elevation corresponding to the *h* wave of Hirschfelder (the *b* elevation of Gibson), and on some of our tracings the summit of the protodiastolic wave would seem to extend to a point on the early part of the anacrotic wave of this elevation.

(7.) The summit of the protodiastolic wave of the cardiogram appears to correspond closely in time, and in its relations to the venous pulse, with the shoulder on the ascending limb of the cardioplethysmogram, which may be well defined in some volume curves of the dog's heart.

(8.) The phenomena associated with the early diastolic sound and shock in normal individuals are, apparently, closely analogous to, if not identical with, those observed in some forms of protodiastolic gallop rhythm. The sound and shock are similar in character and in time, and are associated with like appearances on the cardiogram and in the venous pulse.

(9.) The "opening snap" in mitral stenosis, although usually a somewhat sharper sound, may be very similar in character to the normal third sound; it occurs at much the same period in the cardiac cycle — possibly a trifle earlier —

and is associated with a well-marked protodiastolic elevation on the cardiogram.

(10.) This third sound and shock are not dissimilar to those observed in adherent pericardium, which are also associated with a sharp protodiastolic elevation on the cardiogram. In a striking example of this condition the protodiastolic elevation corresponded, on the venous tracing, to a sharp depression, the base of which, the point corresponding to the summit of the protodiastolic wave, was followed by an abrupt rise on the curve.

In view of these considerations it is clear that the early diastolic sound sometimes heard in normal hearts is an event closely associated with the rapid entrance of blood into the ventricles at the onset of diastole. How rapid this entrance may be is shown by the abrupt ascending limb of some cardioplethysmographic curves.

Now the association of this sound with (*a*) the shock at times felt by the palpating hand; (*b*) the sharp shoulder which may be seen on the plethysmogram; (*c*) the presence in so many of these cases of an *h* wave in the jugular pulse following, as it does, immediately on the summit of the protodiastolic wave of the cardiogram; (*d*) the observations of the dog's heart in which a visible interruption of the dilatation of the ventricle was demonstrable, would all suggest:

(1.) That at just this period, early in diastole, some structure is thrown into sufficient tension to produce audible vibrations.

(2.) That there is, further, at this period some sudden slight, temporary arrest or interruption or delay of the rapid dilatation of the ventricle.

That the sound is due to vibrations of the chest wall is ruled out by its presence in the exposed dog's heart, as well as by its presence in the heart after thoracoplasty.

It is, moreover, fairly evident that the sound is usually produced in the left side of the heart. It is, as a rule, audible and palpable only at or in the immediate neighborhood of the apex, while in our three cases in dogs it was heard only over the left ventricle — and once in the left auricle as well. That a similar sound may arise in the right ventricle must, however, be admitted.

What structures in the left ventricle might be thrown into vibration at this period? Einthoven's suggestion that the third sound is due to late vibrations of the aortic valves corresponding to waves on the katacrotic limb of the sphygmogram can hardly be accepted. The character of the sound; the position in which it is heard; the well-marked shock which may accompany it; its various analogies with sounds which are unquestionably of other origin,— are sufficient, it would appear, to invalidate this explanation.

Several possibilities suggest themselves:

(1.) One might fancy that with the sudden entrance of a large quantity of blood from the left auricle into the dilating ventricle, there is produced an appreciable impulse, sufficient to cause the protodiastolic wave of the cardiogram; that, at the same time, the walls responding to their sudden distention may offer a slight momentary elastic resistance, being thrown at this instant into vibrations of intensity sufficient to produce the early diastolic sound. The slight resistance offered at this moment might account for the centrifugal *h* wave of the venous pulse, a wave which ought to be more marked in the pulmonary veins than in the jugular.

This is in some respects an engaging hypothesis. It is true that, in this moment in diastole, there is a rise in intraventricular pressure, but it is exceedingly slight. There are also several objections which may be raised against this idea. In the first place, the character of the sound is often too sharp and definite to be of muscular origin. Again, in mitral stenosis, where, owing to the nature of the lesion, the first rush of blood into the ventricle cannot be as great as under normal circumstances, a closely similar sound and shock are met with.‡ Moreover, the occurrence of the sound in the hearts of patients suffering with or convalescent from febrile diseases, as well as in one of our experiences with a dog's heart, where it appeared with apparent dilatation, increased under vagus stimulation, and disappeared on the administration of strychnine, suggest that the appearance of the sound may be favored by conditions associated with a diminished tonicity of the heart muscle. But this would be in contradiction to the hypothesis of a muscular sound. For in such conditions, the resistance to the first influx of blood should be diminished.

Potain[16] explains the analogous protodiastolic gallop rhythm by the assumption of a suddenly arrested diastole dependent, however, on changes in the heart muscle. To quote his words:

"In the different varieties of gallop rhythm in diastole the abnormal sound always results from the penetration of the blood into the cavity of the ventricle. In the normal condition this penetration is unaccompanied by any appreciable sound even in conditions of great circulatory excitement. For a mass of fluid in movement does not produce a shock except when it is arrested by a sudden obstacle. But the obstacle which arrests the column of blood penetrating the ventricular cavities is the resistance of the wall, and this resistance is represented in the normal heart by the muscular tonicity which gives way progressively. On the contrary, the arrest of the column of blood falling into the cavity of the ventricle is brusque, sudden, and capable of producing a perceptible shock for the hand and for the ear whenever, the tonic resistance of the myocardium being diminished, that of the fibro-connective elements in the wall is thrown suddenly into action at the moment when filling is accomplished. The state of the heart fills the conditions required to give rise to gallop rhythm when its wall is modified in such a manner that the resistance of these latter elements is in excess, either because they have proliferated more or less considerably, as takes place in patients with Bright's disease whose hearts are sclerotic, or because the myocardium has rapidly degenerated, as occurs, for example, in typhoid fever. And this explains why the same phenomena may be the consequence of two conditions of the heart as different as the rigidity of the nephritic heart and the extreme flaccidity of the heart in certain cases of typhoid fever. Moreover, the fibro-connective resistance of the wall is brought more certainly into play the nearer the heart, constantly dilated, approaches the degree of distention at which its resistance comes into play. This is the reason that in certain patients the gallop rhythm appears as soon as they take the horizontal position and the increased intra-cardiac pressure brings about a notable degree of dilatation. . . . It will depend, therefore, upon the constant pressure, that is to say, the more or less considerable accumulation of blood in that part of the venous system which is near the heart, and also upon the more or less complete evacuation of the ventricular cavities that the diastolic tension of the walls occurs almost at the beginning of diastole or only when auricular systole comes into play, and that the gallop is therefore protodiastolic or presystolic."

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‡ In instances of slight mitral stenosis the heightened auricular pressure might more than compensate for the narrowing of the orifice, but the presence of the sound in stenosis of a fairly well marked degree could hardly be accounted for by sudden tension of the ventricular walls.

This hypothesis is interesting but difficult to prove, and scarcely applicable to normal cases. Moreover, it is difficult to imagine that the limits of distention are actually reached so soon. Although the shoulder of the cardioplethysmogram, the moment at which the arrest in the rapidity of diastole occurs, may be very sharp, I have never seen an instance in which *no* further dilatation occurred.

Again, the remarkably small limits of variation in the time at which the normal third sound occurs would tend to suggest that, as Müller and Chauveau hold, it depends on the exaggeration of a normal phenomenon rather than upon causes such as those suggested by Potain.

(2.) Another possibility which presents itself, that which appears to offer the most reasonable explanation, is that with the first inrush of blood, the mitral and tricuspid valves, especially the former, borne up on the entering current toward a position of closure, while the ventricular walls are rapidly dilating, may be brought suddenly into a condition of tension sufficient to cause the sound and shock and to give rise to the centrifugal *h* wave.§

If this hypothesis be correct, one might expect to find the sound more frequent pathologically in cases where, owing to a diminished muscular tonicity, the diastole is more sudden, or where, owing to a weak heart muscle, insufficient emptying of the ventricle and high auricular pressure, such an hypothetical early tension of the mitral valves might be especially favored. But these are, indeed, conditions under which protodiastolic gallop rhythm is common.

Such an hypothesis might well explain its appearance in adherent pericardium where dilatation is so common and diastole notably rapid, because of the traction exercised upon the ventricles by the adhesions.

This explanation also applies peculiarly well to the similar phenomena occurring in aortic insufficiency. Here there is usually a dilated ventricle, often an engorged auricle, as well as the added element of regurgitation from the aorta, conditions peculiarly fitted to produce an early tension and closure of the mitral valves. And here, indeed, the sound is often followed by the slight vibratory murmur (Flint murmur) so analogous to that of mitral stenosis, in all probability due to fluid veins arising in the blood as it passes through the mitral orifice.

It is by exactly the same hypothesis that we have sought to explain the similar sound in mitral stenosis.

If our hypothesis as to the valvular origin of the early diastolic sound be true, one might indeed ask why in cases of dilatation with engorgement of the auricle the valves might not be brought, early in diastole, into a position so analogous to that which they occupy in aortic insufficiency, as to give rise, with the further passage of blood from auricle to ventricle, to fluid veins sufficient to cause a slightly audible diastolic murmur. But this was indeed true in one of our dogs where, at first, the sound was followed by a distinct murmur. Again, as has already been said, the sound in a healthy human being is sometimes a slight hum, somewhat longer than the ordinary phenomenon; and indications of such a hum following the sound may sometimes be brought out if the patient turn upon the left side. In adherent pericardium with dilated heart, slight mitral diastolic murmurs without valvular disease have also been described.

Furthermore, I have in one instance met with a third sound, a diastolic murmur in the tricuspid region, which could only be explained by such an hypothesis. The patient was a colored man with arteriosclerosis and dilated heart, but without valvular disease. There was mitral and tricuspid insufficiency due to dilatation of the ventricles. To quote one of my own notes, made in 1905: "In the fifth space, in about the parasternal line, there is heard a distinct mid-diastolic murmur. This begins shortly after the second sound with a slight shock exactly like the opening snap of mitral stenosis, and runs at times almost into the first sound. At other times it stops just before it. It is slightly rumbling and presents all the characteristics of the murmur of mitral stenosis with Flint murmur. It is limited to an area about the size of the bell of a stethoscope. The murmur seems to be more marked during inspiration. No aortic diastolic murmur is to be heard." This murmur, always rather soft, never very intense, was heard throughout the last two years of the patient's life. It was limited to a small area over the right ventricle; never audible at the apex. Its nature was the subject of much discussion, and the only satisfying explanation which was reached was that with diastole, owing to the dilatation of the ventricle, the tricuspid valves were brought, with the entrance of the first rush of blood, into a condition of tension causing the sound, and thereafter, owing to the production of a slight *de facto* stenosis, the murmur. At the necropsy, both right and left ventricles were dilated and hypertrophied; there were no valvular lesions. This is the only instance in which I have observed such a shock and sound limited to the right ventricle.

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§ This hypothesis, which, as will be pointed out later on, is essentially that of Gibson, was advanced quite independently of his work and before the appearance of his article.

That the phenomenon is due usually to events taking place in the left side of the heart would well explain the fact that the *h* wave of the jugular pulse is so slight in some cases.

This hypothesis is similar to that hinted at by Hirschfelder[17] as an explanation of his *h* wave.[‖] Henderson[18] also assumes that the shoulder of the volume curve is associated with the approximation of the mitral valves. Furthermore, the hypothesis is almost exactly that upon which Gibson relies to explain the sound heard in association with his *b* wave. To quote his words:[19] "By observation on the excised heart it can be seen that as the ventricular cavity fills, the auriculo-ventricular valves float up and close automatically when the ventricle is full, and it is easy to imagine that the inrush of blood would be followed by a reaction on the ventricular walls in proportion to the momentum of the inrush, so that with a rapid and full stream the tightening of the valves would be quick and strong while with a slow stream the process would be more gradual yet in no wise less complete. The fact that this explanation necessitates the closure of the valves *before* the auricular beat is no objection; the amount of force necessary to push open the valves is extremely small, and the heart would be the more rather than the less efficient pump because of the double closure of the valves. The sequence of events in the diastolic period would then be as follows: After the replacement of the heart which follows systole and causes the *v* wave in the jugular pulse, the blood flows into the ventricle, the valves float up, gradually when the venous pressure is low, quickly when it is high, and the orifice closes; the auricle is now filled by blood from the veins; it contracts and forces the greater part of its contents into the moderately distended ventricle which then becomes fully so, the valves close again from the increase of pressure set up in the ventricle by the auricular contraction; finally, the ventricular contraction keeps the valves closed till the end of systole."

If this hypothesis be correct, why should the sound be heard in some individuals and not in others, and why should it be especially common in young people? The intensity of the sound is often so slight — so near the borderland of the audible — that it is not remarkable that it is frequently missed. Its apparent frequency in individuals with a slow, full pulse would appear to be in accordance with the last mentioned hypothesis, and the observation that the sound is sometimes louder during the slow beats of expiration may well be accounted for by the assumption of a higher auricular pressure during this period.

In connection with the increased intensity of the sound in the left lateral decubitus, it should be noted that, in this position, a well-marked systolic apical murmur may be brought out in cases where, in other attitudes, the heart sounds are clear. If this murmur be regarded as indicative of a functional insufficiency of the mitral valve, the third sound may then well be dependent on the more sudden distention of the ventricle with an increased quantity of blood under higher pressure.

There would, however, seem to be no reason to suppose the existence of especially high auricular pressure or of diminished cardiac tonicity in the many healthy young people in whom the sound is heard. I have always fancied that one, if not the main, reason that the sound was so well heard in the young was because of the thinner chest walls, the less voluminous lungs, and the greater ease with which the heart can be approached.

(3.) There is another possibility with regard to the cause of this sound which may be simply mentioned. Stewart has shown that there is in the normal heart an early diastolic contraction of the ring of muscle just below the aortic and pulmonic valves, a contraction which serves evidently to reinforce the closure of the arterial orifices. His work has not yet been published, and while one might *a priori* expect that the sound associated with such a contraction, if such a sound indeed there be, would occur at a somewhat earlier period, and that it would be more appreciable at the base of the heart than at the apex, yet in the absence of positive proof of that which we have advanced as the most engaging hypothesis, it may be well to bear in mind the possibility that the contraction of the aortic ring may be a factor in the production of the sound, however improbable it may seem.

SUMMARY.

In many healthy individuals, especially in the young, there is audible at the apex of the heart a slight third sound, which occurs in early diastole shortly after the second sound.

This sound is commoner with a slow pulse; it is better heard in the recumbent posture and, especially, in the left lateral decubitus. It is sometimes more clearly audible during expiration.

The sound is not infrequently associated with a shock which may be visible as well as palpable. The sound and shock occur synchronously with the protodiastolic elevation of the cardiogram which is usually prominent in these cases.

These events cover a period of time represented on the jugular pulse by the later part of the katacrotic limb of the *v* wave and, generally, a part of the anacrotic limb of an *h* (Hirschfelder) wave (*b* wave of Gibson), which is usually present in these cases. This period corresponds closely to that occupied by the shoulder of the ascending limb of the cardioplethysmogram.

[‖] Hirschfelder's suggestion, it should be said, relates to the tricuspid, *not* the mitral valve. The principle is, however, the same.

Conclusive evidence as to the cause of this phenomenon is, as yet, wanting.

From a consideration of the conditions observed in normal individuals, together with various apparently analogous manifestations occurring in disease, we are disposed to incline toward the hypothesis that the sound is produced by a sudden tension of the mitral and, perhaps at times, tricuspid valves occurring at the end of the first and most rapid phase of diastole.

In conclusion I wish particularly to thank my friend, Dr. Eyster, of the Physiological Department, for valuable assistance.

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THE VALUE OF LUMBAR PUNCTURE IN SYPHILITIC AND PARASYPHILITIC DISEASES OF THE NERVOUS SYSTEM.

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It is now seven years since Monod,[1] working in Brissaud's clinic, and Widal, Sicard and Ravaut [2] called attention to the fact that an increase of lymphocytes in the cerebrospinal fluid of individuals suffering from general paresis and tabes is almost constantly to be found. Following the work of these pioneers a large number of papers have been published, mostly by French and German investigators, corroborative of their work. Besides the increase in lymphocytes, it has been repeatedly demonstrated that serum albumin, which exists not at all or in only slight traces in normal cerebrospinal fluid, is increased in tabes and paresis to from 2 to 4 gm. per thousand.

It is not from lack of appreciation of the constancy of this albumin increase that the writer has omitted this test in many of his cases, but because its performance requires a larger amount of fluid than does the cell count. The fact that all the cases reported in this paper were tested either in the office or in the out-patient clinic rendered it inadvisable to withdraw more fluid than was necessary in order to obviate the development of uncomfortable symptoms which sometimes follow the operation. Moreover, the proteid estimation, while in itself of value, gives little additional information if the cell count is to be made. It is true that a few cases have been reported where the albumin test was positive and the cell count negative, but in these cases the cell count was made by the old method which lacks the accuracy of our present method of estimation.

As a matter of fact, we know that the number of cases of paresis in which the cell count has failed to show a lymphocytosis is very small. Pomeroy [3] has collected statistics of 500 cases suffering from this disease in which lumbar puncture was performed, and only 2.6% gave a negative result. Cornell, who used the more accurate slide counting method, has had no negative counts in 37 punctures, while Fuchs and Rosenthal [4] had 12 and Rhems [5] had 39 without a negative result. Based on these data, Cornell [6] gives it as his opinion that every case of paresis shows a cellular increase in the cerebrospinal fluid.

Regarding the constancy of the sign in tabes, Fuchs and Rosenthal collected 154 cases in which the sign was positive and 13 in which it was negative, while in their own tabetic case it was positive. Purves Stewart [7] found 8 cases positive and reported 1 case of his own of undoubted tabes in which the count was negative and referred to a negative case of Ferrier and Babinski.

In the light of all that has been done, therefore, we must accept the fact that a leucocytosis of the cerebrospinal fluid is practically always present in tabes and general paresis, and Joffroy,[8] as well as Marie and Duflos,[9] maintain that it is present in the earliest stages.

The value of this aid to diagnosis has been made use of by some in cases of tabes, but to a much greater extent by psychiatrists in differentiating general paresis from psychoses which may simulate this disease, notably alcoholic psychoses, arteriosclerotic psychoses, dementia precox and psychoneuroses.

The object of this communication is to show by brief abstracts of a few records the sort of cases in which lumbar puncture is useful to the practitioner; to add my endorsement to that of the advocates of the slide counting method; and to call attention to the fact that the test can be made in the office or in the bustle of an out-patient clinic and the results obtained in a few minutes.

I am aware that Pomeroy and Nissl [10] make as their first rule: "Patients should not be punctured unless they can be put to bed." It is here, however, that the advantage of making the count without the corroborative evidence of the albumin test is manifest, for if done by the slide counting method, only a few drops of the fluid are needed, and the occasional results of headache, nausea and malaise may be avoided.

The method of procedure of nearly all the investigators who have employed cytodiagnosis of the cerebrospinal fluid has been to collect the fluid in a conical-shaped tube and centrifugalize it at a high rate of speed for twenty to thirty minutes. The fluid is then poured off and the tube inverted and allowed to drain until only a small drop remains in the small tipped end. This drop is absorbed by means of a fine capillary pipette and is spread on three coverslips, dried, fixed and stained. The count is then made with a 1-12-in. oil immersion lens and the average number found in a field is estimated.

The results obtained by this method must vary with the time and rapidity of centrifugalization and the technique of the investigator, for it is obvious that the varying size of the drop left in the tube and the character of the spread must give rise to widely different results.

We owe to Fuchs and Rosenthal the introduction of a modification of the Thoma Zeiss blood-counting apparatus, as a more accurate means of estimating the number of cells. They employed the white blood corpuscle counter, drawing a staining mixture up to 0.5 and filling the tube to 11 with the cerebrospinal fluid. For the purpose of staining they used methylene violet 0.1, acetic acid 2, and water 50, which mixture serves to bring out the character of the cells and distinguishes the red corpuscles which may contaminate the fluid. When the fluid has been thoroughly mixed and stained, the count is made on a slide which differs from the ordinary blood counting slide in that the chamber is larger, measuring 4 mm. square and 2 mm. deep. By counting two or three spreads on such a slide the average is taken and the number of cells per cubic millimeter easily computed.

It has not seemed to me necessary to use the modification of Fuchs and Rosenthal, for in making the count on the ordinary blood-counting slide I have found that if the fluid be well mixed in the pipette that there is very little variation in the count of four or five successive preparations. If the validity of the count is corroborated in this manner the number of cells per cubic millimeter is easily estimated.

The value of this method of counting lies chiefly in its accuracy, allowing the results of one investigator to be compared with those of another without question of any variation depending on technic. In this way it may be possible by collecting a large number of cases to make finer distinctions between a number of conditions in which lymphocytosis has been found, and we do not need to deal with such terms as "positive results," "moderate increase," and "marked increase."

All the evidence goes to show that the normal fluid by the old method of counting demonstrated from no cells to two cells in a field, and by the new method from no cells to three cells in a cubic millimeter. There is nearly always a moderate or marked increase in the number of cells in cases of (1) syphilis with active secondary lesions; (2) syphilis of the central nervous system; (3) syphilitic eye disturbances; (4) tabes; (5) general paresis; (6) tubercular meningitis. In addition to these an increase may be found in (1) multiple sclerosis; (2) mumps; (3) herpes zoster.

There is little difficulty in making the diagnosis from the clinical picture in this latter group of cases, and this is true also of the secondary stage of syphilis and of tubercular meningitis. The real value of the lymphocyte count lies (1) in those cases where there is a well-developed psychosis in which paresis is to be differentiated from other psychoses; (2) in patients who show beginning changes in character and disposition, where the question of a possible early stage of paresis is suggested; (3) patients having isolated symptoms of tabes, such as retention of urine, paresthesiæ, pains, or crises, but who do not show a sufficient number of characteristic symptoms to make the diagnosis of tabes certain; (4) in differentiating cerebral tumors from gummatous growths.

In the light of our present knowledge, however, where the alternative of syphilis of the brain or cord comes up in diagnosticating paresis and tabes, we cannot depend on the lymphocyte count as an aid, for the cell increase is quite as constant in the syphilitic as in the parasyphilitic affections of the nervous system.

It is true that Stewart, in using the cell-counting slide, believes that the average count in syphilis is lower than that in tabes and paresis, giving as his results:

Syphilis,	7 cases,	average	37.6	per cmm.
Tabes,	8 ,,	,,	72.3	,,
Paresis,	4 ,,	,,	190.4	,,

The average of 190 in paresis, however, is much higher than Cornell reports, for he found that as a result of lumbar puncture 37 times in 25 cases of paresis that the average number of cells was 52, the individual counts varying from 12 to 216. It is apparent from these figures, therefore, that cytodiagnosis can be of no assistance in differentiating tabes or paresis from syphilis in cases where the count is in the vicinity of 40 or 50.

During the past year I have used lumbar puncture as a means of diagnosis in 30 cases; in only 3 was the operation really painful, and in only 1 were there any unpleasant after-effects. This was due to the fact that the fluid was under such pressure that an unusual amount escaped before the needle was withdrawn. The result was that the man was confined to bed for a week on account of headache and malaise. In many instances the patients went considerable distance to their homes after the operation (Lawrence, Lynn, Lowell, etc.) and no discomfort was felt.

It is surprising how little pain is caused by the introduction of the needle in most of the cases. After scrubbing the lumbar region with soap and water and alcohol, local anesthesia was produced by means of the ethyl chloride spray, and several times the patient has remarked that the introduction of the needle was much less uncomfortable than the rubbing of the towel.

The outlines of the following selected records serve to illustrate the type of case in which the leucocyte count of the cerebrospinal fluid is of value as an aid to the diagnosis. In all of the cases the number of polymorphonuclear cells has been below 5%, but since these are always present in some degree, I have made use of the word "leucocytosis" rather than "lymphocytosis" to express the cellular increase.

Case I. Male, thirty-two years of age. Came to Out-Patient Department of the Massachusetts General Hospital on account of retention of urine. Two years previously he had begun to have difficulty in micturition, and this had increased so that he had been obliged to use a catheter for several months previous to his first visit to the hospital. He had contracted gonorrhea four years previously, but denied knowledge of having had syphilis.

The pupils were equal in size, slightly irregular in outline, and reacted well with accommodation, but not to light. The knee jerks and Achilles reflexes were present. There was no ataxia or Romberg's sign, and no history of darting pains or paresthesia.

The Argyll-Robertson pupil in this case suggests tabes as a cause for the bladder symptoms. This diagnosis could not have been made with certainty, however, without the aid of lumbar puncture, which showed 110 leucocytes per cubic millimeters corroborating the diagnosis.

Case II. A man thirty-four years old gave a history of having contracted syphilis eight years ago. He came to the hospital in February, 1907, on account of Jacksonian attacks, from which he had been suffering for several months. The attacks were ushered in by an aura of a sense of tightness, starting in the toes of the left foot and extending up the leg. There was then a tonic spasm of the leg followed by unconsciousness and clonic spasm of the left half of the body. There was no headache or vomiting and no optic neuritis. No history of trauma. The pupils were irregular in outline, the right 4½ mm., and the left 2½ mm. in diameter. Both pupils reacted well with accommodation, but the left reacted sluggishly and the right not at all to light. The left knee jerk was more active than the right and there was ankle clonus on the left side. Sensation was normal in all its forms. There was no tremor of the lips or tongue. The speech was not suggestive of paresis, nor was there the characteristic mental indifference and memory defect of this condition.

The question arose as to whether the symptoms were due to cerebral syphilis or tumor of the brain in the region of the precentral convolution. A lymphocyte count of 35 made it possible to rule out the latter condition and accept the former, although the possibility of the convulsions being an early manifestation of paresis was recognized. As a matter of fact, the attacks have now been absent for a year under a thorough iodide treatment, and the patient has showed no further signs of paresis.

Case III was that of a man forty-two years old, who had contracted gonorrhea at the age of twenty, but gave no history of having had syphilis. In August, 1907, he ran to catch a car, mounted the running board and stood for a moment, when he suddenly had a sensation of having been struck in the left knee, and knew no more till he came to himself in the hospital. During the next two months he had attacks of Jacksonian convulsions involving the left side, at intervals of one or two weeks. In some of these he retained his consciousness, and others were observed by attendants. The attacks were ushered in by the left leg drawing up, and a few seconds later a clonic spasm of the left arm. In the course of a few weeks there developed weakness of the left arm and leg, so that he found great difficulty in walking and dressing. There was a moderate degree of headache, but no vomiting. The intellect was clear. Pupils equal and reacted promptly. No optic neuritis. No signs of involvement of cranial nerves. Marked paresis of left arm and leg. The left knee jerk was more active than the right, but there was no ankle clonus. The superficial reflexes were absent on the left side.

Here, as in Case II, we have to differentiate between a localized syphilitic process in the brain and a developing neoplasm in the region of the motor cortex. Examination of the cerebrospinal fluid showed but one cell per cubic millimeter which supported the diagnosis of tumor, and operation was advised, but declined by the patient. Iodide of potassium in doses of 200 to 300 gr. a day were given for several weeks in the forlorn hope that some relief might result, but no improvement has manifested itself in the course of three months.

Case IV was a man of fifty-six, seen with Dr. J. J. Putnam in the fall of 1907. For a year past the patient had been unable to attend to his work of auditing accounts because of his feeling of mental incapacity. He had three distinct complaints: (1) in walking he felt as if some one were pulling down on his legs so it was hard for him to lift them from the ground; (2) in conversation he was apt to think the first half of what he intended to say and begin talking in the middle of a sentence, and while talking he found it a distinct effort to get his tongue around words. His wife also said that he had a recent habit of leaving his sentences unfinished. (3) He was occasionally overcome with dizziness when things seemed to be blurred and move in front of him, and he was in constant fear lest such an attack seize him in the street.

He denied having had syphilis and used alcohol very moderately. Physical examination showed a stout, muscular man, well preserved for his years. He was very talkative and the speech was somewhat slurring. His conversation and manner were both very suggestive of general paresis. He repeated phrases correctly, however, and was quick and accurate in multiplying figures. There were no grandiose ideas. The pupils were regular, equal and reacted well. The fundus was normal. The tongue and lips showed no tremor. The knee jerks were normal. The examination of the cerebrospinal fluid showed one leucocyte per cubic millimeter.

Although there were no somatic signs of general paresis in the patient, and the leucocyte count was normal, his manner seemed so convincingly that of a paretic that a second puncture was performed two weeks later, but the fluid showed only two cells per cubic millimeter. Relying on the cytodiagnosis in this case it is possible to rule out the diagnosis of paresis, and we are forced to accept either a psychoneurosis or an arteriosclerosis as a cause for the condition.

Case V. A man of thirty-three years came to the hospital complaining only of feeling "nervous." This nervousness could not be defined beyond the fact that he felt irritated because he knew that people talked about him and criticised his actions. A short time previously he had given up his position as engineer because his employer found fault with him for incapacity. He felt physically well, but he noticed that his memory had been poorer than usual for several weeks. For two months there had been strabismus. He denied any history of venereal disease.

Physical examination showed the pupils to be regular in outline, equal and moderately responsive to light. There was paralysis of the left external rectus. The tongue was tremulous, but the speech was clear. The knee jerks were normal. Romberg's sign was absent, and there was no ankle clonus or Babinski reflex.

The man's indifferent attitude while his symptoms were being discussed in his presence was characteristic of paresis, and he found difficulty in repeating test phrases correctly. The leucocyte count from the fluid obtained by lumbar puncture showed 110 cells per cubic millimeter.

We have, then, in cases IV and V, patients presenting symptoms suggestive of an early stage of general paresis, but neither showing somatic signs or sufficient mental change to make this diagnosis a certain one. The absence of any increase in cells in Case IV, however, enables us to eliminate the question of paresis, while the high count in Case V serves to corroborate the suspicion of paresis.

Case VI. A man of fifty had been coming to the out-patient department of the hospital for two years, complaining of numbness of the fingers and toes. This paresthesia increased so that in the fall of 1907 it had extended up to the hips and involved the upper extremities to the wrists. There had been no pains and no bladder disturbance, but his eyesight was failing. The gait was unsteady and the numbness of the hands incapacitated him for work. There was no memory defect and no euphoria. Various diagnoses of tabes, general paresis and diffuse degeneration of the cord had been made in the neurological department. The pupils were regular, equal and reacted normally. Ophthalmoscopic examination showed the disks to be normal, but a considerable degree of arteriosclerosis of the retinal vessels. The knee jerks and Achilles reflexes were absent, and Romberg's sign was present. No Babinski. Hemoglobin = 70%.

The cerebrospinal fluid showed two leucocytes per cubic millimeter, eliminating the diagnosis of tabes and of paresis and corroborating that of diffuse spinal sclerosis.

Case VII. A man of thirty-nine years. History of a primary specific lesion twenty years ago followed by secondary signs. This was treated well and faithfully for three years. In April, 1907, he got up one morning with a numb, heavy feeling in the right arm and leg, and fell in trying to go downstairs. During the day the paresthesia and weakness passed off, but returned twenty-four hours later and has persisted since.

He felt heavy and sleepy all the time, and was unable to continue his occupation of mail distributer on account of weakness and awkwardness of his right hand.

During the first two weeks of his symptoms there was constant occipital headache, but no vomiting. He used no alcohol or tobacco. The pupils were equal, regular and reacted promptly to light and with accommodation. The fundus was normal and there was no hemianopsia. There was right hemiparesis and diminished sensibility to touch and prick on the right half of the body. Ataxia of the right hand was present to a moderate degree. Romberg's sign was absent. The knee jerks, wrist and ankle jerks were all exaggerated rather more on the right than on the left side. The urine examination was normal. The speech was strikingly slurring, but the intellect was alert and keen. No memory defect could be discovered. The leucocyte count of the cerebrospinal fluid demonstrated 50 cells per cubic millimeter.

This case is given to illustrate the type in which it is difficult to differentiate between the late manifestations of syphilis of the brain and a developing general paresis. From the picture presented, either condition may have been the cause, and the cell count is quite within the range found in either disease. Iodide and mercury have been persisted in for a year and all traces of the hemiplegia have practically disappeared. In the meantime there has been no further development of symptoms, and the actual diagnosis must remain in doubt.

Other cases varying in the symptoms presented could be added to the series given above, but the group serves to illustrate the sorts of conditions in which cytodiagnosis, as an aid to diagnosis and in determining the prognosis and treatment, is of great value.

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ACUTE YELLOW ATROPHY OF THE LIVER.

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I have had as patients in recent years three cases of acute yellow atrophy of the liver, in all of which the diagnosis was made during life and confirmed at autopsy, and I have had the opportunity to study and report a fourth case with autopsy through the kindness of Dr. Francis H. Williams, visiting physician at the Boston City Hospital. This is a very unusual disease, rarely seen even by physicians of large hospital experience; and on account of its great rarity it seems desirable to report these cases fully with the autopsy findings, a description of the histological changes in the liver and certain chemical analyses which were made. This will be done chiefly from the clinical point of view, with some remarks on the *nature* of the disease in the light of recent investigations.

Case I. J. E. J., age twenty-three, married, was admitted to the Long Island Hospital Jan. 15, 1901, with a diagnosis of syphilis. He gave the following history: His mother had died of pulmonary tuberculosis; the family was otherwise healthy.

Previous illness. — His past history was negative with the exception of measles and pertussis in childhood and recent venereal disease. He was employed as clerk in a wholesale liquor store and drank freely of beer, but was seldom intoxicated. Had gonorrhea with epididymitis three years ago with apparent recovery in about two months. Much promiscuous sexual intercourse up to time of marriage three months ago. Then developed a hard chancre and a month later a characterisitc specific roseola with general malaise. He was treated for syphilis, and when the general eruption faded a few unsightly crusted areas on face and elbow persisted.

Physical examination. — At entrance to the hospital showed a well developed, well nourished individual, about 5 ft. tall, weighing 131 lb. Reflexes were normal, heart and lungs normal, the area of liver and spleen normal, no abdominal tenderness. An ulcer the size of a ten-cent piece was found at the base of the penis. Inguinal and cervical glands were somewhat enlarged. Several red macules or papules with pigmented base were scattered over face, body and extremities. A raised crusted area about the size of a walnut was situated on the forehead over the right eye, and other similar lesions, smaller in size, were found on the upper lip, left nostril and left elbow.

Urine, 1,470 ccm., normal color, acid, 1,018 specific gravity. Albumin and sugar absent.

Mecurial treatment was given, pushed to ptyalism and then diminished one half. This was followed by great improvement in the general condition for four weeks. Then loss of weight, appetite and energy were noted and the crusted skin lesions seemed to increase rather than diminish. Mercury and potassium iodide were given together for a month with tonic and hygienic measures, without improving either general or local conditions. The potassium iodide was given in ascending doses, three times a day, till 85 gr. were reached. The crusts on face and elbow gradually fell off, leaving scars, and the general condition slightly improved. The patient was able to assist in ward work, take long walks, play ball, etc.

Present illness. — On April 4, nearly three months after admission to the hospital, slight jaundice was noticed in skin and conjunctivæ and the patient complained of general malaise and loss of appetite. There were no distinct gastric symptoms and no pain anywhere.

Physical examination was similar to that at entrance with the addition of jaundice. The liver edge was now palpable just below the costal margin, the gall bladder was not palpable or tender. There was slight diffuse abdominal tenderness.

The patient remained in bed most of the time for the next twelve days. He was dull and depressed and slept much of the time and had anorexia and nausea. Eight days after the onset of the jaundice the liver edge was still palpable below the costal margin. The jaundice remained mild and showed a little variation in depth.

On the 13th day the patient became somewhat irrational and mentally confused, refused to have his temperature taken, spat upon his bed and into his medicine. He had forgotten the name of the nurse and of neighboring patients. This was followed by mental excitement, and on the 14th day developed into delirium and at noon he became semi-comatose. The temperature, pulse and respiration were normal.

At 2 P.M. he vomited once, complained bitterly of headache and then relapsed into profound coma. Slight tonic convulsive contractions of the abdominal muscles and of the right side of the face appeared and continued several times a minute. In the afternoon the jaundice became more intense, vomiting was frequent, of "coffee grounds" material which contained hematin, and in the evening a half ounce of bright blood. There was bleeding from the gums.

Physical examination showed a very peculiar condition of the liver dullness. In the mammary line a tympanitic note was obtained over the normal liver area and the only area of *liver dullness* found was in the midaxillary line about two inches in diameter, extending from the seventh interspace toward the costal margin; no tenderness was present (coma). The spleen was not palpable and the splenic area on percussion was normal. There was no ascites or edema of extremities. The pupils were dilated and failed to react, knee jerks were present, no clonus.

The blood on the 15th day showed: hemoglobin, 80%; red cells, 6,640,000; white cells, 12,600.

A differential count of the white cells showed: polymorphonuclear neutrophiles, 76%; mononuclear, 19%; transitional, 4%; eosinophiles, 1%.

The *urine* on the 14th day was as follows: 960 ccm.; color dark; specific gravity 1,013. Reaction strongly acid, considerable sediment. Urophain was much increased. Indoxyl increased, Chlorides, 5.90 gm. Total phosphates 1.50 gm.; albumin, a trace (1-60%). Sugar absent. Albumose absent. Bile pigments present in large amount. Bile acids absent.

The sediment contained many hyaline, granular epithelial and fatty casts, numerous renal cells, mostly fatty, free and on casts, much free fat, occasional normal and abnormal blood globules, numerous bilirubin crystals and granules. Slight excess of leucocytes, bladder and neck of bladder cells.

No leucin or tyrosin crystals were obtained by simple evaporation of the urine or by evaporation and precipitation with alcohol.

Careful quantitative analyses were made showing the total nitrogen excretion in the urine and the proportion of nitrogen excreted as urea, ammonia, and uric acid (using the Kjeldahl, Schröder and Salkowski methods respectively). The following results were obtained (14th day, one day before death):

Total nitrogen excreted, 7.47 gm., and of this 62%, or 4.64 gm., was excreted as urea; 22.9%, or 1.61 gm., as ammonia; 1.6%, or 0.11 gm., uric acid; 13.5%, or 1.00 gm., as residue (by difference).

Compare this with the average normal proportions of nitrogen excretion: 86% as urea, 3.5% as ammonia, 2.0% as uric acid, 8.5% as residue.

The patient remained unconscious during the day, vomiting, at rare intervals, occasionally digested blood, and passing urine and feces involuntarily. The convulsive movements continued, but grew weaker, breathing was labored and stertorous, sweat persisted on the face and the jaundice deepened to a dark orange color. The pulse became irregular and intermittent. The patient died on the afternoon of the 15th day. In the last twelve hours of life the temperature gradually rose to 104°, the pulse to 168 and the respiration to 48. The white blood cells were 23,300 per cmm. two hours before death.

The *autopsy* was performed forty-five minutes after death by Dr. George B. Magrath.

Anatomical diagnosis: Icterus; acute yellow atrophy of the liver; fatty degeneration of the kidneys; fatty degeneration of the heart; ecchymosis of the ileum; interstitial orchitis (?); edema of the brain; red bone marrow; multiple cicatrices of the skin.

Body, that of a man about thirty years of age; length 155 cm.; fairly well developed and nourished; rigor mortis absent; body warm; slight lividity of dependent parts; pupils equal, 3 cm. in diameter; the skin a general deep yellow color; the skin of the middle of the forehead shows an old, slightly depressed scar, 2 cm. in diameter; the skin of the body and extremities bears numerous irregularly oval, shallow, white scars, the largest about 1 cm. across.

Upon section, subcutaneous fat 1 cm. in thickness, muscles red and firm; vermiform appendix and mesenteric lymph nodes normal.

Thorax, height of diaphragm fourth rib on right side, fifth rib on left.

Pleural cavities, normal.

Pericardial cavity, normal.

Heart, section of the vena cava and pulmonary veins yields dark fluid blood. Weight 270 gm.; myocardium brownish red, microscopically showing interstitial fat; wall of left ventricle 1.3, of right, .3 cm. in thickness; mitral valve 10, aortic valve, 6, pulmonary valve 6.5, tricuspid valve 12 cm. in circumference, depth of left ventricle 8.5 cm. Endocardium, valves and cavities normal. Coronary arteries normal.

Lungs, normal.

Abdomen, peritoneal cavity normal.

Spleen, weight 100 gm.; upon section, dark red, markings distinct; pulp not increased; consistence a little diminished.

Stomach, normal.

Intestines, small; the ileum shows several small areas of hemorrhage in the mucosa, otherwise intestinal tract negative.

Pancreas, normal.

Liver, weight 730 gm.; symmetrically diminished in size; length, 19.5, breadth 13 cm., lower border 6 cm. above the costal margin, lay high up under the diaphragm and rather far back; flaccid, flattening out when placed on a table; general color brown red; the free surface in general smooth, presenting here and there areas of varying size, the largest about 2 cm. across, slightly elevated and of a greenish color; upon section, the general cut surface brownish red; devoid of lobular markings, presenting an even, fleshy appearance; distributed over the surface are areas corresponding in size and appearance with those upon the free surface, slightly elevated, firmer than the surrounding liver substance, showing distinct lobular markings; the centers of the lobules bile stained, the borders yellowish brown. The hepatic veins stand open, the surface of section is moist.

The microscopical examination is as follows: In this liver there are two different conditions which are separated, both macroscopically and microscopically. In certain areas, there is a comparatively large amount of well preserved liver tissue. Liver cells are normal. The nuclei stain well and the fine bile capillaries beween the cells are injected with a greenish yellow bile pigment. These areas in the liver macroscopically appeared greenish. The liver cells contain no fat and the nuclei are relatively more numerous. There seems to have been a new formation of liver cells. The trabeculæ are wider than normal in places. The capillary bile ducts are dilated. No nuclear figures are found in the liver cells. The preserved liver tissue is chiefly about the portal spaces. The connective tissue in the portal spaces is increased. About the central veins everywhere the liver tissue is absent. In other sections which involve rather the less pigmented areas macroscopically the liver cells are in places entirely absent or reduced to very small cell collections. One of the most marked features where the liver cells are absent is the presence of immense numbers of endothelial cells. These cells have an abundant dense cytoplasm, are often pigmented, are contained both within the capillaries and within the liver cell trabeculæ, and sometimes show vacuoles containing granular material or pigment. Where the liver cells are absent the tissue consists in a loose fibrous stroma containing these cells with some admixture of lymphoid cells. Here and there the endothelial cells contain lymphoid cells within their vacuoles. In many of these places there are a few scattered eosinophile leucocytes. In a few places only at the edge of the liver cell masses, the same process of cell disintegration, which is fully described in the other cases, is seen. The portal spaces and the tissue adjoining them everywhere contain immense numbers of the so-called newly formed bile ducts. In places, particularly where the liver cells have totally disappeared, these are very prominent and penetrate the tissue. They seem to be actively growing, the nuclei are numerous and nuclear figures in fair numbers are found in them. This case differs from the two following cases in the fact that here a destructive process analogous to that in the other cases, though not so extensive, has taken place. The period of destruction has ceased, or almost entirely so, and the dominant feature is a repair of the process, and regeneration. The regeneration of the liver tissue here is taking place in two ways: in one way by the direct formation of liver cells from other liver cells by division of nuclei. In the other, by a process similar to that of embryonic liver formation, by the formation of undifferentiated epithelial tissue similar in character to the bile ducts, from which the future liver cells will differentiate. The enormous number of endothelial cells which are present is part of the process of repair, these cells being of a phagocytic character and engaged in the removal of the necrotic and broken down tissue.

Gall bladder, normal.

Kidneys, weight of both 400 gm.; capsule strips easily from a smooth surface; upon section, cortex 1 cm. in thickness, pale grayish red, showing yellow droplets within the tubular epithelium.

Adrenal glands, normal.

Bladder, normal.

Genitalia, tubules fail to thread.

Aorta, bile stained.

Cranium, sinuses and dura normal.

Brain, weight 1,390 gm.; upon section, somewhat softened and wet.

Spinal cord, not examined.

Bone marrow of the femur, red.

Bacteriological examination: cultures from the heart, lungs, spleen and liver show white and yellow colonies, microscopically cocci. Culture from the kidney sterile.

Case II. T. N., age thirty-two, single, a blacksmith, was admitted Dec. 10, 1904, to the Second Medical Service of the Boston City Hospital, which was temporarily in charge of the writer. The following history was obtained from the patient's sister: his family was a healthy one and no previous illnesses were remembered save measles and diphtheria in childhood. He used beer and whisky in moderation.

Present illness. — Was perfectly well till six days before entrance to the hospital when he had a severe headache, anorexia and general malaise. Next day he vomited several times, headache continued. He was up and about, and the following two days felt much better. Was constipated. No fever.

On the fourth day, mild jaundice was noted and some mental confusion. On the sixth day of his illness there was renewed nausea and vomiting and he came to the hospital on his physician's advice with the diagnosis of catarrhal jaundice. He walked to the hospital. At entrance he seemed irrational, was unable to recognize his own name, repeatedly jumped out of his chair when told to sit down, etc.

Physical examination, on the sixth day showed a well developed and nourished man, conjunctivæ and skin mildly jaundiced, reflexes normal, sordes present on lips and teeth, tongue dirty, protruded in median line, throat negative, glands not enlarged. Neck not tender or rigid. Pulse good, arteries elastic, heart and lungs normal.

The area of liver dullness was very unusual. The greater part of the normal area of dullness was tympanitic like the rest of the abdomen, and the only dull area in the liver region was about the size of one half the palm of the hand (2–2½ inches in diameter) just above the right costal margin in the anterior axillary line. The edge was not felt. No tenderness was present. The spleen was not felt, nor the area enlarged on percussion. The abdomen was lax, tympanitic and not tender. There was no edema, rigidity or paralysis.

The blood on the sixth day was as follows: hemoglobin, 78%; red cells, 5,120,000; white cells, 11,600.

The urine on the same day was 780 ccm., specific gravity 1,018; color dark; reaction acid; considerable sediment; albumin, a trace; sugar absent; albumose and peptone absent. Bile pigment present in large amount.

The sediment contained hyalin, granular and fatty casts, free fat, bile-stained renal cells and some showing fatty degeneration, a few leucocytes. On evaporating the urine and precipitation with alcohol, tyrosin was present, leucin absent as a crystalline sediment. This crude test was followed by an accurate analysis by the B-napthalin-sulphochlorid method and a little tyrosin and a very little leucin found.

Careful quantitative analyses were made to show the total nitrogen excretion and the proportion of nitrogen excreted as urea, ammonia and residual nitrogen. The following results were obtained (6th day, one day before death):

Total nitrogen excreted 9,874 gm., and of this 44%, or 4.32 gm., was excreted as urea (Folin's method); 25%, or 2.48 gm., was excreted as ammonia; 31%, or 3.17 gm., was excreted as residual nitrogen including uric acid.

The stools were clay colored and somewhat offensive and showed a great excess of fat as is usual in jaundice.

The patient was irrational and confused during the sixth day, and in the evening became violently delirious, fought, struggled and swore. An hour or two later, he became comatose with stertorous, irregular, rapid respiration, low muttering and feeble pulse and subsultus tendinum. Discharges were involuntary, conjunctivæ were injected and the face bathed in sweat. There was no further vomiting or any hemorrhage or eruption of any sort. There was no marked loss of weight. The temperature remained normal. The patient was confined in a camisole and sedatives and cardiac stimulants given.

The comatose condition continued through the night, and toward morning of the seventh day the extremities became rigid. General clonic convulsions began, and after a few moments of violent motion the contractions became tonic; the back arched and the body was supported by the back of the head and the heels. This condition lasted for fifteen minutes. The pupils were of moderate size, the right slightly larger than the left and did not react to light. Later in the day the pupils were equal, but did not react to light. Kernig's sign and Babinski's reflex were present on both sides; the knee jerks were lively and ankle clonus present. The extremities remained rigid until death, the neck was rigid and retracted, the respirations slow and stertorous.

The jaundice became gradually more intense, reaching a deep lemon yellow color. The pulse gradually failed and the patient died on the afternoon of the seventh day of his illness and the third day after the appearance of jaundice.

The *autopsy* was performed by Drs. Mallory, Lewis and Duval of the Boston City Hospital eighteen hours after death.

Anatomical diagnosis.— Acute yellow atrophy of the liver; chronic fibrous pericarditis; acute bronchopneumonia; chronic fibrous pleuritis; chronic healed pulmonary tuberculosis of the lungs; chronic tuberculosis of lymph glands; infarctions in spleen; hemorrhagic gastritis; catarrhal enteritis; chronic general arteriosclerosis; coronary sclerosis.

Age thirty-two. Body length 173 cm.

Body of a well developed, well nourished male. Rigor mortis is extreme. Lividity is well marked over the whole of the body. It is particularly noticeable about the neck and face. Pupils equal 9 mm. There is no edema. Over the whole of the body, but particularly marked over the face, is a lemon yellow tint. The sclera and the dried secretions in the conjunctival sacs are bright lemon yellow in color.

Peritoneal cavity contains no free fluid. The serous surfaces throughout are somewhat dull. There are no adhesions. The mesenteric nodes are rather prominent. The appendix is 18 cm. long, runs upward and outward along the outer body of the ascending colon, normal. Diaphragm reaches to the fourth rib on left side, third interspace on right side. The edge of the liver lies 4 cm. above the costal margin in the midclavicular line.

Pleural cavities are obliterated with rather firm fibrous adhesions. The pericardial cavity has 50 ccm. of lemon yellow fluid. The parietal pericardium is smooth. The epicardium shows over the right ventricle a dense white patch 1 x 2 cm. Over the folding margins of the auricles are a few fibrous tags.

Heart: weight, 330 gm. The muscle is firm, dark red and even in color. The *endocardium* and *valves* are normal. The coronary arteries show slight sclerosis.

Scharlach R. shows fat in small droplets within muscle fibers.

Lungs: weight, 1,385 gm., are expanded. The upper lobes of each side show on section gray collapsible surface, dripping clear fluid and air. Here and there toward apices a few calcareous nodules the size of a large pea. The right middle lobe and both lower lobes are expanded, feel nodular. Cut section shows a general light red surface marked with small dark red areas. These dark red areas are firm to the touch, and from the cut section oozes blood-tinged fluid, but air only from the lighter red areas.

Spleen: weight, 165 gm., capsule smooth. Section shows a grayish red, soft surface, much substance coming away on scraping with knife. Here and there, particularly toward the capsule, are dark red areas which are slightly firmer than the surrounding spleen substance.

Gastro-intestinal tract.— The stomach contains a pint and one half of dark brownish-red fluid. The mucous membrane is white and slimy. Near the cardiac orifice and the posterior wall is a red area 2 mm. in diameter. The duodenum contains a moderate amount of greenish yellow mucus. From the common duct there can be squeezed some thick white mucus. The jejunum, ileum and colon sent unopened to the chemist.

Pancreas seems normal.

Liver: weight, 600 gm. In general, organ extremely flabby and can be folded completely on itself. Color, yellowish red. Capsule smooth. Margins thin and sharp. Section shows a general yellowish red surface marked with small points of intense red. Surface dry.

Scharlach R. shows much fat within the few remaining liver cells.

Microscopic examination of liver. — Sections of liver hardened in Zenker's fluid and stained with methylene blue and eosin. In these sections of liver examined with low power there are two main characteristics. In one there are extensive areas of hemorrhage around the hepatic veins. In some of these areas of hemorrhage the topography of the liver seems to be preserved. In other places the hemorrhages appear as blood lakes in the tissue. The liver cells are absent save in the immediate vicinity of the portal spaces. In these there are a small number of fatty, though otherwise normal appearing, liver cells. Between the central areas of hemorrhage and the periphery there is an indefinite tissue with few cells. In the portal spaces and extending between the remaining liver cells there is a dense cellular infiltration, chiefly lymphoid in character. The bile ducts are open and there are no apparent lesions either in arteries or veins, save that occasionally in some of the larger portal vessels there are recent red thrombi. Rarely are there seen structures corresponding to the so-called newly formed bile ducts of cirrhosis.

In the other sections of the liver, the areas of hemorrhage are small and inconspicuous, and over large areas there are no liver cells whatever. The structure of the liver cannot be recognized, the main mass being apparently composed of granular-looking material in which there are large, often greenish colored, cells. With a high power, it is seen that in the hemorrhagic areas the blood is contained in masses corresponding to liver structure and separated by small spaces and fissures. Among the blood corpuscles there are unenucleated cells and occasionally imperfectly staining large cells of endothelial character often containing pigment. No liver cells or remains of liver cells or capillaries can be distinguished. The blood masses seem to correspond rather to the columns of liver cells than to the capillaries. In most of these places the red blood corpuscles seem to have coalesced. The single corpuscles are swollen and rounded.

Immediately outside of the area of hemorrhage is an area in which the cellular elements are large, rounded cells, often containing a small amount of yellowish or greenish pigment. The nuclei are variable in shape and stain intensely. Between these cells there is often some indefinite granular material, but no evidence of capillary walls or cell rows. The cytoplasm is granular. In a very few places there are masses which can be recognized as necrotic liver cell remnants. In these the cells seem to be changed into granular masses. The condition is different from that of the ordinary necrosis of liver cells. The cell masses lose their outline. They have not the sharp acidophilic character nor the refraction of ordinary necrotic liver cells.

In the other areas of the liver the change is more marked. In these, fragments of cells without nuclei and with greenish pigment are numerous. Among these there are often larger cells which show active phagocytosis. One of the most striking conditions in this case is the complete absence of polynuclear leucocytes.

The condition in this liver is one of intense destruction of liver tissue. The condition is different from that which is seen in the ordinary necrosis of liver cells. The cells seem to soften and disappear by solution, leaving in some cases a more or less granular-looking mass behind. The condition affects also the capillaries of the liver. In the place of the liver tissue there is beginning to form a tissue composed chiefly of endothelial cells which in a few places show an active phagocytosis. The same process of tissue solution has affected the blood as there are no blood corpuscles in the most marked areas. In this softened tissue in places there has come a fresh influx of blood, the blood corpuscles lying chiefly in the spaces formerly occupied by the rows of liver cells. There is in no place any indication of regenerative process.

Kidneys: weight, 370 gm. Capsule strips readily from a smooth surface. Cortex well differentiated. Pyramids 7–10 mm. in thickness. Color grayish red. Glomeruli can be seen as gray points. Pyramids dark red. Blood vessels seen as reddish lines.

Scharlach R. shows fat in small droplets, large in quantity, within cells lining tubules of cortex and pyramids.

Adrenals are somewhat thin. The left adrenal seems lumpy. No gross lesions can be determined. Scharlach R. shows fat in central zone of cortex and in cells lining medullary portion.

Bladder and *genital organs* seem normal.

Aorta shows a moderate grade of fibrous sclerosis running in longitudinal lines along the posterior wall.

Organs of neck.— The thyroid seems normal in size and consistency.

Lymph nodes.— The inguinal lymph nodes are somewhat enlarged. On section several of them show pinpoint yellowish-white firm spots. The mesenteric lymph nodes about the bile ducts and head of the pancreas are markedly enlarged and dark red on section. The post-peritoneal lymph nodes and the mesenteric lymph nodes in general are appreciably enlarged, on section dark red. Several of the mesenteric lymph nodes are calcareous.

Bone marrow.— The shaft and head of the right femur is rather gelatinous and alternates streaks of yellow with streaks of dark red.

Head.— Short, curly, dark brown hair. Scalp and calvarium of normal thickness. Dura non-adherent. Sinuses contain fluid blood. Pacchionian granulations moderate. Some little subpial edema. Vessels of pia injected. Circle of Willis normal.

Brain: weight, 1,380 gm. Rather firm in consistence. Convolutions of normal prominence. Ventricles, midbrain, pons, medulla and basal ganglia show nothing of special note.

Chemical examination of liver and intestinal contents. — The contents of the jejunum, ileum and colon were examined thoroughly and repeatedly for phosphorus without finding any.

The liver in this case was examined chemically by Dr. Carl S. Alsberg. It was slightly richer in water than is normally the case. It also contained a greater per cent of ether extract than is normally present, but as the liver weighed only 600 gm., the total ether extract of the entire liver was very much less than the ether extract of a normal liver of 1,800 gm. In other words, while the relative amount of fat and lipoids was somewhat greater than normal, the absolute amount was very much less than normal. Furthermore, the nitrogen distribution was determined according to the method of Hauseman, Osborne's modification. The nitrogen precipitable by phosphotungstic acid was diminished and the nitrogen not precipitable by this reagent very markedly increased. These are conditions which very clearly show marked autolysis.

Case III. M. C. C., age thirty-six, married, born in Ireland, a housewife, was admitted to the wards of the Boston City Hospital in the service of Dr. Francis H. Williams, on Dec. 1, 1905. Through his kindness the writer was permitted to examine and study this patient. The history was obtained from her physician and husband. Her family history was excellent. She had always been strong and well, no previous illnesses were remembered. Had used no alcohol and syphilis was denied. Two children had died soon after birth, of digestive disease; no miscarriages. Her digestion had been excellent and she had had no disease of the genital organs. There had been no recent infectious disease.

Present illness. — This began six days previous with severe headache, anorexia, malaise and general weakness, accompanied by a moderate flow of blood from the uterus. The last catamenia had ceased one week before; they had previously been very regular.

She had been in bed since the second day of the illness. There had been diffuse abdominal pain, occasional vomiting, and the bowels moved on the fifth day for the first time in several days. On the fifth day several mouthfuls of blood were vomited and slight jaundice was noticed for the first time. On the sixth day (the day of entrance to the hospital) the patient became drowsy and lost consciousness for the first time. At entrance to the hospital she was semi-conscious, could only be roused by the strongest external stimuli, would not answer questions, rolled about the bed.

Physical examination showed a well developed, poorly nourished woman whose skin and conjunctivæ showed slight jaundice. The skin was very dry and scaling in several places on the abdomen; the tongue had a dry brown coat; the odor of the breath suggested acetone. The glands were not enlarged, neck not rigid or tender. The pulse was regular, slow, of good volume and tension. The heart was normal in size and the apex palpable and visible in the fifth space within the nipple line. The action was regular, both sounds were sharp and loud and the first sound reduplicated at the apex. A slight systolic murmur was heard at times at the apex and a cardio-respiratory murmur just to the left of the nipple. The lungs were normal. The abdomen was soft and lax without tenderness, masses or fluid. The *liver dullness* was difficult to determine accurately. There was tympany instead of flatness in the upper epigastrium and in the nipple line. The only definite area of dullness found was in the right axilla between the seventh rib and the costal margin extending only as far forward as the anterior axillary line. The spleen was not felt, nor the dullness found to be enlarged. The reflexes were normal. Kernig's and Babinski's sign were absent. The temperature was normal.

The blood on the sixth day was, hemoglobin, 60%; red cells, 6,720,000; white cells, 16,000.

The urine on the same day was passed involuntarily so that the twenty-four-hour amount could not be collected. A mixture of several catheter specimens showed the following characters:

Reaction acid; specific gravity, 1,028; color normal; albumin, a very slight trace; sugar absent. Albumose present; bile pigment present in small amount.

The sediment contained a few coarse, granular casts and renal cells with fat drops, a little free fat, leucocytes and squamous cells. Calcium oxalate crystals.

On evaporating the urine and precipitating with alcohol, both leucin and tyrosin were found present.

Quantitative analysis of the nitrogen excretion made by the writer showed that 69.2% was excreted as urea, 17.0% as ammonia; 13.8% as residual nitrogen including uric acid.

The stools were formed, of very dark color and contained a considerable amount of partially digested blood.

The treatment was essentially symptomatic. Purgation with calomel, with large enemata of salt solution; bromides for the restlessness, and heart stimulants. During the afternoon of the sixth day the patient's condition remained unchanged. She was very restless and noisy, tossing about in bed, rolling her head incessantly from side to side. There was no more vomiting. The patient occasionally coughed up a little blood-streaked sputum. A moderate bloody discharge from the uterus continued. The jaundice gradually deepened to a yellowish bronze color; the conjunctivæ were bright yellow. There were no hemorrhages into the skin. The bowels did not move again. Profound coma gradually developed. There were no convulsions, twitching, or rigidity. The temperature remained normal. The pulse became rapid and gradually failed. The patient died at noon on the seventh day of her illness and the second day after the appearance of jaundice.

The *autopsy* was performed by Drs. Mallory and Graham of the Boston City Hospital, twenty-two hours after death.

Anatomical diagnosis:— Acute yellow atrophyof liver; acute parenchymatous nephritis; acute myocarditis; generalized icterus of skin, subcutaneous fat and serous membranes; multiple hemorrhages of lungs; multiple hemorrhages of mesentery; hemorrhages from gastric and intestinal mucous membranes and endometrium; congestion and edema of lungs; chronic pleuritis (bilateral); chronic perihepatitis; generalized passive congestion; myoma of uterus; biliary calculus; aortic arteriosclerosis (slight).

Body of a well developed, fairly nourished white woman, 159 cm. in length. Rigor slight in limbs, absent in neck muscles. Lividity of dependent parts marked. No edema. There is general icterus, skin surfaces a yellowish bronze in color, sclerotics bright yellow. Pupils equal, 0.5 cm. in diameter.

Peritoneal cavity. — Subcutaneous fat is of a salmon yellow color, its vessels filled with dark blood. Pectoral muscles dull red. On opening cavity all the serous membranes show yellowish discoloration. The mesentery shows numerous scattered punctate hemorhages beneath the serosa. They occur in the region of the vasa intestini tenuis, especially along the line of attachment of mesentery to intestine and average 0.2–0.3 mm. in diameter. They are most numerous in the region of the small intestine. Appendix 7.5 cm. long, 0.6 cm. in diameter; direction downward and inward. Mesenteric lymph nodes not enlarged. Diaphragm, right fifth space, left sixth rib. No fluid.

Pleural cavities.— There are old fibrous adhesions over surfaces of left lung posteriorly; over surface of right lung anteriorly. No fluid.

Pericardial cavity. — Serosa smooth, glistening throughout. Cavity contains about 25 ccm. of clear, dark yellow serous fluid.

Heart: weight, 245 gm. Pericardium smooth. Myocardium dull red, flabby; on section shows vaguely marked areas of opaque yellowish gray color; appears loose in texture. Endocardium shows yellowish discoloration. Coronary arteries not sclerosed. Valves negative.

Scharlach R. shows throughout the entire section the muscle fibers crowded with small fat droplets; large flat cells occur in the fibrous trabeculæ.

Lungs, right: middle lobe pinkish, crepitant; on section dry. Upper and lower lobes show slightly marked congestion and edema. Throughout both these lobes there are numerous scattered areas of hemorrhage averaging 0.5–1 cm. in diameter, which are most numerous in dependent portions. Anterior surfaces show tags of fibrous adhesions.

Left: Upper and lower lobes reddish in color, crepitant. Tags of fibrous adhesions posteriorly. On section, color bright red, surfaces are moist and show multiple hemorrhagic areas, especially posteriorly and inferiorly. There is no evidence of pus formation.

Spleen: weight, 100 gm. Capsule lax; on section, cut surfaces dull red in color, mottled with clearly defined grayish areas averaging 1 mm. in diameter. Trabeculæ distinct. Little pulp on scraping.

Gastro-intestinal tract. — Stomach shows adherent to mucosa a few small scattered, reddish-black masses appearing like old blood clots. Mucosa not perceptibly congested. The jejunum is empty except for a considerable quantity of reddish-black mucoid material with slight fecal odor. This material shows, microscopically, the presence of red blood cells in considerable quantity. Similar material is found in the cecal region. No bleeding points found.

Pancreas. — Organ is softened in consistence. Cut surfaces moist and of edematous, semi-translucent appearance. Color dull grayish white. The spaces between the groups of gland acini are hemorrhagic.

Scharlach R., shows large fat droplets in the inter- and intra-acinar connective tissue. The parenchymal cells show a slight fatty change.

Liver: weight, 960 gm. On opening the abdominal cavity, liver appears to have fallen back from its normal position on to the posterior wall. It appears small; the anterior and superior surfaces of the right lobe are bound by a few old fibrous adhesions. Organ is soft in consistence, the capsule lax. The left lobe is of a peculiar ochre yellow color, dotted with dark-red points. Markings not distinct. The right lobe is mottled dark red to ochre yellow. On section, the left lobe shows same peculiar coloration as on external surface. Right lobe shows irregular areas of ochre yellow alternating with areas dark red in color. Dark red points are scattered thickly over cut surfaces. Normal markings cannot be made out. Gall bladder of normal size, contains a rounded olive-shaped calculus of "mulberry" appearance, 2.3 x 1.7 cm. It is filled with a clear viscous yellowish fluid containing a slight amount of whitish flocculent material. Cystic duct and common bile duct are patulous throughout, papilla of Vater appears normal. There is no evidence of cholecystitis.

Microscopic examination of the liver. — The case examined with the low power shows areas which correspond more or less well with the second case. In this there are areas of hemorrhage in the centers of many of the lobules. In places, chiefly in the centers of the lobules, a disappearance of the liver tissue with the collection in these areas of endothelial cells. The liver cells are more extensively preserved. They are all of them intensely fatty, the fat being in very small granules. Certain of these fatty cells have lost their nuclei and appear to be necrotic. There are few polynuclear leucocytes, though more than in the preceding case. In some of the cell areas along with the large epithelioid there are cells chiefly of a plasma character belonging to the lymphoid series. No distinct cell phagocytosis is seen.

In this case also there is an extensive rapid destruction of liver cells with the same process of softening and disappearance as in the preceding case. The necrosis of the cells seems to have been preceded by an enormous formation of fat within them. In this case also the difference between this character of necrosis with liquefaction and the ordinary focal necrosis is striking. In neither of the cases is the necrosis focal. It is general and distributed all over the tissue with very slight difference in degree. In no place in this specimen have the liver cells totally disappeared.

Kidneys: weight, 210 gm. Organs are softened in consistency, stellate veins injected. In section, cortex 0.6 cm. in width; capsule very slightly adherent. The cortex and medullary rays are of an opaque light-yellow color; Malpighian corpuscles appear usually as fine red points, exceptionally as larger opaque yellowish gray granules. Extending into cortical region from the bases of the pyramid are radiating lines of translucent grayish appearance. Line of demarcation between cortex and pyramids is very distinct, the pyramids being dark red in color, their vessel prominent as dark red lines. Whole kidney appears engorged with blood.

Scharlach R. shows large and small fat droplets in the epithelial cells of all the urinary tubules throughout their entire extent. The glomeruli show an occasional fine droplet.

Adrenals. — Both adrenals show marked injection of their vessels and appear slightly enlarged.

Bladder. — Mucosa is slightly bile tinged. Otherwise nothing remarkable.

Genital organs. — Tubes and ovaries appear normal. The uterus shows a rounded mass in the muscular wall of the upper fundus region which is grayish white in color, firm, cutting with considerable resistance. The endometrium of fundus region is dark red, slightly thickened. Adherent to it is a long chicken fat clot 0.5 cm. in diameter, extending to the internal os.

Aorta. — The lumbar portion of the vessel shows a few scattered pinpoint areas of slightly elevated, dull grayish appearance, a similar area larger in size, about the orifice of the celiac axis.

Head, not opened.

Case IV. M. McC., age twenty-four, single, housemaid, was admitted April 11, 1908, to the First Medical service of the Boston City Hospital in charge of the writer. The patient was comatose at entrance and the following history was obtained from her physicians, Dr. Merrick and Dr. McLaughlin, of Dorchester.

Previous history. — Her family was a healthy one. She remembered no previous illness. Her mental development was poor. She was considered feebleminded, but was able to do simple routine work as a laundress. Thorough physical examination seven months ago on admission to an institution gave a normal result.

Six months ago she was delivered of a five months, anencephalic child. Her convalescence was normal; no history of syphilis was obtained and no evidence of this disease was found in mother or child. She had never had a previous attack of jaundice.

Present illness. — Nine days before admission to the hospital her digestion was slightly disturbed and mild jaundice appeared. There was no abdominal pain. She had anorexia, vomited a few times and was somewhat weak and depressed. Physical examination on the third day showed nothing but the mild jaundice. The patient was given laxatives and a light diet and advised to keep quiet, and her illness was considered simple catarrhal jaundice. She did not take to her bed till the sixth day of the illness. There was some early variation in the depth of the jaundice, but from this time it increased rapidly and progressively. On the seventh day the patient was quite weak and on the eighth day mildly delirious. A few hemorrhagic papules appeared on the forehead, but there were no other signs of bleeding. There was no fever; the pulse was 96.

The possibility of acute liver atrophy was considered at this time and a careful examination of the hepatic area was made by the above named physicians. The upper border of liver dullness was found in the fifth right interspace and the lower border at the costal margin and the edge was just felt on deep inspiration; nothing abnormal was felt in the gall bladder region. The abdomen was soft and there was no abnormal tenderness. On the ninth day (the day of entrance to the hospital) she became comatose.

Physical examination on the tenth day showed a slender, fairly nourished woman in deep coma with the skin and conjunctivæ colored deep yellow; the pupils were equal and reacted well; the knee jerks were lively; no Babinski or Kernig signs were obtained. The lips were crusted and the teeth covered with blood-stained mucus. The pulse was 90, of good volume and tension. The throat was negative, the tongue not protruded; the glands were not enlarged; the neck was not tender. There was occasional tonic spasm of the muscles of the extremities and neck. The heart was normal in size, the first sound was sharp with a suggestion of a presystolic roll and thrill at the apex. The lungs were clear. The abdomen was lax, soft, slightly tympanitic and not tender. The spleen was not felt. There was no ascites or edema of extremities.

The area of liver dullness was much diminished. The upper border was in the normal position in the fifth right interspace in the nipple line. The lower border ran approximately parallel to the right costal margin, *6 or 7 cm. above it,* and the liver dullness was thus reduced to a thin wedge running across the lower front of the right chest, tapering from 6 cm. in width in the anterior axillary line to 2 cm. in width in the midsternal line.

The *blood* on the tenth day was: hemoglobin, 75%; red cells, 6,100,000; white cells, 9,000. In a stained specimen the red cells showed slight achromia and little change in size or shape. There were no blasts. A differential count of the white cells showed: polynuclear leucocytes, 80%; lymphocytes, 12%; large mononuclear, 8%.

The *urine* was collected on the tenth day for twenty-four hours by means of catheterization every four hours, and showed the following characters:

Amount 400 ccm., color dark yellow; specific gravity 1,022. Reaction, strongly acid; albumin, a slight trace; sugar absent; bile pigment present in large amount; albumose and peptone present.

The sediment was deeply bile stained and contained many granular and epithelial casts; many renal cells, some fatty; considerable free fat, vaginal cells; no blood.

Leucin, much present; tyrosin, much present.

The examination of the urine for leucin and tyrosin was made by the B. napthalin sulphochlorid method.

Quantitative analyses were made showing the total nitrogen excretion in the urine and the proportion excreted as urea and ammonia (using the Kjeldahl and Folin methods). The following results were obtained: Total nitrogen excreted 4.575 gm. and of this 44.8%, or 2.05 gm., was excreted as urea; 12.6%, or 0.515 gm., as ammonia; 2.2%, or 0.101 gm., as uric acid; 7.8%, or 0.359 gm., as creatinine; 32.6%, or 1.57 gm., as residue.

The patient remained in deep coma, taking almost no food, not more than a few teaspoons of milk every hour. There was no further vomiting, or any external bleeding. Occasional tonic spasm of the muscles occurred, but no convulsions. On the day before death the temperature rose to 100.6° and the pulse to 125. The pulse gradually failed in strength and the patient died on the morning of the eleventh day of her illness, the eleventh day after the appearance of the jaundice and the third day after the appearance of the severe cerebral symptoms.

The autopsy was performed three hours post-mortem, by Drs. Mallory and Rhea of the Boston City Hospital.

ANATOMICAL DIAGNOSIS.

Acute yellow atrophy of the liver; icterus (general); bronchopneumonia (right lower); fatty degeneration of kidney; subperitoneal hemorrhages (multiple); subpleural hemorrhages (visceral and parietal) (multiple); subpericardial hemorrhages (multiple); congestion and edema of lungs (lower lobe posteriorly); laceration of cervix (bilateral); corpus hemorrhagicum; acne (back), icterus of dura.

Age, twenty-four years. Body, length, 149 cm.

Body is that of a fairly well developed and fairly well nourished white female. Body, length 149 cm. Rigor mortis is present. There is some lividity of the dependent parts, most marked throughout the lower back. Pupils are 5 mm. and equal. There is no edema. The skin is everywhere dry and is of a very deep yellowish color. This yellowish discoloration is least marked on the hands and the feet, especially on the palmar surfaces of the hands. The conjunctivæ are very deep yellow. Over both cheeks and eyelids are numerous discrete and confluent, light brownish areas which vary from 2 mm. to 6 mm. in diameter. The hair of the eyebrows is very soft and silky. Over the upper part of the back are several discrete, slightly elevated, dark brownish red areas which stand up slightly above the surrounding skin. The centers of some of these areas show small pustules. The external orifices are normal. The abdominal fat measures 3 cm. in thickness. It is firm and of a very bright yellow color.

Peritoneal cavity. — The peritoneum is for the most part smooth and glistening throughout. The underlying tissues are of a light yellow color. The ileocecal fossa is very distinct and measures 2 cm. in depth. The distal 2 cm. of the vermiform appendix rests in this fossa, entering it behind the fold of the peritoneum which forms the right border of the ileocecal fossa. The appendix measures 5 cm. in length, is free from adhesions and has a mesentery to within 6 mm. of its tip. Both iliac fossæ show numerous small, discrete, sharply outlined, oval and round, deep red areas which shine through the peritoneum. Beneath the peritoneum, covering the mesentery and the retroperitoneal tissues, are numerous discrete, round and oval, bright red areas. Similar areas are seen beneath the peritoneum covering the mesentery of the ascending and transverse colons. The mesenteric lymph nodes are not increased in size or consistence. On section they are pale. Diaphragm, left fifth rib, right fifth space.

Pleural cavities. — They are free from adhesions. The surfaces are generally smooth and glistening. Beneath the pleura covering the diaphragm on each side are several small, discrete, dark red areas, similar to those seen beneath the peritoneum.

Pericardial cavity. — The pericardial fluid is normal in amount and shows marked yellowish discoloration.

Heart. — Weight 180 gm. The width of the right auricle at its mid-portion is 12 cm. The depth of the right ventricle is 6 cm. The width of the left auricle at its central portion is 11 cm. The depth of the left ventricle is 7 cm. Just beneath the pericardium covering the left ventricle, most marked in the areas where the pericardial fat is in greatest abundance, are several discrete, round and oval, dark red areas, similar to those seen beneath the pleura and beneath the peritoneum. The myocardium is firm and of a uniform slightly yellowish color. This yellowish discoloration is most marked in the immediate vicinity of the larger blood vessels. The endocardium is smooth and glistening throughout. In none of the heart cavities is there any clotted blood except a very small amount between the trabeculæ in the region of the tip of the left ventricle. There is a moderate amount of fluid blood in both ventricles.

Measurements: tricuspid valve, 9 cm.; pulmonary valve, 6 cm.; mitral valve, 8.5 cm.; aortic valve, 5.5 cm.

Lungs. — Left: Just beneath the pleura in the region of the apex, both anteriorly and laterally, are numerous small, discrete, deeply injected areas which are irregularly oval to round in shape. These areas extend a very short distance into the underlying lung substance. On section the upper lobe is generally of a light salmon pink color. In its lower anterior portion there are several discrete and confluent, dark red areas which vary from 2 mm. to 3 cm. in diameter. In these areas the lung is less crepitant than elsewhere. On pressure a very dark blood-stained fluid escapes from them. The remainder of the lung is of a light salmon pink color except in the lower posterior portion of the lower lobe, which is generally a dark red in color, and from its cut surface a considerable amount of blood-stained fluid escapes.

Right: In the anterior lower central portion of the lower lobe there is a slightly elevated, sharply outlined, firm area 4 cm. in diameter. On section this stands up somewhat above the surrounding lung tissue, and on pressure numerous pinpoint, light grayish drops of fluid exude. The remainder of the lung is crepitant, slightly less so in the posterior portion, where the lung substance generally is of a dark red color, and a considerable amount of blood-stained fluid escapes. The upper lobe is light salmon pink in color. It is crepitant throughout.

Spleen. — Weight 110 gm. The surface is smooth. On section the pulp is light brownish red in color and of normal consistence. The Malpighian bodies are distinctly visible as small, grayish points. The vessels and trabeculæ are just visible.

Gastro-intestinal tract.— The stomach contains a small amount of undigested liquid food. Its mucous membrane is normal. The small intestine contains thin, bile-stained fecal material. Its mucous membrane is normal. The large intestine contains in its upper portion a small amount of thin bile-stained fluid; in its lower portion a moderate amount of firm, dark brown, fecal material. The mucous membrane of the intestinal tract generally is distinctly discolored yellow.

Pancreas. — Normal.

Liver. — Weight 595 gm. Upon opening the abdominal cavity there is no part of the liver visible, it being situated entirely behind the ribs. At the central portion of the right lobe the lower margin of the liver reaches to within 5 cm. of the costal margin. When the liver is removed there is quite a marked tendency for the organ to collapse. Save at the extreme tip, the left lobe can be easily rolled up like a scroll. When rested upon the right lobe with the left lobe pointed upward, this latter portion tends to collapse over the right lobe. Generally the external surface of the liver is light brownish in color and its capsule is thrown into very delicate folds, though there are certain firm areas which are elevated, sharply demarcated from the surrounding liver substance, of deep yellowish color and consist of discrete and confluent areas. The largest is situated at the extreme tip of the left lobe. This area is 5.5 cm. long and 6 cm. broad at its base. Its extreme tip consists of a diffluent area. This diffluent area extends to the right along the course of the upper lobe for 2.5 cm. The remaining 3 cm. of the elevated area at the tip of the left lobe is made up of discrete, elevated, yellowish nodules between which the liver substance is slightly depressed and of a light yellowish red color. There is a discrete, firm, elevated area in the dome of the left lobe. This area measures 4.5 cm. by 6 cm. In general it is similar to the area described above in the extreme tip of the left lobe. Elsewhere throughout the surface there are small, discrete, elevated, firm yellowish areas. On section the liver shows the following picture: The two large elevated areas described above, the one situated in the extreme tip of the right lobe and the other in the central portion of the dome of the right lobe, extend down entirely through the liver substance and are quite sharply demarkated from the surrounding parenchyma. They are made up of large confluent and small discrete, distinctly elevated, firm, yellowish areas, the former in their central portion, the latter about their periphery. They are much firmer than the surrounding liver substance and are quite friable. The remainder of the liver is flabby, and on section is generally very light brown in color with small, narrow, band-like, pale areas, which interlace, dividing the liver into distinct lobular-like areas. While the elevated yellowish areas are generally confined to the two larger areas described above, there are a few small areas of similar character throughout the remainder of the liver substance. The gall bladder and its ducts are opened *in situ.* The gall bladder contains a small amount of thin, yellowish bile. The bile ducts are patent. The ampulla of Vater is normal. Bile escapes into the duodenum upon pressure of the common bile duct, or the gall bladder.

Kidneys. — Weight 260 gm. On section the cortex is of a pale, distinctly yellowish color and is very sharply demarcated from the pyramids, which are a light brownish red in color. The blood vessels in the cortex and pyramids are slightly injected. Malpighian bodies are distinctly visible as small glistening points.

Adrenals. — Normal.

Bladder. — Is contracted. It contains a small amount of dark-colored urine. The mucous membrane of the bladder is deeply bile stained.

Genital organs. — The cervix is smooth and glistening. Its mucous membrane is light yellowish in color. The cervix shows a transverse, bilateral tear. The uterus measures 7.5 cm. long and 1.5 cm. broad at the external os, 1 cm. broad at the internal os and 4 cm. broad at the fundus, between the cornu. The left ovary is normal. The right ovary is slightly increased in size and contains a sharply demarcated, very dark red area 8 mm. in diameter.

Aorta. — It is generally of a deep yellowish color. At the bifurcation it is 2.5 cm. in diameter; at its mid-portion 3.5 cm.; at the lower portion of the descending arch 4 cm. in width. In its lower third it shows a few linear, slightly elevated, slightly yellowish patches.

Organs of neck. — Normal.

Bone marrow. — The bone marrow of the femur is soft, made up of dark red, granular areas embedded in fat. The ribs show a rather small amount of bone marrow. The bony framework of the medulla of the ribs is rather prominent. The bone marrow of the vertebra is light red in color.

Spinal cord. — The subdural fat is distinctly bile stained. The dura is not adherent. On section the markings of the cord are distinct. There are no gross pathological lesions demonstrable.

Head: weight, brain 1,270 gm. Head is covered by a thick growth of long brown hair. The calvarium is negative. The dura shows a decided light orange color and is moderately adherent to the calvarium. On section the brain is apparently normal.

Middle ears. — Normal.

Microscopic Examination.— The heart shows slight fatty degeneration. The spleen, pancreas, adrenal, gastro-intestinal tract and central nervous system are practically normal. The kidney shows very extreme fatty degeneration of tubules of all types. The glomeruli show no changes.

Liver. — Sections were taken from numerous regions. All show very marked degeneration; those from the firmer, yellow, elevated areas, noted at autopsy, show less marked changes. The general picture in the section from the more normal regions shows large and small islands of liver cells widely separated by a tissue containing only blood spaces and cells of inflammatory origin. The large groups of liver cells, in some instances, show a lobular arrangement. The smaller groups show no trace of normal structure. All of the liver cells show marked changes. There is an increase in size with marked vacuolation, and at the periphery of the groups the vacuolation is extreme and the shapes assumed are irregular and often grotesque. The bile capillaries are prominent and filled either with a densely stained eosin material, or inspissated bile. In the surrounding tissue no trace of liver cells is to be found. There are many large, mononuclear cells, some of which are pigmented yellow, while others are phagocytic, and numerous cells of the lymphoid series. These cells lie in spaces between injected blood spaces which evidently correspond to the sinusoids of the liver.

In the regions of most marked destruction of the liver tissue, there are only a few small groups of cells recognizable as liver cells. There remain only marked injected blood spaces, probably corresponding to the sinusoids. Between the blood spaces there are many pigmented and phagocytic mononuclear cells. In places there seems to be an increase of connective tissue, but this is not confirmed by the connective tissue stain. Within small groups of liver cells there are numerous polymorphonuclear leucocytes. None of the liver cells show the dense hyaline change of the protoplasm seen in other forms of degeneration. Everywhere throughout these portions of the liver, there are many branching bile ducts, in which many evidences of direct nuclear division can be found. Mitoses were not found in the liver cells, though some cells have a denser basic staining, compact protoplasm like that of cells found in regenerating liver tissue. No definite hemorrhages are present. The Scharlach R. stain for fat shows that the vacuolated liver cells contain fat.

This case presents the same general conditions which have been described in the preceding cases. The stage of the process is earlier than that of the first case and probably later than either the second or third case, as regeneration is taking place, at least from the bile ducts.

CHEMICAL EXAMINATION.—The following tissues were sent to Dr. Carl L. Alsberg, of the Harvard Medical School, for chemical examination: Heart, heart's blood, lung, spleen, liver, kidney, adrenal, intestinal contents. A part of the results of chemical analysis of the liver are given. The other analyses were not completed in time to be included in this paper. They will be reported later.

The liver was examined chemically to determine the distribution of nitrogen according to the method of Hauseman. Osborne's modification. (*Journal of the American Chemical Society,* 1903, xxv, 323.) The analyses were made in duplicate. The per cent of the different forms of nitrogen is as follows (the nitrogen under the fifth heading does not come under the heading of monamino, diamino or amid nitrogen. Osborne simply reports it as nitrogen in the Mg O_2H_2 precipitate):

Liver analysis. — Total nitrogen, 2.66%; amid nitrogen, 0.18%; monamino nitrogen, 1.62%; diamino nitrogen, 0.55%; nitrogen in the precipitate obtained by digestion with acid and addition of excess of Mg O_2H_2, 0.31%.

The diamino nitrogen in this case is not so low as is sometimes found in cases of autolysis.

CLINICAL SUMMARY OF THESE FOUR CASES.

Occurrence. — Two of our patients were men and two women. The disease is, however, almost twice as common in women as in men, the usual proportion of incidence being 8 women to 5 men. (Quincke.) The patients were of an age (twenty-three, twenty-four, thirty-two, thirty-six) when the disease most commonly appears. All four of our cases developed in the winter time, but season is not considered an important factor.

Etiology. — The preliminary stages were like simple catarrhal or other benign jaundice. Minkowsky has expressed the opinion that the difference between simple benign jaundice and the rapidly fatal type is simply one of degree of intensity of action of the same or similar factors upon the same tissue, and that no sharp distinction can be drawn. Every jaundice, no matter what its cause, may lead to hepatic insufficiency and end in acute atrophy, and the tendency to the severe form of the disease depends on the lack of resistance of the organism as well as upon the intensity of the effect of the poison.

It is, however, fair to suppose that the sudden outburst of severe symptoms is not a sign of the entrance of some new causal factor into a simple case; but in reality the chemical changes which produce these symptoms have been preparing for some time, as in uremia and diabetic coma, and the illness has been actually grave from the start.

Certain infections, especially syphilis, play a part in etiology. One of our patients was in the second stage of syphilis when the acute atrophy occurred. This is fairly common. Senator has collected 20 such cases. The question has been raised whether the syphilitic poison or the mercury used in its treatment was the cause of the liver necrosis.

There is no definite evidence in our cases of the development of poisons from ordinary food or of the eating of poisonous substances, such as mushrooms, or of acute alcoholism. A careful analysis of the intestinal contents and liver of two of our cases showed that phosphorus was absent.

The direct importance of bacteria in this disease is very doubtful. Cultures in our cases were either sterile or apparently without significance as is usually the case.

The disease in our patients appeared in otherwise healthy livers, as usually happens, though it may be superimposed on other liver disease, such as cirrhosis, bile stasis and fatty degeneration.

The question of etiology will be more fully discussed under the heading, "Nature of the Disease."

Pathological anatomy. — The liver in all the cases showed a characteristic reduction to one half or almost one third the normal size and weight. The normal weight of the liver is 1,500 to 1,800 gm. In our cases it was 730, 600, 960 and 595 gm. respectively. It was flaccid, flattened, folded, and dropped backward unless held by adhesions as in the third case. The cut surface was yellowish red or yellow, mottled with or alternating with large or small red areas. The markings were usually indistinct. The yellow color is not due to fatty degeneration, for this is not the chief change, and in fact fat may be almost entirely absent. Taylor found in a liver which he examined that there was no increase of fat over the normal amount. The chemical analysis of the liver in our second case showed that the amount of fat and lipoids was very much less than normal. The yellow color is due chiefly if not wholly to bilirubin.'

The condition is one of intense destruction of the liver tissue different in character from the ordinary necrosis of liver cells. The cells seem to soften and disappear almost entirely by solution, leaving behind connective tissue enclosing endothelial cells and a more or less granular material. The cell masses lose their outline, and have not the sharp acidophilic character nor the refraction of ordinary necrotic liver cells.

In none of the cases was the necrosis focal. It was general and distributed all over the tissue with very slight differences in degree. In the third case the necrosis of the cells seems to have been preceded by an enormous formation of fat within them. Fat was almost entirely absent in the other cases.

The first case differed from the others in the fact that it was of somewhat longer duration, fifteen days instead of seven or eleven, and the destructive process was not so extensive and had almost or entirely ceased. The dominant feature was a regeneration to replace the destruction of liver cells. The regeneration of liver tissue was taking place in two ways. In one way by the direct formation of liver cells from other liver cells by division of nuclei, in the other by a process similar to that of embryonic liver formation by the development of undifferentiated epithelial tissue similar in character to the bile ducts and from which the future liver cells develop. The enormous number of epithelial cells which were present were assisting in the process of repair, these cells being phagocytic and engaged in the removal of necrotic and broken down tissue. The presence of bile in the capillaries might be taken as an indication of the very great activity of the remaining liver cells.

This case is especially interesting from its relation to other diseases of the liver. It forms a transition stage in acute and subacute forms of hepatic cirrhosis. Had the destruction of liver tissue not been so profound this case might have developed into some one of the peculiar forms of cirrhosis with atypical lobulation.

In the fourth case also regeneration of liver tissue was in progress to replace destroyed liver cells. The stage of the process is earlier than in the first case, probably because the process of repair of the liver was cut short by the death of the patient at an earlier time (in eleven days instead of fifteen days). The regeneration of liver cells was taking place as in the first case from the epithelium of the bile ducts.

In the two cases (No. 2 and No. 3) which did not survive beyond one week, no evidence of any attempt at regeneration of liver tissue was found.

The four cases of acute yellow atrophy taken as a whole show a pathological process which consists in a peculiar autolytic destruction of liver tissue. There is an absence of leucocytosis; either the toxin or the necrosed tissue repels the polynuclear leucocytes. Their place is taken by enormous numbers of endothelial phagocytic cells which are probably formed locally. With the cessation of the process of destruction there takes place a rapid regeneration which comes both directly and indirectly. The hemorrhage, so prominent in the second case, seems to have rather the character of a secondary process; it is unusual, and does not form an essential element in the condition. Whether the blood undergoes autolysis at the same time with the liver tissue is uncertain.

The changes in the heart and kidney were those usually found, namely, fatty infiltration and granular degeneration of the epithelium of the kidney and of the heart muscle.

The spleen was soft but not enlarged, as is the rule; in fact the spleen in our three cases was rather small. The normal weight is from 130 to 250 gm. and in our four cases was 100, 165, 100 and 110 gm. respectively.

Ecchymoses were found in or under the serous or mucous membranes in all four cases. In the liver in one case, bowel in two cases, stomach in two cases, mesentery in two cases, uterus in one case, lung in two cases, heart in one case.

Nature of symptoms. — The course of the disease in these patients may be divided into a prodromal stage of six to twelve days, and a short and severe second stage, beginning with the onset of cerebral symptoms and lasting one to three days; the total duration of the illness was fifteen days in one case, eleven days in another and seven days in two others.

In the prodromal stage nothing characteristic appears. All the cases were considered simple catarrhal jaundice by the attending physician until the cerebral symptoms occurred. In all the cases there was severe headache and early gastric symptoms. Early hemorrhages from the stomach and uterus occurred in one case. This is unusual in time. Hemorrhages occur in over one half of the reported cases but are usually limited to the last two or three days of the disease.

Jaundice was a fairly early symptom in all these cases, appearing one to four days after the first symptoms of digestive disturbance.

The stools were clay-colored and fatty in three of the cases, and in the third dark through the presence of blood.

Enlargement of the liver was noted clearly in the first and fourth cases where the patients were under observation previous to and during the whole illness. The other two cases came under observation when the liver was already atrophic.

The second stage was ushered in by cerebral symptoms, mental confusion, irrationality, drowsiness, beginning coma, and progressed rapidly to active delirium and finally deep coma. Severe convulsive seizures occurred in two of our cases. They have been present in about one third of the reported cases in adults. Constipation was marked and nausea and vomiting frequent. The jaundice became very pronounced from deep yellow to bronze or orange color.

The spleen was not enlarged in any of our cases. In about two thirds of the reported cases splenic enlargement was found.

Hemorrhage is a prominent symptom. Hematemesis in small amounts is the most frequent form and occurred in all the patients but one. Hemorrhages into the skin, the next most frequent form, was found in only one of our cases. Hemorrhage from the bowel occurred once and uterine hemorrhage once. One case had bloody sputum.

No fever occurred except an ante-mortem rise in the last twelve hours in the first and fourth cases. No especial slowing of the pulse was noted in the first stage. As the patients became weaker the pulse grew rapid and weak also.

The examination of the blood was interesting. The hemoglobin was moderately reduced, 60% to 80%, and the white corpuscles moderately increased, 9,000, 12,600, 11,600 and 16,000. The most striking feature was the increase in the number of red cells, 6,640,000, 5,120,000, 6,720,000 and 6,150,000, respectively. This is a striking condition in a disease accompanied by hemorrhages. The same condition is seen in phosphorus poisoning. It apparently is not due to simple concentration of the blood through vomiting of liquid, as the count was highest in the case in which the least vomiting occurred. If it were due to persistent starvation of fluids we should expect to find it more frequently in similar delirious patients.

The most striking feature of the physical examination was the rapid and almost complete disappearance of the liver dullness in the last few days of the illness, due to the softening, folding and dropping backward of the atrophic liver. All that remained in three of these cases was a small area of dullness, 2 to 3 in. in diameter in the right axilla and in the fourth a narrow strip, one or two inches wide, running across the lower right chest. In the first and fourth where the whole course of illness could be followed, the contrast and change from a slightly enlarged and easily palpable liver to the condition of extreme atrophy was especially striking. Hepatic tenderness which, according to Reiss, persists even in coma, was conspicuous by its absence.

No enlargement of the spleen was found. This is unusual.

The only skin eruption was a few hemorrhagic papules appearing in the second stage in the fourth case and there was no apparent change in cutaneous sensation.

The general nutrition was only moderately affected. This is unquestionably due to the short duration of the illness.

The urine in all the patients was decreased and contained bile pigments, also small amounts of albumin and a considerable variety of casts and fatty epithelium. The most interesting changes were those which resulted from the hepatic insufficiency and perversions of metabolism, and were indicated by the change in the excretion of urea, the relative diminution of urea and increase of ammonia, and the appearance in the urine of other bodies not normally present, such as leucin, tyrosin and albumose.

It might be expected that the excretion of nitrogen would be increased by the rapid destruction of liver tissue, and it would have been very interesting to have determined this matter by an accurate observation of the ingestion and excretion of nitrogen for several days in succession. An accurate metabolism experiment was practically impossible from the nature of the illness, associated with delirium, frequent vomiting and involuntary discharges. In three of the cases, however, the change in the character of the nitrogen compounds found in the twenty-four-hour urine (collected by repeated catheterization) was definitely determined and was very characteristic.

The total nitrogen excretion in cases I and II, 7.4 and 9.8 gm. respectively, was apparently somewhat high on practically a starvation diet with vomiting and poor absorption of food.

In all the cases the excretion of urea was relatively much diminished, and the excretion of ammonia and other nitrogenous substances (classed as residue) was relatively greatly increased as a result of high-grade liver insufficiency and other changes in metabolism. This is shown in the following table:

	Urine amount ccm.	Total nitrogen (gm. per cent).	Urea nitrogen (gm. per cent).	NH_3 nitrogen (gm, per cent.)	Total nitrogen.	Urea, nitrogen.	NH_3 nitrogen.	Uric acid nitrogen.	Residue nitrogen.
Case I,	960	7.40	4.64	1.61	100%	62%	22.9%	1.6%	13.5%
Case II,	780	9.87	4.32	2.48	100%	44%	25.%		31.0%
Case III,					100%*	69.2%	17.%		13.8%
Case IV,	400	4.575	2.05	0.515	100%	44.8%	12.6%	2.2%	32.6%
Normal,	1,500				100%	84–87%	2–5%	1–3%	7–10%

* The percentages in this case are based upon a sample including almost the whole twenty-four-hour amount of urine; the total amount could not be collected.

These changes in the urine show considerable variation in the four cases. This is undoubtedly to be explained by the different degrees of damage to the liver.

In two cases the urine was tested for leucin and tyrosin only by examination of the crystalline sediment after evaporation to 1-10 volume and precipitation with alcohol. Leucin and tyrosin were both present in one case and both absent in the other. In two cases the urine was tested by the much more accurate B-napthalin-sulphochlorid method, and leucin and tyrosin were both present in each case. The excretion of these substances does not measure the amount formed. Both are difficultly soluble and much may be left in the liver.

Albumose was present in two cases.

The purin bases (Salkowski method) were determined quantitatively in the first and fourth cases and were not found increased as they often are from increased nuclear destruction, or lack of decomposition of uric acid.

Prognosis. — The disease is a very fatal one, and the outlook is worse the earlier the cerebral symptoms appear. The prognosis in the individual case depends upon the degree of disturbance of the central nervous system. Rapid decrease in liver area, and leucin and tyrosin in the urine usually precede death by only a few days. The presence of hemorrhages is a very unfavorable sign. The state of the kidneys is very important in prognosis. Free diuresis is very necessary to avoid an accumulation of toxic products of metabolism. The grave symptoms of the second stage usually appear simultaneously with a marked reduction in the amount of urine and a great decrease in the nitrogen excretion, which must be considered a sign of retention of poisonous substances in the body.

The possibility of recovery from this disease cannot at present be denied. There is no reason why the injury to the liver should not stop before the liver tissue has been completely destroyed, and when the process of destruction stops rapid regeneration occurs. This regeneration may conceivably go on till more or less complete restoration of liver function and general health is reached.

Our first case showed an extensive process of regeneration of liver tissue and the fourth case a considerable degree of regeneration. The amount of regeneration of liver tissue bears a close relation to the rapidity and violence of the toxemia in our four cases. The longer the patient survived his toxemia, the greater the liver regeneration; in the first case, fifteen days' illness, extensive regeneration; in the fourth case, eleven days' illness, moderate regeneration; in the second and third cases, seven days' illness, no regeneration of liver tissue. Other fatal cases in the literature have shown these same regenerative changes, and a considerable number of cases of recovery, now between 20 and 30, have been collected and reported by Wirsung, Senator, von Jaksch, Albu and others.

Diagnosis.— Early diagnosis from a practical clinical standpoint seems almost impossible. Simple benign jaundice is so common and acute atrophy of the liver so rare, that to subject every simple case to elaborate quantitative analyses to determine whether or not it seemed likely to develop acute atrophy of the liver, would be an enormous labor which would bear little fruit.

From a practical standpoint the nervous symptoms were the first guide to the diagnosis. Any unusual disturbances of the general nervous system appearing in acute jaundice should rouse our suspicions of this serious disease. The correct diagnosis was not made, or even suspected, in any of our cases, until the appearance of the second stage.

The decrease in the area of liver dullness which was so striking and characteristic in all the cases did not appear in the two cases which were under continuous observation till the second stage of the disease within two or three days, at most, before death. Even the presence of adhesions in the third case between the upper surface of the liver and the diaphragm did not prevent the reduction in the area of dullness, though under some circumstances they do obscure the evidence of decrease in size.

The presence of leucin and tyrosin in the urine formerly was considered pathognomonic of the disease. We know now, however, that they may occur in the urine in any condition in which there is much destruction of tissue in the body, but in no other condition in so large amount as is present in acute liver atrophy. They have a certain value in diagnosis, but this has been greatly exaggerated, in my opinion, and is in reality very small from a practical point of view. Their appearance is usually late in the disease, not before the second stage.

The simple methods of detection are unreliable and the accurate methods elaborate and long. If an accurate test is made in the second stage of the disease, as it usually is, it can rarely be completed before the patient dies and has no part in the antemortem diagnosis. The simplest method of detection is examination of the urinary sediment after evaporation of the urine to 1-10 its volume and the addition of alcohol. This microscopical diagnosis by means of crystals is a rough and unreliable method and should always be confirmed by chemical tests. Tyrosin needles must not be confused with bilirubin or calcium phosphate crystals. Leucin spheres must be distinguished from urates. This is often difficult and it is wise to remove the urates by precipitation with lead acetate and remove the latter by hydrogen sulphide before examining the urine for crystals.

No simple chemical test had been devised at the time the earlier cases were studied, and the best present chemical methods of analysis for leucin and tyrosin are only qualitative and only moderately delicate; a decided disturbance of liver metabolism may occur without causing their appearance in amount sufficient for detection. The methods of analysis are much too elaborate for the clinician. They require the experience of an expert chemist and their description is outside the scope of this paper. They will be found in the textbooks on biological chemistry. One of the best ways of examination is by the B-napthalin-sulphochlorid method which was used in our later cases, Nos. 2 and 4.

Estimation of the relative amounts of the nitrogenous substances excreted in the urine, such as urea, ammonia and the residual nitrogen, is of much more value in diagnosis. When no peptones are present in the urine the residual nitrogen is made up chiefly of amino acids, such as alanin, cystin, etc., in addition to leucin and tyrosin. All these substances are intermediate products of nitrogenous metabolism, and the other amino acids have an equal significance with leucin and tyrosin in this disease. The exact quantitative estimation of this residual nitrogen, chiefly composed of amino acids, is a better way of measuring the disturbance of liver metabolism than a test for the presence of leucin and tyrosin by a rough and unreliable microscopic examination or by a merely qualitative method which is complicated, but not very delicate.

Even the disturbance of liver function, which we assume to be shown by the increased excretion of ammonia and a lessened excretion of urea in the urine, must be used with caution as a diagnostic sign on account of its variability and dependence on other factors, such as acidosis.

The actual character of the nitrogen excretion in these cases, as well as the presence or absence of leucin and tyrosin, were determined by analyses made *after the death of the patients* on urine previously collected, and while very interesting and important *they played no part in the ante-mortem diagnosis. This will usually be the case.*

In two cases the urine was tested for leucin and tyrosin only by examination of the crystalline sediment after evaporation to 1-10 volume and precipitation with alcohol. Leucin and tyrosin were both present in one case and both absent in the other. In two cases the urine was tested by the much more accurate B-napthalin-sulphochlorid method, and leucin and tyrosin were both present in each case.

The presence in the urine of oxy-acids derived from the amido acids, of lactic acid, of albumoses, and of purin bodies from the increased destruction of nuclei cannot be said to have any special diagnostic significance.

Severe cerebral symptoms appearing with jaundice have been termed *icterus gravis.* This condition may be present in quite a variety of pathological conditions, chiefly severe acute infections, such as pneumonia, sepsis, typhoid, malaria, peritonitis, etc. They can usually be excluded by the absence of fever, the intensity of the jaundice, the very small area of liver dullness, the urinary changes, and the absence of specific signs, such as changes in the lungs (pneumonia) or the blood (malaria, typhoid).

The diagnosis from acute phosphorus poisoning may be peculiarly difficult; fortunately it rarely has to be made in this country. The illness is of very short duration, the jaundice usually less marked, and the hemorrhages larger.

When the course of the illness is fairly typical, as it was in our four cases, any one having the clinical picture of the disease well in mind would have little difficulty in diagnosis when the second stage was reached. The diagnosis is much more likely to be missed because the disease is not considered on account of its rarity, rather than because it was carefully considered and then ruled out.

Treatment in our cases, and of the disease in general, is most discouraging and unsatisfactory. The results of treatment seem trifling and hopelessly ineffective in the face of so violent and fatal a malady. Something may possibly be expected of treatment in the prodromal stage which is practically that of catarrhal jaundice. Our first effort should be to remove any harmful material from the digestive tract by calomel or salines. Laxatives also stimulate peristalsis in the bile passages and help to empty them. Plenty of drinking water will help to dilute the bile and lessen its consistency, and the absorption of water from the bowels will help to dilute those substances which might damage the liver in their passage through it. Its value as a diuretic and means of washing out poisonous substances from the body is very important. More active diuretics, caffein, diuretin, are occasionally useful.

We also try to lessen the work of the diseased organ by an appropriate diet; limit fats and give them only in emulsion (milk); carbohydrates, the principal food, are given in easily digestible form.

In the second stage the same principle of removing poisonous substances, if possible, by the bowel and urine, holds good. Where the patient's condition will not permit abundant administration of water by stomach or bowel, subcutanous injections of salt solution must be used to restore sufficient diuresis. Otherwise, the treatment is symptomatic, sedatives, such as bromides for restlessness and delirium, ice pills, cocaine, etc., for vomiting, and stimulants for heart weakness.

NATURE OF THE DISEASE.

Acute yellow atrophy holds a peculiar position among diseases of the liver on account of the great speed and degree of change in the liver cells. We have the striking picture of a large solid organ rapidly decreasing in size by the self-digestion of its cells and the appearance in the urine and blood of products of proteid digestion (leucin, tyrosin, etc.). The course of the disease has raised so many interesting questions regarding the functions of the liver and metabolism in general and its anatomical relation to other diseases of the liver, that it has attracted much greater interest and been far more carefully studied than other diseases of equal rarity.

Recent work on autolysis, the self-digestion of body cells, by Salkowski, Taylor, Jacoby and others, has thrown much light on the process of liver atrophy. Salkowski has shown that any aseptically preserved organ can undergo autolysis or self-digestion by its own ferments, if kept at body temperature, and produces substances similar to those of ordinary intestinal digestion including leucin and tyrosin. Autolysis has been found to be important in many pathological conditions, such as the absorption of exudates and of aseptic necrosed tissue. The necrosis in this disease apparently differs from ordinary necrosis in the rapidity and completeness of absorption of the dead cells. It resembles somewhat the resolution of a pneumonia.

The rapid disappearance of over one half of a large solid organ like the liver within a few days strongly suggests a process of self-digestion of necrotic liver cells by their own ferments. This is explained by the supposition that the original poison causing the process has a very specific action on the liver cells and destroys their life without injuring the proteolytic ferments which they contain, and thus self-digestion occurs. This view that a cell may be killed and also be able to digest itself is borne out by the autolysis of tissue in infarctions. The autolysis and absorption in the liver would go on much more rapidly because the circulation is good and removes the products as fast as they are formed. On chemical analysis of the liver itself, in our second and fourth cases the distribution of nitrogen precipitable and nonprecipitable by phosphotungstic acid shows very clearly the presence of marked autolysis.

The poison must affect the other cells of the body to a much less degree than the liver, so that it is possible for the patient to survive the liver necrosis for a time, during which absorption goes on until there is finally so great a loss of liver tissue and functions that general toxemia results.

On the other hand, liver extirpation in animals by Nencki and Pawlow, Saleskin and Zaleski and others have shown that in certain cases, in spite of the absence of the liver, an abundant formation of urea occurs, and no appreciable change in the proportion of ammonia to the total nitrogen and urea. This same condition is found in some cases of acute liver atrophy, so that in certain cases of this disease, at least, we must attribute the toxemia to some other cause than lack of urea formation in the liver.

It must be admitted that the etiology of the disease is unknown. No specific poison has been identified, and it is apparently possible for many poisons to produce this effect upon the liver under certain circumstances,— phosphorus, mushrooms, arsenic or chloroform perhaps (Ballin's 9 cases), the poison of syphilis and of some other acute infectious diseases; any poison in short that does not cause death at once, and at the same time injures the liver cells without destroying their ferments and thus causes autolysis.

From the fact that this disease is usually ushered in by disturbances of the digestive canal, and that the liver is the organ chiefly damaged, it has long been thought that the poison frequently may come from the bowels, and is a ptomaine or toxalbumin or bacterial toxin resulting from abnormal intestinal putrefaction or fermentation.

It is natural that such a violent acute disease should be considered an infection, but the bacteriology of the disease is very uncertain, the results of different observers conflict, sterile cultures are often obtained, and, in general, no organism has been found frequently enough to deserve special consideration. A few cases (Babes, Ströbe and von Kahlden) have been reported of infection through the bile passages; this surely is an exceptional occurrence, the slight involvement of the bile ducts does not accord with an ascending infection or intoxication of this sort.

Quincke has advanced the theory that the changes of acute liver atrophy might be produced by a backing up of pancreatic juice into the liver and subsequent digestion of its cells as a result of obstruction to the common duodenal opening of the duct of these two glands.

This ingenious theory has many objections; only one or two cases have been reported in which any such obstruction was found. Opie has shown that the result of obstruction of the ampulla of Vater is not an escape of pancreatic juice into the liver, but the reverse, an escape of bile into the pancreas because the bile pressure is greater than the pancreatic juice pressure, which results in pancreatitis, fat necrosis, etc. Finally, Best's experiments of injecting trypsin into the liver by way of the bile ducts did not produce the typical changes of acute atrophy.

Now we turn to the chemical changes and symptoms which *result from* or *are associated with* the liver atrophy.

No change in the urine is more important than the diminished excretion of urea discovered by Frerichs, and the simultaneous appearance of leucin and tyrosin and other amino-acids, substances which are not normally found in cell metabolism or, if formed, are speedily changed into urea.

This lessened excretion of urea is almost invariably accompanied by a marked relative increase in the excretion of ammonia, a substance which is commonly regarded as a precursor of urea; and this double change is looked upon as a sign of liver insufficiency; hence the importance which is placed upon ammonia estimations in acute liver atrophy.

These facts are capable, however, of another interpretation. Increased *acid formation* may also increase the excretion of ammonia; and there is good evidence of this process in acute liver atrophy. Sarcolactic acid is present in large amounts in the urine, fatty acids are increased, and other abnormal acids such as oxymandelic and diacetic acids have been found.

Since the native alkali of the body is not sufficient to neutralize so much acid it apparently occurs in this disease, as in diabetes, that part of the NH_3 derived from proteid metabolism is diverted from its usual course and instead of contributing to the formation of urea is used to neutralize the pathological acids.

Münzer has shown that ammonia excretion in acute phosphorus poisoning is directly dependent on the acid formation in the body. He gave 6 gm. of sodium bicarbonate a day to a patient with acute phosphorus poisoning, with the result that the ammonia excretion fell rapidly. The fact that the increase of ammonia in this similar disease has been proved to be *for the purpose of neutralizing an acidosis* must show that it can no longer be regarded as a clear sign of hepatic insufficiency.

The recent ideas upon the source of the amino-acids, leucin and tyrosin, are interesting and important. It has long been believed that these substances appear in the urine because of liver insufficiency. They were supposed to be formed in the bowel as the result of normal intestinal digestion and also in the tissues, and were carried to the liver, but were not converted into urea as they normally are, because of the damaged condition of the liver, and so passed to the kidney to be excreted.

The investigations of Jacoby, Schryver and Taylor on autolysis have placed this matter in a new light. It is probable that a large part at least of the leucin and tyrosin is formed by the self-digestion of the cells of the liver. Taylor has shown that these products of digestion can be found in considerable amount in the liver itself, in spite of the fact that the greater part of that formed must have been carried away by the blood. The quantities in the urine vary and the conditions which determine their appearance (greater or less destruction of the liver, poor excretion by kidneys, solubility, etc.) vary from case to case. The amount in the urine may be slight and yet large amounts may be obtained from the liver after death.

On the other hand, Neuberg and Richter have analyzed the blood from a case of acute liver atrophy, and found an amount of these substances so large that it could only be derived from the autolysis of the entire liver, and as the liver is only partly destroyed it could at most furnish only a part of this large amount. The rest must be derived from the autolysis of other organs and tissues, or from the intestinal contents.

In short, it is difficult to tell just what relation the intestinal and hepatic disturbances bear to one another; but the leucin and tyrosin in the urine are probably derived partly (perhaps chiefly) from self-digestion of the liver, and partly from the amino-acids of the bowel and tissues, which the liver cannot transform into urea as it does normally.

The albumose in the urine which is occasionally present in this disease probably comes from the decomposing liver tissue.

The purin bodies in the urine come also from the destruction of nuclei in the liver.

The urine usually contains a large amount of bilirubin from which we must conclude that the production of bile pigment is kept up in spite of the severe damage to the liver.

When we attempt to explain the symptoms and course of this illness from what we know of its pathology we meet new difficulties. In fatal cases it is very hard to distinguish the disturbance of symptoms and signs due to the original infection or intoxication from those due to lack of liver function or to the flooding of the body with poisonous bile constituents.

The jaundice itself is at first probably due to catarrh of the bile passages and later to plugging of the passages by desquamated cells and partial closure, by collapse and distortion of liver tissue.

Many attempts have been made until recently to prove that the salts of the bile acids are the chief cause of the severe symptoms. Bickel has recently shown that these bile acid salts are powerful poisons to the nervous system, but it is doubtful whether these substances are ever present in sufficient concentration to produce such results.

It seems natural to explain the hemorrhagic diathesis by the solvent action of bile acids upon red blood cells and the production of changes in the walls of the blood vessels. This is very doubtful, however, on account of the great dilution of the biliary salts in the organism. They are best explained by the general disturbance of nutrition.

The cholemia is probably the cause of some of the milder nervous symptoms, such as headache, malaise and weakness, also of slowing of the pulse, and of damage to the kidneys.

On the other hand, the *chief symptoms of severe intoxication* are largely due to the damage done to the functions of the liver and the special poisonous substances are probably

a. Nitrogenous antecedents of urea.

b. Certain products of decomposition in the bowel which are normally deprived of their toxic power in passing through the liver.

c. Decomposition products of the destroyed liver tissue.

This view is borne out by observation of other severe diseases of the liver where little or no jaundice occurs.

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Some Observations on Appendicitis. Boston Med. and Surg. Jour., 1905, clii, 339.

Intrapleural Lipoma; Acute Pericarditis; Pericardial Exploration. Am. Jour. Med. Sc., Nov., 1905.

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THE BOSTON
Medical and Surgical Journal.

THURSDAY, MAY 7, 1908

A Journal of Medicine, Surgery and Allied Sciences, published at Boston, weekly, by the undersigned.

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THE "FESTSCHRIFT" CUSTOM.

The custom long prevalent in Germany, of commemorating the retirement of distinguished men from active work through memorial publications, has received somewhat tardy recognition in other countries. There is, however, much evidence that this fitting recognition of services rendered is, in increasing measure, likely to find similar expression elsewhere than in Germany. Within recent years such volumes have been printed in Holland, Sweden and in America. In general, these "Festschrifts" have been published in two forms, either as a distinct publication not appearing elsewhere in print, or as a republication from a periodical, in which the papers appear as part of the contributions to that journal. This latter method has distinct advantages in that the contributions, usually of much scientific value, may be adequately catalogued and not lost, as is too apt to be the case where a limited, special edition alone is published.

There is already a long list of Festschrifts in honor of distinguished German physicians, some of which are as follows: Oct. 30, 1905, the *Berliner Klinische Wochenschrift* published a "Fest-Nummer" dedicated to Prof. Carl A. Ewald on his sixtieth birthday; on his seventieth birthday Prof. Ernst von Leyden was presented a volume of contributions to clinical medicine; in 1904, Prof. H. Senator received a like volume. Profs. J. Rosenthal and Ernst Salkowski, Dr. Wilhelm Ebstein, Dr. S. E. Henschen, Dr. Leopold Ritter, Dr. L. Lichtheim, Dr. A. Fiedler, Dr. G. Merkel, Prof. Ernst von Bergmann, Prof. Georg Eduard von Rindfleisch, Prof. Albert Neisser, are some of those who within recent years have been honored by their colleagues in this way. Perhaps the most unique example of a memorial volume is one presented Prof. S. Pozzi with the following inscription: "Livre d'or offert au Professeur S. Pozzi en souvenir de vingt années d'enseignement à l'hôpital Broca, 3 Juillet, 1906." With this book was presented a gold pocket medallion of Professor Pozzi.

The list of volumes published up to this time in America is still small, but there is no question that the number will receive numerous additions in the years to come. The first to appear in this country was the "Wilder Quarter-Century Book," in 1893, dedicated to Prof. Burt G. Wilder at the close of his twenty-fifth year of service in Cornell University. The presentation of this volume, to which a number of his former pupils had contributed, was made by Dr. Theobald Smith, then of Washington and now of Harvard University. Seven years supervened before the publication of a similar volume. The second Festschrift commemorated the seventieth anniversary of Prof. Abraham Jacobi's birth and contained international contributions to medical literature. It was published in New York in 1900, a volume of 496 pages. The same year a most elaborate volume was dedicated to Prof. William Henry Welch, of Johns Hopkins University, on the twenty-fifth anniversary of his doctorate. This volume contained upwards of a thousand pages, with many contributions of permanent scientific value. Three years later, in 1903, Professor Victor Clarence Vaughan was made the recipient of a similar volume of contributions to medical research, also on the twenty-fifth anniversary of his doctorate. Finally, a like honor was conferred upon Prof. William Thompson Sedgwick in 1906.

It is a matter of special satisfaction that Professor Fitz, who has long been identified with the highest interests of medicine, should at the termination of his service as teacher and hospital physician be honored by a volume contributed by his present and former assistants. A perusal of this number of the Journal will show among these contributions a wide diversity of subjects, admirably illustrative of recent tendencies in medical research. Such a volume marks, as it were, a certain epoch in the progress of medicine, and as such should, as have its predecessors, dedicated to other distinguished men, occupy a somewhat unique place in medical literature. We congratulate Dr. Fitz upon this public acknowledgment of his distinguished position as a man, a teacher and a physician, and in giving it to our readers we express the earnest hope that many years of activity may yet remain to him in a field of endeavor in which he has long held so prominent a place.

RECORD OF MORTALITY

For the Week ending Saturday, April 25, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	0
Chicago	—	—	Waltham	12	1
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	7	1
Baltimore	190	47	Brookline	6	—
Cleveland	—	—	North Adams	12	2
Buffalo	—	—	Chicopee	9	4
Pittsburg	—	—	Northampton	9	2
Cincinnati	—	—	Medford	10	3
Milwaukee	—	—	Beverly	4	—
Washington	—	—	Leominster	4	—
Providence	80	16	Hyde Park	4	3
Boston	245	75	Melrose	6	0
Worcester	37	15	Newburyport	—	—
Fall River	40	21	Woburn	2	—
Cambridge	33	9	Westfield	4	1
Lowell	31	15	Marlboro	2	1
Lynn	29	11	Revere	2	—
New Bedford	39	20	Attleboro	1	1
Springfield	24	3	Peabody	—	—
Lawrence	26	11	Adams	3	3
Somerville	17	6	Clinton	1	0
Brockton	11	2	Gardner	2	1
Holyoke	18	7	Milford	—	—
Malden	13	2	Watertown	2	1
Chelsea	12	3	Plymouth	—	—
Newton	12	2	Weymouth	9	0
Salem	15	5	Framingham	4	1
Haverhill	8	2	Southbridge	—	—
Fitchburg	8	3	Wakefield	—	—
Everett	8	—	Webster	—	—
Taunton	11	6	Arlington	4	1

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 2, 1908.

D. A. Spear, assistant surgeon. Ordered to duty at the naval hospital, Washington, D. C.

R. W. Plummer, surgeon. Commissioned surgeon from Feb. 23, 1908.

G. Rothganger, surgeon. Granted sick leave for three months, when discharged from treatment at the naval hospital, New York, N. Y.

S. Bacon, G. C. Rhodes, F. R. W. Hough, J. A. Biello, assistant surgeons. Appointed assistant surgeons from April 11, 1908.

F. C. Cook, surgeon. Detached from the Naval Academy and ordered to the "North Carolina" when commissioned.

H. D. Baker, pharmacist. Ordered to duty at the naval medical school hospital, Washington, D. C.

APPOINTMENTS.

Dr. John B. Murphy has resigned as professor of Surgery and co-head of the Department in Rush Medical College and has accepted the professorship of surgery and head of the department in Northwestern University Medical School and position of attending surgeon at Mercy Hospital.

Dr. A. W. Meyer, of the University of Minnesota, and formerly of Johns Hopkins has accepted the professorship of Anatomy in Northwestern University Medical School.

Dr. A. N. Richards, of the College of Physicians and Surgeons, of New York City, has been appointed professor of Pharmacology in Northwestern University Medical School.

SOCIETY NOTICES.

New England Association for the Education of Nurses. — The seventh semi-annual meeting of the New England Association for the Education of Nurses will be held on May 15, at Huntington Hall, Rogers Building, Institute of Technology, Boston. There will be two sessions, the first at 4 p.m., the second at 8 p.m. Subject for afternoon, "The Newer Opportunities Open to Women with a Nurse's Training." Opening address by Jeffrey R. Brackett, Ph.D., followed by Dr. Margaret E. Carley, Miss Annette Fiske and Miss Ida M. Cannon. The subject for the evening session will be "Training Nurses for Institutional Work." Miss Charlotte A. Aikens, associate editor of the *National Hospital Record*, Detroit, Mich., will read the paper. Discussion by Dr. G. H. M. Rowe, Dr. H. B. Howard, Dr. W. O. Mann, Dr. Geo. F. Tuttle, Miss Mary Riddle and Miss Susan Tracy.

Norfolk District Medical Society. — The Annual Meeting will be held at Hotel Vendome on Tuesday, May 12, 1908, at 5 p.m. Dinner will be served at 6.30 p.m. Dr. Samuel Crowell will preside.

William H. Robey, Jr., *Secretary.*

Norfolk District Medical Society Board of Censors. — The Censors will meet at the Norfolk House, Eliot Square, on Thursday, May 14, 1908, at 2 p.m., for the examination of candidates for admission to The Massachusetts Medical Society.

William H. Robey, Jr., *Secretary.*

New England Pediatric Society. — The next meeting of the New England Pediatric Society will be held at the Boston Medical Library, 8, The Fenway, at 8.15 p.m., May 9.

A. H. Wentworth, M.D., *Secretary.*

American Urological Association, New England Branch. — There will be a meeting of the New England branch of the American Urological Association at the Boston Medical Library, 8, The Fenway, on Tuesday, May 12, at 8.15. Program: 1. Presentation of patients. 2. Demonstration of instruments and specimens. 3. Relation of cases. 4. Paper: "Prostatic abscess with the results of treatment. *a.* By perineal drainage. *b.* By perineal prostatectomy." Dr. Samuel Alexander, of New York. 5. Discussion.

R. F. O'Neil, M.D., *Secretary.*

New England Electro-Therapeutic Association. — The twenty-first regular meeting of the New England Electro-Therapeutic Association will be held in The Auditorium (third floor), Edison Building, 39 Boylston Street, Boston, Mass., Friday, May 8, 1908, at 8 p.m. The following papers will be read: "Hyperemia Treatment of Chronic Affections," by E. H. Bradford, M.D., Boston, and "The Removal of Superfluous Hair by the X-Ray," by Frederick A. Bardwell, M.D., Boston. Clinical cases will be shown. The profession is cordially invited to attend.

Samuel J. Harris, M.D., *Secretary.*

RECENT DEATHS.

Horace Marshall Holmes, M.D., M.M.S.S., died in Adams, May 3, 1908, aged eighty-one years.

David Nelson Patterson, M.D., M.M.S.S., died in Lowell, April 23, 1908, aged fifty-three years.

BOOKS AND PAMPHLETS RECEIVED.

To Panama and Back. A Record of an Experience. By Henry T. Byford, M.D. Illustrated. Chicago: W. B. Conkey Company. 1908.

Two Cases of Raynaud's Disease with Ocular Symptoms. One Case Complicated by Scleroderma. By Howard Fox, M.D. Reprint.

Observations on Skin Diseases in the Negro. By Howard Fox, M.D. Reprint.

The Death Rate of the City of New York as Affected by the Cosmopolitan Character of Its Population. By William H. Guilfoy, M.D. Reprint.

Cosmetic Surgery. The Correction of Featural Imperfections. By Charles C. Miller, M.D. Second edition, enlarged. Illustrated. 1908.

Some Phases of the Surgical Treatment of Cancer. A Clinical Lecture. By William Seaman Bainbridge, M.D. Reprint.

Metastases Following Incision of a Sarcoma. By William Seaman Bainbridge, Sc.D., M.D.

The Influence of Alcohol and Other Drugs on Fatigue. The Croonian Lectures delivered at the Royal College of Physicians in 1906. By W. H. R. Rivers, M.D., F.R.C.P. London: Edward Arnold. 1908.

Thirty-first Annual Report of the Board of Health of the State of New Jersey, 1907, and Annual Report of the Bureau of Vital Statistics. Trenton. 1908.

American Practice of Surgery. A Complete System of the Science and Art of Surgery, by Representative Surgeons of the United States and Canada. Edited by Joseph D. Bryant, M.D., LL.D., and Albert H. Buck, M.D. Complete in eight volumes. Illustrated. Vol. IV. New York: William Wood & Co. 1908.

The Common Sense of the Milk Question. By John Spargo. Illustrated. New York: The Macmillan Company. 1908.

Annual Report of the Lynn Hospital for the Year 1907.

A Manual of the Diseases of Infants and Children. By John Ruhräh, M.D. Second edition, thoroughly revised. Illustrated. Philadelphia and London: W. B. Saunders Company. 1908.

Original Articles.

A COMPARATIVE STUDY OF TSUTSUGAMUSHI DISEASE AND SPOTTED OR TICK FEVER OF MONTANA.

BY P. M. ASHBURN, M.D.,
Captain and Assistant Surgeon, U. S. A.,
AND
CHARLES F. CRAIG, M.D.,
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Constituting the United States Army Board for the Study of Tropical Diseases as They occur in the Philippine Islands.

I. Synonymy. II. Introduction. III. History of both Diseases. IV. Etiology. V. Symptoms, Tsutsugamushi, Spotted Fever. VI. Blood Examinations. VII. Mortality. VIII. Immunity Conferred by Attack. IX. Susceptibility of Animals. X. Prognosis. XI. Pathological Anatomy. XII. Diagnosis. XIII. Prophylaxis. XIV. Treatment. XV. Case Histories of Tsutsugamushi Disease. XVI. Conclusion as to the Nonidentity of the Two Diseases. XVII. Does Flood Fever Occur in the Philippine Islands?

I. SYNONYMY.

Tsutsugamushi Disease: Japanese River Fever. Flood Fever. Island Fever. *Kedani* Disease. *Akamushi* Disease. *Shimamushi* Disease. *Yochubio. Shashitsu.*

Mushi is a Japanese word meaning bug, and the compounds ending with it all relate to the etiology of the disease. *Tsutsugamushi* is the term employed by most Japanese people and professional men and, as it has the prestige derived from ancient and specific usage, it will be employed in this paper.

Spotted Fever of Montana: Rocky Mountain Fever. Tick Fever. Pyroplasmosis Hominis (Wilson and Chowning). Tick Fever of the Rocky Mountains. Rocky Mountain Spotted Fever.

As so-called spotted fever has been described in various parts of the Rocky Mountain region and as it has not been determined that the same disease prevails in all those parts, the term *Spotted or Tick Fever of Montana* will be used in this paper, the disease referred to being that occurring in western Montana, particularly in the Bitter Root Valley, in Missoula and Ravalli counties.

II. INTRODUCTION.

For many years past *kedani* or *tsutsugamushi* disease has been an annual subject of the most active and painstaking investigation on the part of Japanese physicians and the Japanese government.

One of the leading investigators of late years is Dr. M. Miyajima, of the Institute for Researches of Infectious Diseases, of Tokyo. Dr. Miyajima had read of the work of Wilson and Chowning, Anderson, Stiles and others, on the study of "spotted" or "tick fever" in Montana, and he had found so many points of similarity in the two diseases that he thought it quite possible that they were the same. Consequently, when he came to Manila as a representative of his government to the Philippine Islands Medical Association and we met, he was desirous that we should visit Japan at the proper season and determine, if possible, whether or not such be the case. Thanks to the representations of Dr. Miyajima and the liberal view taken of the matter by General Wood, the Acting Surgeon-General, and the War Department, we were ordered; and this report is based on the observations on *tsutsugamushi* disease made on that trip and the observations made by one of us (Ashburn) in 1904 and 1905 on the cases of spotted fever occurring in those years in the Bitter Root Valley in Montana.

The specific point that we were to try to determine, and which we think we have determined, was the question of the identity or nonidentity of the two diseases and most emphasis will be laid on that point in this report.

However, both diseases, being so closely restricted as to locality, are necessarily unknown to the very great majority of medical men, and a brief description of each will therefore be given and an effort made to run the descriptions parallel, so that the resemblances and differences may be brought out more strikingly. The descriptions to be given are based on personal observations of some 22 cases of spotted fever and 7 cases of *tsutsugamushi* disease, as well as on the writings of other men who have studied one disease or the other more carefully than we could or did.

Both diseases are still subjects of earnest and careful investigation by expert workers and it is therefore unnecessary and would be futile, in a paper of this kind, to attempt the thorough consideration of them which they deserve and will receive later.

III. HISTORY OF THE TWO DISEASES.

According to Tanaka the name *tsutsugamushi* has been known since the earliest historical times, while the name *shashitsu* occurs in old Chinese writings of more than a thousand years ago. A quotation from one such writing indicates that at that time the disease was recognized as a distinct affection and was ascribed to the bite of a mite which occurred in summer time in certain districts that had been flooded by the spring rains. The bite was described and the statement made that after three days high fever developed and a pustule appeared at the site of the injury. It was also recognized that only certain regions were infected and that the disease only appeared in persons entering them.

The disease was brought to the attention of the Western world by Palm, in 1878 and Bälz, in 1879, and since that time it has been the subject of much painstaking work by Japanese medical men and of numerous articles in Japanese and some in foreign journals. Numerous micro-organisms, including cocci, bacilli and protozoa, have been described as the cause of the disease, and several investigators are working at the present time, each with what he thinks the causative factor. It cannot be said that any of these workers has yet established his claim.

Three hypotheses at present divide the workers and rule the work of investigation:

1. That the disease is due to a bacterium, a belief favored by the workers of the Institute for Infectious Diseases.

2. That it is a protozoal infection. Professor Ogata is the leading exponent of this idea.

3. Tanaka thinks the disease due to a toxin contained in the body of the red mite.

Spotted fever of Montana has been recognized for only a few years, twenty-five at the most, while the literature relating to it has practically all been made since 1902. At that time Wilson and Chowning published their first account of it and their ideas as to its cause and method of transmission, in a preliminary report to the Montana State Board of Health, which appeared in the *Journal of the American Medical Association*. It is true that Major Wood, in 1896, and Maxey, in 1899, had reported a similar, or the same, disease in Idaho, but the form occurring there presents such points of difference, particularly in regard to mortality, that it is not considered in this paper. Since the work of Wilson and Chowning in 1902, the disease has each year been the subject of careful investigation and report and the prospects now are that its etiology will soon be well understood.

The total number of cases occurring each year is small and that, considered in connection with the further facts that the disease occurs in such a limited and relatively isolated region and that it has been known for so short a time, makes it remarkable that the present knowledge concerning it should be as great as it is.

IV. ETIOLOGY.

Tsutsugamushi disease occurs along certain limited parts of the banks of a few rivers on the west coast of the main island of Nippon, being limited to Echigo and Akita provinces. The distribution of the infected areas is irregular and, up to the present time, unexplainable. They are all subject to submergence by floods which occur in June, but not all flooded districts are infected nor does the relative location of an infected district, up or down stream, seem to influence a noninfected. The floods usually occur in June and last but a few days. Immediately after their subsidence the infective regions are not dangerous but after a few weeks or a month and synchronously with the appearance of the *akamushi* or red mite, they become so and any person entering them takes a considerable risk of contracting the disease. Consequently, they are then avoided by all whose poverty does not drive them there to work or gather mulberry leaves. As a general rule no right of ownership is exercised over such land and the very poor do, therefore, cultivate hemp on it in some places and in other parts visit it to gather mulberry leaves to feed silkworms. In either case they are apt to be bitten by red mites and it is customary for them to search carefully for such bites after leaving the places. However, the mites are so minute as to be very difficult of detection, and, if the bite does not cause pain, it is frequently overlooked. Not all mites are infective and many bites therefore cause no trouble. A certain proportion of them, though, do so, the point bitten becoming an eschar and later an ulcer, the neighboring lymphatic glands becoming enlarged and painful and an attack of fever succeeding.

It is the experience of practically all who have carefully studied the disease, and they are numerous, that *every* case of it is preceded by the mite bite and in the great majority of cases the bite is located by an examination of the region drained by the lymphatic glands which first became enlarged and tender. So far as could be learned in Japan, Bälz's contention that such is not the case has not received support, and later investigators agree that the bite of the mite is the sole means of infection. The mite in question is the larval form of a *trombidium*, species unknown. The larva bears a great resemblance to that of *Leptus autumnalis*. It is so small as to be almost invisible to the naked eye, bright red or orange in in color, and is found on land that has been submerged by flood. Here it is best collected by tying a monkey out over night or by catching the field mice (*Arvicola hatanedzumi*, Sasaki) occurring in such regions. The mites collect in groups on or about the eyelids of the monkey, while they are always found attached in large numbers to the inner surfaces of the ears of the mice. Mites resembling these in size and color occur in many parts of Japan but they do not attack persons. The *akamushi* of other than infected regions do not transmit disease. Several supposed causative organisms have been described for this disease, the latest and probably the one calculated to excite most interest being Ogata's plasmodium. None of these alleged discoveries has been confirmed, and, judging from what we heard and what blood examinations we could make in Japan, it appears that Ogata's plasmodium does not exist. The causative organism is yet unknown.

Spotted or tick fever of Montana, as known by Wilson and Chowning, Anderson, Stiles, Ricketts and Ashburn, occurs also in very strictly limited areas, particularly in a strip of country about four to ten miles wide and fifty miles long, lying on the west side of the Bitter Root River and the eastern side of the Bitter Root Mountains and partly on the slopes of those mountains. The country in question has a considerable snowfall and the snow remains on the mountains until mid June and on the highest peaks for two or three weeks longer. The Bitter Root River is largely fed from this snow, and, as it begins to melt in March and continues to do so with increasing rapidity until most of it has disappeared, the stream is in a state of freshet during that time and does not again reach "low water" until July.

During the same period ticks, *D. occidentalis*, which before and after it are infrequently seen, appear in great numbers, particularly in the woods, thickets and uncultivated regions, and are very apt to get on any person or animal going into such parts. Likewise and, as a rule, during the same period, cases of spotted or tick fever appear, and in almost all cases there is a history of a recent visit to, or residence in, the infected district, and, in many cases, of tick bites received there. Wilson and Chowning incriminated the tick as the carrier of the disease as early as 1902.

From a study of all the cases occurring in 1904 and most of those occurring in 1905 Ashburn came to the conclusion that a considerable proportion of them gave neither history nor signs of tick bite and for that and other reasons which it is not necessary to detail here, agreed with Stiles that the tick was not concerned in transmitting the disease. However, the more recent and very excellent work of Ricketts and of King and their apparent success in transmitting the disease to monkeys and guinea pigs by means of the tick, seem to indicate that Wilson and Chowning were right in their belief as to the method of infection.

It may therefore be said that the disease is introduced by the bite of *D. occidentalis.* This bite cannot always be located, possibly because the first symptoms of the disease do not indicate its location as in the *tsutsugamushi* disease. Certainly an ulcer and lymphadenitis do not always follow it.

Ricketts' recent observation that nymphal ticks may transmit the disease and his suggestion that larvæ † may do so, may account for the absence of a history of tick bite in some cases, as the lesion resulting from the bite of a larva may be insignificant and may possibly leave no trace after a few hours or a day and the larva itself may be overlooked. Most persons in the infected regions carefully watch and examine themselves for tick bites and it is improbable that the bite of the adult tick is often overlooked. In nearly all cases the disease is contracted on the hill sides or "bench," high above the river, and some persons long resident in the region say that the bottom lands and islands which are subject to submersion are free from danger.

Wilson and Chowning named the disease *Piroplasmosis hominis.* Later investigations, except that of Anderson, have failed to confirm their view and the disease is not now considered a piroplasmosis. The causative organism is not known.

A consideration of the etiology of the two diseases shows many points of resemblance, but also some important differences. Both occur in small and usually strictly limited areas along certain streams running through mountainous country. The country in each instance is subject to heavy snowfall in winter and the streams to spring or summer floods. Along each infected stream the dangerous spots are usually more or less uncultivated and the soil overgrown with underbrush, trees or weeds, while the immune spots are well cultivated. In each instance the disease is attributed to the bite of an *Acarina* and in each a supposed protozoan blood parasite has been described as the cause and has not been confirmed as such. Contagion is unknown in either disease.

The differences in the etiology of the two are equally well marked. The *Acarina* whose bite causes *tsutsugamushi* is always a six-legged, larval *Trombidium,* whose adult form is unknown. That causing spotted or tick fever of Montana is always *Dermacentor occidentalis* and usually the adult.

Tsutsugamushi disease occurs always after floods and it is contracted on ground which has actually been submerged by the swollen river. Fields immediately adjoining the infected areas and but a few feet higher are considered safe. The Montana disease may precede the flooding of the streams or, more usually, accompanies it. It is very commonly contracted on ground which has not been submerged but is on hillsides high above the level of the river. The cases begin in March and rarely appear after the middle of July. *Tsutsugamushi* disease is beginning to appear at that time and continues to do so into October.

Spotted fever regions are uncultivated, either because of the elevation and roughness of the land and the difficulty of irrigating it, or because of the relative newness of the country. The *tsutsugamushi* infected regions are uncultivated because of their low and flat positions subjecting them to annual floods which destroy most crops and because for an immemorial period they have been recognized as dangerous.

V. SYMPTOMS.

Tsutsugamushi disease is not commonly preceded by well-marked prodromata. Occasionally there may be a few days of malaise and indisposition, but the usual history is that in from five to twelve days, rarely less than five, after the receipt of a bite from a red mite the patient has a chill; headache and fever come on and one group of lymphatic glands, usually those of one axilla or groin, is found to be enlarged, painful and tender. Examination of the region drained by these glands leads to the discovery of the lesion resulting from the bite. This lesion is small, circular and usually 2 to 4 mm. in diameter. It is stated by some writers that in its early stages the lesion is a small vesicle. In most instances it is a black or brown area of necrosis of the derma. The dark necrotic skin is very adherent, but after a varying number of days it loosens and is cast off, leaving a circular, punched out ulcer of slightly greater diameter. The periphery of the ulcer is pinkish in color and slightly infiltrated and is not usually painful or tender. Enlargement of the lymph vessels connecting the lesion and the large and painful glands cannot be detected.

The glands, while enlarged and inflamed, do not present great swelling, are not fused together and are movable beneath the skin.

The temperature at this early stage ordinarily runs from 101° F. to 103° F. Tanaka states that it may reach its maximum in twenty-four hours. The pulse is from 80 to 100 and strong.

The conjunctival vessels are apt to be injected, slight cough may be present, the tongue is moist and slightly coated, the bowels constipated, and slight or moderate splenic enlargement demonstrable. The urine may contain albumin and the diazo reaction is present. The patient ordinarily feels comfortable except for headache, and the appetite may be surprisingly good.

As the disease advances the above symptoms become more marked. General slight enlargement of superficial glands occurs, the temperature reaches 104° F. to 105° F. and is continuous. The pulse weakens and quickens and may become dicrotic, the first heart sound may be impure. The presence of albumin and the diazo reaction are more marked in the urine and casts may be numerous; injection of the conjunctiva and lachrymation are more evident. Respiration is accelerated, the breath sounds are harsh, cough increases and may be harassing, though the expectoration is scanty. The entire surface of the body is apt to be hypersensitive and this causes complaint. Constipation usually persists but diarrhea and abdominal pain and tenderness occur exceptionally. The tongue becomes dry, brown in the center and glazed at the tip and edges, sordes collect and the gums may become spongy and bleed. In such cases the breath is particularly foul.

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† Since the above was written Ricketts (*Jour. Am. Med. Asso.*, Oct. 12, 1907) has published reports of successful transmission of spotted fever to guinea pigs by means of larval *D. occidentalis.*

Partial deafness occurs, the patient becomes stuporous and may pass into coma before death.

At some period of the disease, usually from the fifth to the seventh day, though it may be a little earlier or later, an exanthem appears, showing first on the face and later on the chest, the forearms, the legs and the rest of the trunk. The palate and buccal surfaces also show it occasionally. The eruption consists of irregular, rather faint, dusky or pink macules or flattened papules, 2 to 5 mm. in diameter, which may become confluent on the cheeks and give an appearance of swelling. On the relatively dark skin of a Japanese this eruption is not well shown and on other parts than the face the lesions bear a great resemblance to flea bites, with which they may be confused. They fade on pressure but at once return when it is removed. The eruption does not itch and the duration of it is usually from four to seven days, although it may be more or less. It never becomes hemorrhagic or petechial. Tanaka states that in rare instances it may become vesicular or pustular. This is probably rarer than he implies.

This period of exanthem marks the height of the disease, and as the eruption begins to fade, usually about the end of the second week, the fever remits and in a few days the temperature reaches normal, while the general condition also improves rapidly. The patient then speedily recovers, although the little ulcer resulting from the bite may be long in healing.

The above presents a recovering case of average severity. In more severe cases death may result from the ninth to the fifteenth day, or in more severe cases which recover, the fever may last longer and the symptoms be very marked.

On the other hand very light cases may show but slight and ephemeral fever, very trifling or no exanthem, and may not be bedfast. The ulcer and lymphatic enlargement are always present though, and the former may be larger than usual, as much as 1 cm. in diameter. The duration of the disease is usually about three weeks. It may be as long as a month or as short as one week. Parotitis, melena and mania have been noted as complications, while coma, cardiac weakness and pulmonary edema may be terminal features.

Spotted or tick fever, as it occurs in the Bitter Root Valley, begins in from one to eight days after the tick bite, in cases where the history of bite is obtainable. As in *tsutsugamushi* disease, prodromata are unusual, the disease commonly commencing with a chill. There is not the constant signal symptom of localized lymphadenitis which enables one to find the tick bite, and when present it is usually due to pyogenic or other infection of the wound and lymphangitis may accompany it, while the margins of the lesion are more inflamed and indurated than in the other disease. In many cases no tick bite can be located. When found it does not present the constant appearance of a small round necrotic area succeeded by an ulcer as in the case of the mite bite. The temperature is not essentially different, although it does not show the constancy of type shown by that of *tsutsugamushi* disease; the eye symptoms, constipation and splenic enlargement may be the same.

As the disease progresses the symptoms in the main bear a great resemblance to those of *tsutsugamushi* disease, with the following exceptions:

a. The fever in the latter disease is more typically continuous; in the former more irregular.

b. The pulse rate in spotted fever is apt to be relatively high, as compared with the temperature; in *tsutsugamushi* disease it may be relatively low.

c. Most spotted fever patients are dead before the end of the second week.

d. The exanthem in spotted fever appears earlier, as a rule, than that of *tsutsugamushi* disease. It shows first on the wrists and ankles and rapidly spreads to cover the entire body. It is much more abundant and more plainly visible than that of *tsutsugamushi* disease, though the latter fact is doubtless related in part to the darker color of the skin in Japanese. It usually consists of macules or petechiæ, although it may resemble the rash of measles or of rötheln: but in practically all cases it soon becomes petechial or hemorrhagic and large extravasations may be produced by the confluence of neighboring hemorrhagic spots. Instead of disappearing in from four to seven days this eruption usually persists until after the patient has died or recovered, and slightly pigmented stains may mark for weeks its location on the bodies of persons recovering. Some of the points of extravasation may pass on to gangrene and sloughing, a thing unknown in *tsutsugamushi* disease.

e. Hemorrhagic extravasation not infrequently takes place into the scrotal tissues of male subjects of spotted fever, never in cases of the other disease.

f. The tongue and lips of the spotted fever case may become dry, cracked and bleeding, but the gums do not become spongy and ooze blood as they sometimes do in *tsutsugamushi* disease.

g. Parotitis, malena and mania have not been noted as complications.

VI. BLOOD EXAMINATION.

No complete studies have been made, so far as we know, of the condition of the blood in *tsutsugamushi* disease. Tanaka states that the red cells usually run from 4,800,000 to 5,200,000, the leucocytes from 6,000 to 8,000 and the hemoglobin from 40% to 75%.

On the other hand Dr. Miyajima informed us that the red cells fall during the course of the disease to 3,000,000, or 4,000,000, while the hemoglobin is reduced proportionately and that leucopenia obtains. He had not made differential counts of white cells. We were disappointed in not having apparatus for making blood counts and were forced to content ourselves with examinations of fresh and stained films. From such examinations we judge that the red cells are not deformed, that they stain normally and that the differential white cell count is not apt to be of much assistance in diagnosis. There is apparently a well marked leucopenia.

The number of cases examined by us is too small to enable us to draw any general conclusion as to the value of differential counts in the prognosis, but if they indicate anything, it is that they have such value.

It will be noticed that Case IV, discharged recovered, and Case V, suffering from a third attack and apparently not very sick, both had low polymorphonuclear and high lymphocyte counts; while cases I and II, both ending fatally, and III and VI, both serious, if not fatal, did not show either. So far, then, as a general deduction might be drawn from the consideration of differential counts on six cases, it would appear that a relative decrease of polymorphonuclear and increase of mononuclear cells, particularly of lymphocytes, constitute a favorable prognostic omen. We were unable to recognize parasites in either fresh or stained specimens of blood, except one body in a fresh film from Case VI. The body was intracellular, ameboid, unpigmented and about 1 micron in diameter. We thought it a young tertian parasite. (Malaria is common in the district.)

The following table shows the results of our differential counts. They were all made on blood drawn Aug. 2 and in each case at least 400 white cells were counted.

	Case I, Fatal.	Case II, Fatal.	Case III, Severe.	Case VI, Severe.	Case IV, Mild.	Case V, Mild.
Small lymphocytes,	7	5	8	8	18	18
Large lymphocytes,	11	10	7	12	21	27
Polymorphonuclears,	74	80	84	77	54	45
Trans. and large mono.,	8	5	1	3	6	9
Eosinophiles,					1	1

In spotted fever, as in *tsutsugamushi* disease the blood condition has not been sufficiently studied to permit the drawing of general deductions. Wilson and Chowning and Anderson agreed that the red cell counts were reduced about 20%; the hemoglobin somewhat more; while the leucocytes were increased. In one fatal case, in a pregnant woman, Ashburn found a leucocyte count of 15,600.

Not enough differential counts have been made to enable us to form an opinion as to their value in prognosis. Anderson reports such a count in a recovering case, the percentages being as follows: small lymphocytes, 9.9; large lymphocytes, 10.6; polymorphonuclears, 78.7; eosinophiles, 0.8.

Wilson and Chowning and Anderson described what they considered a *piroplasma* in the blood of spotted fever cases. Later observers have not confirmed this and we do not think that any organism can be seen.

VII. MORTALITY.

The mortality of *tsutsugamushi* disease has been variously estimated at from 15% to 70%, or more. Statistics of 567 cases carefully recorded by Dr. Miyajima show an average mortality of 27%.

The rate shows a steady and progressive increase from 12½% in the first decade of life to 57% in the seventh.

The mortality statistics of tick fever are not based on such a large number of cases, and it is probable that many of the cases included in Wilson and Chowning's tables, but occurring prior to 1902, were not really spotted fever. They nevertheless figure the percentage of mortality as 75 and that is approximately correct. This disease is therefore more fatal than the other. So far as the statistics at hand give any indication, the mortality does not steadily increase with the age of the patients.

VIII. IMMUNITY CONFERRED BY ATTACK.

One attack of *tsutsugamushi* disease does not confer permanent immunity against another. Probably a temporary immunity is always conferred, but second and third attacks, in later years, are not rare. One of the cases seen in August was suffering from his third attack. As a rule the later attacks of the disease are milder than the first.

In tick fever second and third attacks are unknown and it seems probable that they do not occur. The number of living persons who have had the disease is so small, however, as to make generalizations on this point dangerous. Ricketts states that active immunity of at least two or three months' duration is produced in the monkey or guinea pig by an attack of the disease.

IX. SUSCEPTIBILITY OF ANIMALS.

Ogata states that *tsutsugamushi* disease is inoculable into kittens, apes, mice and guinea pigs. Dr. Miyajima, who has done much work on the subject, states that it can be produced in monkeys either by mite bite or inoculation from a patient, but not in mice or guinea pigs. Infected monkeys show fever but not the skin or genital involvement described by Ricketts as occurring in monkeys inoculated with spotted fever.

Wilson and Chowning thought that rabbits and spermophiles were inoculable with spotted fever. Stiles and Ashburn were unable to produce the disease in them.

Ricketts and King have produced it in monkeys and guinea pigs, and more recently Ricketts appears to have produced it in the horse.

X. PROGNOSIS.

The prognosis, in view of the mortality, is considerably better in *tsutsugamushi* disease than in spotted fever, and this is particularly true with regard to young subjects. In neither disease, though, can much reliance be placed on mild symptoms during the early days of sickness, for in both it too frequently happens that a patient who for some days has had very moderate fever, a good appetite, no pain and has appeared only slightly or not at all sick, will take a turn for the worse and in a short time be in a very dangerous condition, and later die in spite of the fair promise of the early symptoms. Prognosis, therefore, should be guarded.

In both diseases pregnant women are apt to abort and die. Judging from the cases here reported, we may hope that the differential leucocyte count will prove valuable in estimating the prognosis in given cases of *tsutsugamushi* disease.

XI. PATHOLOGICAL ANATOMY.

The knowledge of the conditions found postmortem in both diseases is as yet incomplete, because in the region of flood fever, as in that of spotted fever, there is a sentiment against autopsies and very few of them have been obtained. The only pathological conditions recognized as characteristic of *tsutsugamushi* disease are the ulcer at the site of the bite, the moderate lymphatic enlargement and the splenic enlargement. Edema of the lungs and hypostatic congestions may be found. The kidneys are swollen and congested and may show acute nephritis.

The findings in tick fever are not greatly different from the above. The characteristic ulcer and the lymphatic enlargement are not present, while the skin lesions are striking and may include large areas of extravasation, or small patches of gangrene. Ricketts' findings of lymphatic enlargement in animals dead of experimental spotted fever indicate that more careful search might reveal such enlargements in human subjects of the disease.

XII. DIAGNOSIS.

Tsutsugamushi disease presents points of resemblance to malaria, typhoid, typhus, pneumonia and plague.

The locality and the season at which the disease occurs are, of course, important points in enabling one to differentiate it from those diseases. Examination of the blood for malarial parasites and for the Widal reaction will be of further assistance, as will the absence of most physical signs of pneumonia and the presence of the mite bite, the lymphatic enlargement and the eruption. The character of the epidemic and the presence of plague bacilli in sputum, glands or viscera would differentiate plague. A mild case of typhus occurring in the endemic region at the proper season would possibly be very hard to differentiate. The darker, more profuse and petechial eruption, the absence of characteristic lymphatic enlargement and of the bite and the contagiousness, should make the diagnosis reasonably certain.

Spotted or tick fever of Montana bears a much closer resemblance to typhus and, in our opinion, can only be differentiated from it by its seasonal and geographical limitations and its lack of contagiousness.

It may also present a great resemblance to cerebrospinal meningitis, from which, in the most nervous cases, it can be differentiated by consideration of season and locality, the more ephemeral nature of the nervous symptoms, the absence of such serious nervous signs as blindness, the occurrence of other and less nervous cases, and, finally, by the autopsy.

Malaria, except recurrences of the disease contracted elsewhere, does not occur in the spotted fever country. Typhoid can be excluded by the blood examination and by the appearance of the rash.

While the wide geographical separation of the two diseases renders it improbable that any one else will be called upon to differentiate *tsutsugamushi* disease and tick fever of Montana, it is germane to the subject of this paper to summarize here the points of differentiation and that can be done best by means of parallel tables.

Tsutsugamushi Disease.	Spotted Fever.
GEOGRAPHICAL DISTRIBUTION.	
Confined to Echigo and Akita provinces in Japan.	Confined to parts of the Rocky Mountain region.
Contracted on ground that actually has been submerged.	Contracted on ground that has not been submerged.
SEASON.	
First of March to end of June, usually.	End of June to October.
ETIOLOGY.	
Due to bite of infected larval *trombidium.*	Due to bite of infected *Dermacentor occidentalis.*
INCUBATION.	
Five to twelve days usually.	One to eight days.
SYMPTOMS, EARLY.	
Onset. Usually by chill, followed by headache, malaise.	Same. Headache and backache more common.
Pain and swelling of lymphatic glands on first or second day leads to discovery of bite.	Not so. Tick bite, if present, may be inflamed.
Bite always present and demonstrable. Shows small black area of necrosis.	Not so. When present it is usually a red mark.
Superficial lymphatic glands elsewhere than near wound become enlarged.	Not so.

Temperature 101° to 103° F.	Not so constant.
Injection of conjunctiva and photophobia are frequent.	Same.
Nose and *throat* normal.	Sore throat occasional.
Tongue moist, slightly coated.	Same.
Constipation.	Often present but not as a rule.
Spleen enlarged.	Same.
SYMPTOMS, LATER.	
Fever to 104° or 105° F., continuous.	More irregular and may be higher or lower.
Pulse may be slow but usually rapid and weaker. May be dicrotic.	Almost always rapid and weak. May be dicrotic.
Exanthem usually fourth to seventh day.	Usually second to fifth day.
First on face and temples.	Usually first on wrists and ankles.
Indistinct or absent on thighs and arms.	Not so.
Macules or papules, dusky.	Macules or petechiae.
Usually lasts four to seven days.	Fades more slowly.
Does not become hemorrhagic.	Becomes hemorrhagic.
Frequently shows in mouth.	Not so.
Hyperesthesia common through disease.	Often present.
Partial deafness frequent.	Less frequent.
Tongue and lips may crack and bleed.	Same.
Gums spongy, may ooze blood.	Not so.
Cough may be severe and paroxysmal, expectoration tenacious.	Cough common and edema of lungs common at end.
Perspiration common.	Not noted. Skin often dusky or marbled.
Remission at end of second week.	No constancy. Most patients dead before that.
Ulcers may be long in healing and glands remain tender.	No such condition.
COMPLICATIONS.	
Parotitis, melena, mania.	Not noted.
Coma, cardiac weakness, pulmonary edema.	Frequent.
MORTALITY.	
Thirty per cent. Increases steadily with age.	Seventy-five per cent. No steady increase with age.
PATHOLOGICAL ANATOMY.	
Ulcers, lymphadenitis, large spleen, hypostatic congestions. May be nephritis.	No ulcers. Lymphadenitis not noted. Large spleen, hypostatic congestions. May be nephritis.
IMMUNITY.	
Not conferred by attack.	Probably conferred by one attack.

XIII. PROPHYLAXIS.

The only prophylactic measure yet put to any general use against either disease is avoidance of the infected regions. This is much easier in the case of flood fever than in that of spotted fever, as the dangerous regions are so much smaller and are so plainly marked off by the very flooding that makes them dangerous and because they are not residence sites. Some of the Japanese investigators are recommending that persons who have to enter the dangerous regions should wear clothing saturated with petroleum. The use of carbolic baths, benzine, oil of peppermint and Balsam of Peru are also advocated. The effectiveness and applicability of these measures remain to be proved. It is stated that cultivation of the soil and the use of human feces as manure will free an infected area from the disease in about three years, if its submersion be meanwhile prevented.

XIV. TREATMENT.

So far as personal observation enables us to form opinions on this subject, it indicates that the treatment in both diseases is divisible into two classes: 1. Expectant, symptomatic. 2. Hoped-for specifics, which are apt to be the result of guesswork or of reasoning from false premises or erroneous observations.

The clinical symptoms of both diseases and the results of practice in clinically similar diseases, such as typhoid and typhus, indicate that each offers a field for a more extended use of hydrotherapy than either has yet received.

XV. CASE HISTORIES OF TSUTSUGAMUSHI DISEASE.

The following are such histories and notes as could be obtained in regard to the cases of *tsutsugamushi* disease seen by us this year (1907):

Case I. S. Igarashi. Male, age seventeen years. Farmer.

Family history.—Negative as regards *tsutsugamushi* disease.

Personal history. — Patient had been in the infected locality at various times and does not know when he was bitten by mites. This is his first attack of the disease.

Present illness. — The disease began on July 24, 1907, with a chill. The next day the patient entered the hospital. At that time the glands of one axilla were enlarged and tender and examination of the region drained by them showed the small ulcers resulting from three bites. There was no skin eruption and the spleen was not demonstrable. The pulse was strong, frequent and regular, appetite decreased and the bowels constipated. Urine was normal. The temperature is shown by Chart I.

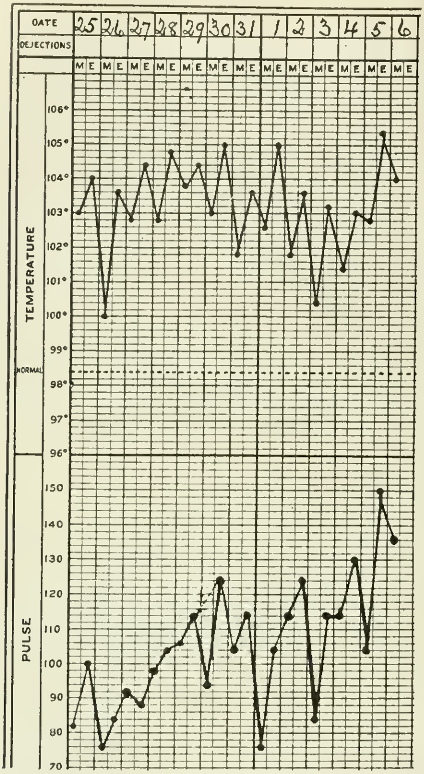


CHART I.

On July 26, an eruption of rose-colored macules appeared on the face. Later it gradually spread over the body and limbs. The diazo reaction was well marked in the urine of the 28th and the pulse was that day dicrotic. The eruption showed on the hard palate and the fauces and some cough was present.

Aug. 1. The present condition is indicated by the foregoing notes, there having been no change.

Aug. 2. The patient is sluggish and stupid. The eruption is still present but is not prominent; the eyes are injected and suffused; the spleen is tender but not palpable; respiration is rapid and the pulse feeble. The patient sleeps well and has had no delirium.

Aug. 3. The urine contains considerable albumin and numerous coarsely granular casts. The patient sleeps much and perspires freely, the pulse is 85, but very weak, the heart sounds feeble. There is no cough; breath sounds everywhere harsh. The eruption still shows on the face and chest but is fading. The eyes are much injected. The tongue is dry, white in the center, glazed at the margins, the papillæ prominent; gums spongy; spleen tender but not palpable.

Aug. 4. The general appearance and condition are about as yesterday. The gums are very spongy and are bleeding. Cough is present and produces a scant, tenacious sputum, much discolored with blood from the gums. Respiration is rapid and somewhat irregular, the breath sounds harsh. The pulse is rapid, irregular and of low tension, the first heart sound feeble. There is slight edema of the feet. The eruption remaining on the face is papular and the apex of each papule shows a minute scab; the conjunctivæ are much injected.

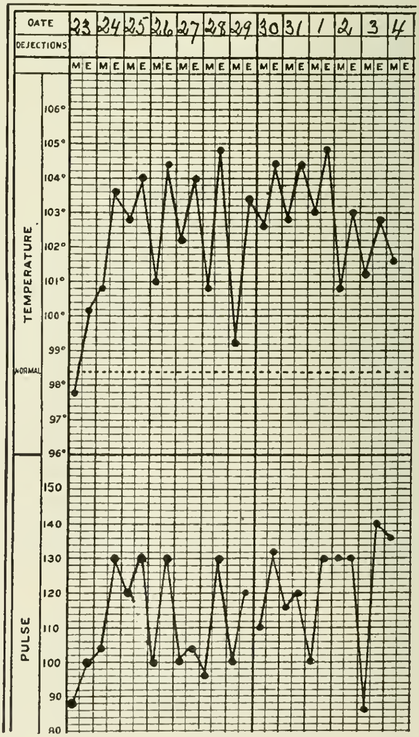
Aug. 7. We left on the 5th to visit another infected region and on our return this morning we learn that the patient became progressively worse and died on the morning of Aug. 6, with high temperature and edema of the lungs. Autopsy was not obtainable.

CASE II. I. Hasigawa. Female, age thirteen years. *Family history* negative as regards this disease.

Personal history. — The patient has been in the *tsutsugamushi* infected region and was bitten by a red mite on July 17, 1907. This is her first attack of the disease.

Present illness. — On July 22, she had a chill and next day entered the hospital. At that time she had fever, a flushed face, weak and rapid pulse, poor appetite and diarrhea, the last a very unusual symptom. The left femoral glands were enlarged, painful and tender and just below them was the small ulcer resulting from the mite bite. It was surrounded by a slightly infiltrated pink border.

On the 27th the spleen was demonstrably enlarged and the urine gave the diazo reaction. It contained no albumin. The patient was delirious at times and was extremely hypersensitive. The temperature is shown by Chart II.



[CHART II.

Aug. 1. Eruption appeared this morning for the first time, showing on the face. It is rubeolar in appearance, but scanty. Diarrhea has ceased under treatment. The pulse is growing weaker. Cough is present but unproductive of aught save pain; breath sounds everywhere harsh.

Aug. 2. The patient slept well last night and is not delirious. The pulse is rapid and feeble; cough persists and causes abdominal pain; hyperesthesia is very marked and pain causes the patient to moan a great deal. The abdomen is particularly painful and tender but is not distended or rigid. The bowels are loose. There is a dusky, faint, scattered, macular eruption on the face, arms and legs. Tenacious mucus in the throat excites cough and nausea.

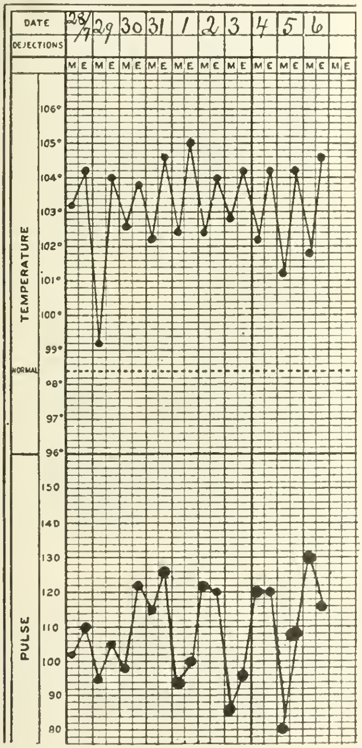


Chart III.

Aug. 3. Face dusky, eyes congested, eruption less distinct; tongue dry and glazed and its papillæ prominent. Hyperesthesia, abdominal pain and diarrhea persist. Patient slept poorly last night and is delirious. Respiration rapid and moaning; breath sounds harsh; cough less severe and distressing. Pulse recorded as 85 but during examination it was 140 and weak. Heart sounds rapid and weak but clear.

Aug. 4. Patient died at 6.00 a.m., to-day.

Delirium had ceased, but diarrhea persisted and the heart became rapid and weaker until death occurred.

Autopsy was not obtainable.

Case III. H. Itagake. Male, age fourteen years.

Family history negative as regards this disease.

Personal history. — The patient has visited the infected regions and was bitten by a mite on July 19. This is his first attack of *tsutsugamushi* disease.

Present illness. — The disease began with a slight chill on July 27, since that time the patient has had moderate fever and enlargement of the lymphatic glands, particularly of the right axilla, but has felt comfortable and has not appeared very sick. The temperature is shown by Chart III.

Aug. 1. Patient has had no symptoms except the fever, slight headache and constipation and does not look or feel very ill. There is no eruption and the spleen is not demonstrably enlarged. The right axillary glands are swollen and tender and the skin of the same axilla shows a small ulcer with pinkish, slightly indurated and tender margins.

Aug. 2. Face clear and bright. No eruption present and the patient looks well. The tongue is white, slightly dry and tooth-marked. The pulse is of good strength.

Aug. 3. The face is flushed, the eyes injected, a faint eruption present. The patient looks sicker than he did yesterday but does not complain. The tongue is moist and has a white coating, the spleen somewhat enlarged and tender, but not palpable. There is no cough but the breath sounds are harsh, especially at the apices of the lungs. The urine shows a trace of albumin and very numerous, coarsely granular casts and small round epithelium, but no blood. Examination of the feces shows ascaris eggs but is otherwise negative.

Aug. 4. The skin is hot, the face flushed, eyes injected, expression somnolent. The tongue is somewhat dry, red at the margins and has a thick, yellowish white, central coat. The gums are normal. Cough is present but there is no expectoration. Respiration is rapid and regular, the breath sounds harsh. The pulse is rapid, compressible and regular; the first sound of the heart roughened over the base and apex.

Aug. 7. On our return to the hospital we learned that the patient had grown worse and had become very nervous and that he had left the hospital on August 6. His subsequent history is unknown to us.

Case IV. S. Asai. Male, age seventeen years.

Family history negative as regards this disease.

Personal history. — Patient has been in the infected regions but was not aware that he had been bitten by mites. On July 27, he felt listless and feverish and on the 29th, he came to the hospital. At that time he had fever (see Chart IV), his face was flushed and he complained of headache and pain in the pharynx. The lymphatic glands in the left axilla were swollen and painful and careful examination revealed the presence of two small ulcers, one in the left axilla and one back of the hair line of the left frontal region.

Aug. 1. Condition as at time of admission. No eruption has shown and the patient looks and feels well. Spleen not palpable or tender. Slight systolic roughening is noticed over base and apex of the heart. There is slight enlargement of the superficial lymphatic glands, more marked in the left axilla. Physical examination is otherwise negative.

Aug. 2. The patient looks and feels well, has a good appetite, no pain, no eruption and sleeps well. The ulcer on the head has healed.

Aug. 3. The patient looks and feels well. The systolic roughening persists unchanged.

Aug. 4. Discharged from hospital, recovered.

Case V. T. Suzuki. Male, farmer. Age, forty-four years.

Family history. — One son had this disease two years ago.

Personal history. — The patient had an attack of *tsutsugamushi* disease at the age of seventeen years and a second attack at the age of twenty-five years. Lately he has visited the infected region but he does not know when he was bitten by a mite. On July 28, he began to suffer from malaise and he came to the hospital on the 30th. At that time he had fever (see Chart V) and the right inguinal glands were enlarged, painful and tender. At the right margin of the umbilicus was a very small ulcer with red, puffy edges and covered with a thin crust. There were no other symptoms.

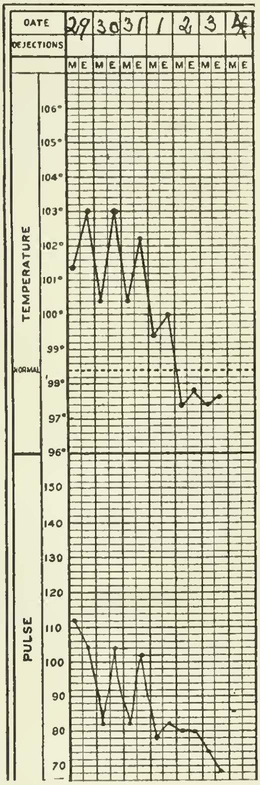


Chart IV.

Aug. 1. Enlargement of the epitrochlear glands is noticed but they are not tender. Patient feels well and looks so. Physical examination is negative.

Aug. 2. There has been no change since yesterday. The spleen is not demonstrably enlarged, the tongue is moist, clean at the edges and shows a white, central coat; there is no eruption, the bowels are sluggish.

Aug. 3. There is no change in the general appearance or condition.

Aug. 4. There is no marked change. The patient eats and sleeps well, and, except for his fever, the ulcer at the umbilicus and the lymphatic enlargement, appears to be well. The bowels are moving naturally.

Aug. 5. The patient to-day insisted on leaving the hospital, and did so notwithstanding the persistence of fever and the remonstrances of his attendants.

The subsequent history of the case is unknown to us.

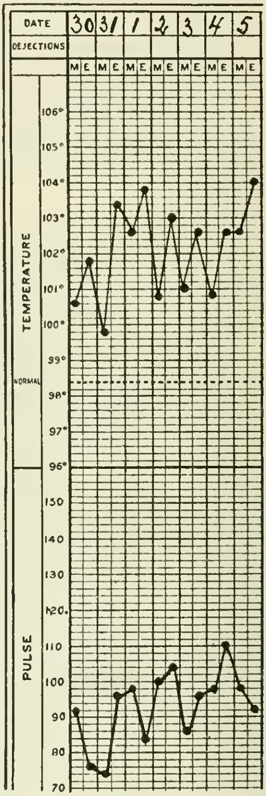


Chart V.

Case VI. Male. Age, eight years.

Family history. — The patient's mother had *tsutsugamushi* disease twelve and his father two years ago, both recovering. An employee living in the same house also had it at one time but the date is unknown.

Personal history. — The patient has at times been fishing in the infected region but does not know of having received any bite from a red mite. On July 30, he had a chill and since that time has had fever.

Aug. 2. The patient was this morning brought to hospital for the first time by his father.

He has a temperature of 103.2° F. and severe headache. The post-auricular and upper cervical glands of the left side are enlarged, tender and painful. Examination shows a mite bite just to the left of the sagittal suture at the vertex. It is a small, brown circle of necrotic skin, about 2 mm. in diameter. The brown, necrotic tissue is loose at the margins but most intimately adherent by its under surface to the sound scalp.

The tongue has a white coat, through which the papillæ project red and prominent. The eyes are not red or inflamed. Scattered over the face is a slight eruption, which first appeared last night. It is most prominent on the cheeks and consists of faint, dusky macules, 2 to 5 mm. in diameter, which fade on pressure and return very promptly when the pressure is relieved. The spots present the slightest perceptible degree of elevation. There is no eruption in the mouth or throat. The spleen is enlarged, the appetite poor, the bowels constipated; there is no cough and the heart and lungs are normal.

Removal of the necrotic area of the bite by means of forceps and scissors leaves a small ulcer with steep margins and a whitish or grayish lining, the appearance of which is said to be very characteristic.

Aug. 7. The patient did not enter the hospital and we have seen him but the one time. We are told that his fever is high and his condition serious.

The subsequent history is unknown to us.

Case VII. Sakuma. Male, farmer, age twenty years.

Family history is negative as regards *tsutsugamushi* disease.

Personal history. — The patient has not had this disease previously. On July 27 he was bitten by a red mite. On Aug. 3 he was taken sick with fever and a feeling of uneasiness. He continued feverish but had no great discomfort, nor any marked symptoms, and came to the hospital on Aug. 5. The maximum temperature that day was 104° F., the highest pulse rate 94. On the sixth the highest temperature was 103.2° F., the highest pulse rate 107.

Aug. 7. We saw the patient for the first time this morning. He has a temperature of 102.2° F. and a good pulse of 95. There is slight enlargement of the superficial lymphatic glands, most marked in the left axilla, where they are also tender. The bite is located in the left axilla and is an ulcer with a mass of black, necrotic tissue still attached to its central part. It is larger than usual, being about 1 cm. by 0.5 cm. The conjunctivæ are congested, the tongue moist and white and an eruption is present this morning for the first time. This is most marked on the right cheek and consists of six dusky, very slightly elevated papules which fade on pressure. The bowels are regular and the patient has neither cough nor pain. He sleeps and eats well but his expression is somewhat dull and listless. The spleen is slightly enlarged but neither tender nor palpable. The examination of heart and lungs is negative. We did not see this patient again and know nothing of his subsequent history.

XVI. CONCLUSION AS TO THE NONIDENTITY OF THE TWO DISEASES.

We think that a consideration of the facts concerning the two diseases, as at present known and set forth above, justifies the opinion that they are separate and distinct disease entities. They present many points of resemblance but not enough of them to overbalance those of difference.

XVII. DOES TSUTSUGAMUSHI DISEASE OCCUR IN THE PHILIPPINE ISLANDS?

The ready answer which the large majority of medical men in the Islands would give to the above question would be in the negative and it is probable that that is correct. Nevertheless, certain cases that are seen should lead to a more complete investigation of the subject. There occur in these islands a great many cases and probably several kinds of anomalous fevers and in our report for the quarter ending June 30, 1906, we made passing reference to two cases seen by one of us at Camp Connell, Samar, in the preceding February.

We are in possession of the temperature charts and the notes made on those cases by First Lieut. Earl H. Bruns, Assistant Surgeon U. S. Army. As these cases bear considerable resemblance to those of *tsutsugamushi* disease, it seems advisable to refer to them again and more at length.

Before relating the cases it is well to mention the climatic conditions under which they occurred. Camp Connell is located on the west coast of Samar and lies but a few feet above sea level. At one side of it is a low, flat stretch of land that was formerly a swamp, but it has been drained and made into a target range. In time of very heavy rains water still covers the range and it may be submerged for two or three days at a time, or such was, at any rate, the condition in 1905 and 1906. The ordinary annual rainfall at the post is about 110 to 120 inches, and almost all of the precipitation occurs between the first of June and the first of January. During January the target range is apt to become dry and hard. In 1905 the post suffered from drought, which began in January and was not fully relieved until late in May. In 1906 there was again very little or no rain in January and a repetition of the condition of the previous year was feared at the time that these cases occurred. The condition of the target range in December, January and February is somewhat similar to that of the *tsutsugamushi* infected regions in Japan in June, July and August.

One of us (Ashburn) happened to be at Camp Connell investigating the question of water supply in February, 1906, and was asked to see the two cases to be quoted, because of their resemblance to the spotted fever of Montana. The notes to follow were made by Lieutenant Bruns eighteen months before we saw any *tsutsugamushi* disease or considered the possible relationship between the two infections.

Case *A*. D. L. D. Age twenty-nine. Private, Co. M, 21st Infantry.

Family history. — Negative.

Personal history.— The patient has had the usual diseases of childhood, pneumonia at nine years and at fourteen years, dysentery in 1901, malaria in 1901, gonorrhea and chancroids in 1905.

Present illness. — Jan. 29, 1906. For the past six days he has had headache and pain in the back and has been feverish and constipated, but has had no chill. He was admitted to the hospital this morning with the following symptoms and signs: headache, pain over the kidneys, constipation, slight pain in right iliac fossa, slight dry cough; heart, lungs, liver and spleen normal. There is an eruption of flat, rose-colored, irregular macules scattered over the chest, abdomen and legs and about the anus. General glandular enlargement is present, the right femoral glands being also painful and tender.

(For the temperature see Chart A.)

Jan. 30. No malarial parasites in blood; leucocyte count 5,400; urine normal.

Jan. 31. Glands in right femoral region more enlarged, tender and painful. There are headache and slight abdominal pain.

Feb. 2. Muttering dilirium, nervous twitching and subsultus are present this morning. The skin is mottled and the eruption increased on chest, abdomen, neck, face, legs and about the anus. Tongue coated and dry, pulse dicrotic. Femoral glands smaller.

Feb. 3. Breathing is thoracic and shallow; face flushed; femoral glands painful; eruption more dusky. The pulse is rapid and irregular.

Feb. 4. No change. Blood shows no malarial parasites; leucocyte count 4,300.

Feb. 6. The patient feels better this morning; the pulse is of good tension, the eruption fading.

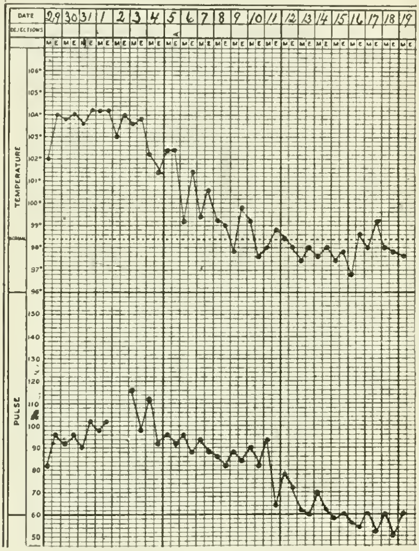


CHART A.

Feb. 9. Improved. Patient looks brighter and feels very well. His mental condition is peculiar, not normal.

Feb. 10. Delirious all night and to-day. Face flushed; pulse remains fairly strong.

Feb. 11. Improved, quiet, no pain.

Feb. 13. Improved, hungry. The pulse is good and the rash disappearing. Urine normal.

Feb. 16. The patient has improved. He has no pain, the pulse is strong, the eruption and glandular enlargement have disappeared.

Feb. 19. The Widal reaction is negative after one hour.

Case *B.* H. D. P. Age thirty-four, teamster.

Family history. — Negative.

Personal history. — The patient has had diseases of childhood, "typhoid-malaria" in 1894, dysentery in 1903. There is no history of syphilis or gonorrhea.

Present illness. — Feb. 2, 1906. The patient has felt badly for five days and has had headache, pain in the back and limbs and in abdomen and the appetite has been poor. There was no chill and but slight cough. Two days ago he noticed enlarged glands in the right axilla and right groin. Yesterday he had diarrhea. He was admitted to hospital to-day suffering from fever, pain in the head, back, legs, anus and abdomen, enlarged and painful lymphatic glands in the right axilla and groin and diarrhea.

Physical examination: The heart is normal; dry râles are heard over the upper lobes of both lungs. The abdomen is tender around the umbilicus, the spleen enlarged. A rose-colored, irregular, macular rash shows on the head, trunk and limbs. There is a general enlargement of the superficial lymphatic glands, more marked in the right axilla and groin. The tongue is moist and has a white, central coat and red edges. No malarial parasites found in the blood.

(For the temperature see Chart B.)

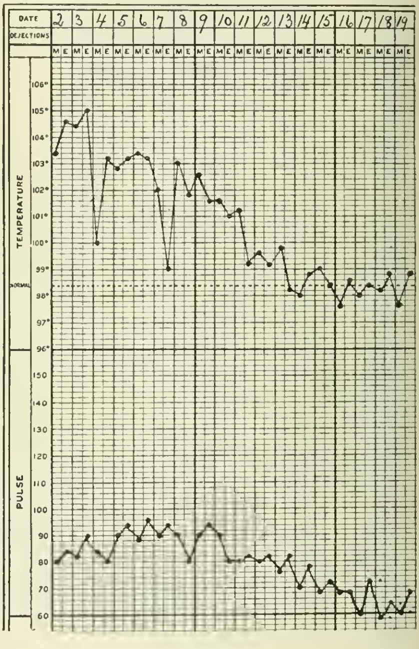


CHART B.

Feb. 3. No malarial parasites. The patient is dull, the face flushed, the axillary and inguinal glands painful.

Feb. 4. There is no change. Leucocyte count 3,200; no malarial parasites.

Feb. 5. Patient appears better this morning. The pulse is of good tension, the eruption fading. There was a marked chill after a plunge bath.

Feb. 6. The eruption is fading, the pulse is good, the tongue dark and dry. No malarial parasites in the blood. A differential count of white cells shows: small lymphocytes 20, large lymphocytes 8, polymorphonuclears 60, eosinophiles 2, transitionals and large mononuclears 4%.

Feb. 9. Still improving. A gland was removed from the right groin for examination.

Feb. 10. Improving. Face flushed, eyes injected, mouth dry and the tongue shows a yellowish coat. The pulse is of good tension, the eruption confluent and fading. No malarial parasites in the blood.

Feb. 12. Patient is still improving. He sleeps well. Bacteriological examination of the excised gland was negative.

Feb. 13. The patient is hungry, the eruption has disappeared, the glandular enlargement is less marked and the urine is normal.

Feb. 19. Patient is still improving. Widal reaction was negative after one hour. No malarial parasites found in the blood.

Lieutenant Bruns made daily notes on these cases but when there was no change in the condition or no new examination mentioned the remarks have been omitted.

Both patients received cold baths during the progress of the disease and the charts are probably modified by them. While the notes do not indicate it, such is probably the explanation of the two marked drops of temperature shown by Chart B. A satisfactory diagnosis was never made on either case, though both were reported as typhoid fever.

We do not maintain that these cases were *tsutsugamushi* disease, but they certainly present enough points of resemblance to it to make it worth while for medical men in the Philippines to keep the matter in mind should they have the opportunity of investigating similar cases.

ACKNOWLEDGMENT.

We desire to express our thanks to those assisting us in this study and particularly to Professor Miyajima and his fellows from the Imperial Institute for Researches of Infectious Diseases, to whom we are indebted for the opportunity to see what we did of *tsutsugamushi* disease, and for such knowledge as we have of the articles published on it in Japanese, as well as for the information they gave us concerning their own work, and to Lieutenant Bruns, for his notes on the Camp Connell cases.

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A STUDY OF THE VALUE OF MEASUREMENTS OF CHEST EXPANSION.

BY HARRY W. GOODALL, M.D., BOSTON,

AND

J. LYMAN BELKNAP, M.D., BOSTON.

Opinions differ as to the value of the measure of chest expansion in health and in early pulmonary disease.

Cabot says the measure yields very little information of practical value and at present is very little used. DaCosta says we are able to estimate the amount of air received into the lungs, but the results are not, on the whole, reliable. Sahli and Butler attach considerable importance to the measurement, and Anders says with the growing adoption of diagnostic methods of precision this most important one, mensuration, deserves at once increasing scientific study and practical application.

In the routine examination of supposedly healthy individuals by Medical Examiners for Government service, insurance companies and the like, where standard tables of normal individuals are used for comparison, chest expansion receives very serious consideration, as, for example, in the United States Army and Navy an expansion of less than two or two and one half inches may be sufficient cause to reject the individual. Many insurance companies do not consider an applicant with an expansion of less than two inches a good risk.

The following study of chest movements shows that, instead of a precise, simple diagnostic method, we have to do with one capable of considerable error in technic and interpretation and that one can undoubtedly determine the mobility of the chest walls, but that this measurement does not necessarily assist us in determining the true lung expansion.

This thoracic enlargement in normal inspiration is brought about in two ways, — the descent of the diaphragm and the elevation of the ribs.

In the male the diaphragm is the chief respiratory agent and even in the female plays such an important part that it is not to be neglected. In its descent the abdominal organs are pushed downward, as is evidenced by the projection of the abdominal walls, and result in an increased vertical diameter of the thoracic cavity. The groups of muscles which are brought into play in elevating the ribs are chiefly responsible for the difference in the anteroposterior and transverse diameter of the chest.

Inspiration being a voluntary act it is at once evident that a normal individual can at will affect the abdominal or costal type of breathing and that the actual chest expansion will depend upon the type followed, being greater in the costal type.

It is also evident that the higher the diaphragm is held during costal inspiration, that is, the shorter the vertical diameter of the chest, the greater will be the increase in chest expansion, the volume of air inspired being the same. This elevation of the diaphragm can only be brought about by the contraction of the abdominal walls which forces the abdominal organs upward into the upper abdominal cavity, an action which has no relation to normal inspiration and only leads to erroneous conclusions.

From this it is evident that no measurement of chest expansion is of comparative value without a knowledge of the position of the diaphragm, which can only be estimated by corresponding abdominal measurements, and that tables of chest expansion taken alone are practically valueless.

This consideration of the part played by the contraction of the abdominal walls in elevating the diaphragm has led the writers to believe that a normal individual with the lungs at full expiration and again at rest may, while holding the breath, without the further intake of air, shorten the vertical diameter of the chest by abdominal contractions with a resulting increase in the chest circumference.

If an increase in chest circumference results it must, of course, be due to muscular contractions and not to an increased volume of air.

From the following tables it will be seen that a considerable increase is possible, and it is fair to assume that this increase is capable of considerable variation according to muscular development, practice, etc.

Tables I and II illustrate the points in question. Measurements were taken of two normal male individuals of moderate muscular development.

The chest measurements were taken at the level of the nipples and just below the angle of the scapulæ and the abdominal measurements at the level of the umbilicus.

During forced expiration the subject expelled as much air as possible from the lungs. Rest refers to the position half way between inspiration and expiration. Maximum expansion refers to the greatest expansion the subject is able to attain regardless of method.

From Table I it will be seen that with full inspiration, abdominal type, the total chest expansion in A is 2 in., in B 1.65 in., the maximum expansion attainable in A 3.6 in., in B 2.65 in. We assume A gained 1.6 in. by abdominal contraction, while B gained but 1 in. This assumption is borne out by the fact that A's abdomen was 3.5 in. and B's only 1.85 in. smaller during the maximum expansion than during abdominal inspiration. Again, the increase of abdominal measure between rest and full abdominal inspiration in A was but .2 in. while in B it was 1.1 in.

Table I.

Inspiratory Measurements.

	A		B	
	Chest	Abdomen	Chest	Abdomen
Forced expiration,	35.75	35.25	32.5	27
Rest,	36.65	37.15	33.85	28.75
Full inspiration abdominal type,	37.75	37.35	34.15	29.85
Maximum expansion,	39.35	33.85	35.15	28

Comparing the two chest measurements we conclude that B's lung capacity is proportionately as good as A's, that B's greater descent of the diaphragm, as shown by the greater abdominal measurement, equalizes A's greater chest expansion due to proportionately greater abdominal contraction.

It is obvious that we cannot draw absolute conclusions as to actual lung expansion from these two measurements, but without a knowledge of the abdominal expansion the error is much greater.

The most interesting observations are included in Table II where the chest expansion is attained without additional intake of air. Starting with as much air as possible expelled from the chest, A was able to attain an expansion of 1.9 in. or 52.7% of his total maximum expansion, while B attained 1.35 in., or 50% of his total expansion. In order to attain this A's abdominal measurement was 2.1 in. smaller than at forced expiration, while B's abdomen was only .15 in. smaller. From rest to maximum muscular chest expansion A gained 2.75 in., B, 2.25 in., this increase being evidently due to the amount of air in the lungs representing the volume between forced expiration and rest.

Table II.

Expansion without Additional Intake of Air. Measurements made while Holding Breath.

	A		B	
	Chest	Abdomen	Chest	Abdomen
Forced expiration,	35.75	35.25	32.5	27
Rest,	36.65	37.15	33.85	28.75
Forced expiration greatest muscular expansion,	37.65	33.15	33.85	26.85
From rest to greatest muscular chest expansion,	38.5	32.35	34.75	26.6

It is interesting to note that these last chest measurements are greater than the chest measurements in full abdominal inspirations where we know the lungs are expanded to their utmost capacity, proving absolutely the two points in question.

In order to still further study the influence of contraction of the abdominal muscles on the chest expansion 25 normal active male individuals were measured. Both the chest and abdomen measure-

Table III.

	Rest.		Expiration.		Inspiration.		Chest Expansion.	Abdomen Retraction.
	Chest.	Abdomen.	Chest.	Abdomen.	Chest.	Abdomen.		
1.	34.0	32.3	33.1	28.2	35.5	27.4	2.4	4.9
2.	36.6	34.1	36.2	33.2	37.3	33.4	1.1	1.0
3.	35.6	33.2	33.1	31.5	37.0	29.6	3.9	3.6
4.	33.1	30.6	32.4	29.4	35.7	29.1	3.3	1.5
5.	35.5	32.0	33.3	31.2	37.5	30.7	4.2	1.3
6.	35.0	32.4	31.2	31.6	36.6	30.6	2.4	1.8
7.	34.6	31.6	33.1	28.7	36.0	28.2	2.9	3.4
8.	39.3	35.5	37.4	31.1	39.4	34.0	2.0	1.5
9.	39.3	36.0	38.1	35.1	40.2	35.0	2.1	1.0
10.	36.6	32.6	35.6	31.2	37.4	30.3	1.8	2.3
11.	35.2	31.4	33.4	30.7	36.2	30.0	2.8	1.4
12.	33.4	30.3	33.0	28.5	34.5	28.0	1.5	2.3
13.	37.6	33.4	36.0	32.4	38.7	32.0	2.7	1.4
14.	35.0	30.5	34.0	30.0	36.2	29.0	2.2	1.5
15.	39.2	36.0	36.4	35.1	40.4	35.3	4.0	0.7
16.	31.7	33.0	34.0	31.3	37.1	31.0	3.1	2.0
17.	33.6	30.0	32.6	28.7	35.7	28.3	3.1	1.9
18.	32.4	28.2	31.7	27.6	34.2	27.3	2.5	0.9
19.	36.3	32.7	34.6	31.4	38.0	31.0	3.8	1.7
20.	36.6	34.0	35.6	32.6	39.0	32.6	3.4	1.4
21.	33.0	31.4	31.6	28.1	35.0	27.6	3.4	3.8
22.	33.2	29.4	32.6	28.5	34.0	27.5	1.4	1.9
23.	33.1	29.1	32.0	27.4	31.4	26.1	2.4	3.0
24.	33.6	31.0	32.7	29.1	35.6	29.1	2.9	1.9
25.	33.3	29.4	32.4	28.0	35.3	29.6	2.9	

Abdomen retraction = difference between abdomen at rest and at inspiration.

ments were taken, — at rest, at forced expiration and at their maximum chest expansion. The individuals were in no way instructed previous to the measurements being taken.

It will be noted that in only one case was the abdominal measurement greater at greatest expansion than at rest. The average chest expansion equals 2.7 in. The corresponding average abdominal measurement was 1.8 in. smaller than the average measurement at rest, showing that in practically every case the diaphragm was held at a higher level than at rest. This is more strikingly shown when we consider that during forced expiration, when the diaphragm is forced up as high as possible, the abdomen averaged .5 in. more than at maximum inspiration, showing no diaphragm descent in spite of considerable increase of volume of air in the lungs.

Comparing these figures with Table I it is fair to conclude that in the majority of these measurements muscular contraction plays an important part, and the chest measurement is not a fair indication of the volume of air inspired.

CONCLUSION.

Mensuration of the chest alone does not give an accurate measurement of respiratory capacity. To be of any value, corresponding abdominal measurements must be taken in order to determine, as nearly as possible, the position of the diaphragm, the chief respiratory agent.

As much as 50% of the increase in chest circumference during maximum expansion may be due to change in the shape of the thoracic cavity due to muscular contractions alone.

From these two facts it is evidently erroneous to conclude from chest measurement alone that a supposedly healthy individual with a chest expansion of less than two inches has a diminished respiratory capacity, or that an individual with an expansion of two inches or more necessarily has a normal respiratory capacity.

THE EXTRA-INTESTINAL ORIGIN OF HYDROBILIRUBIN.

BY A. E. AUSTIN AND MABEL D. ORDWAY.

(From the Medical Chemistry Laboratory of Tufts College.)

It is a quite universally accepted fact, I think, that urobilin and stercobilin are one and the same substance; true, they may both exist as a mother substance, respectively, in urine and feces, but the final products caused by the activity of light or by Schmidt's mercuric chloride in feces have the same spectroscopic appearance and give the same chemical reaction with zinc chloride, while the elementary analyses are approximately similar. As to the identity of the artificial product obtained by the strong reduction of bilirubin by sodium amalgam, there is more question; still the latter at least gives the same spectroscopic appearance and chemical reaction, but not exactly the same elementary composition. Hence we may regard all three as identical, and coming from the same source, bilirubin, while we give them the common term "hydrobilirubin."

We may be pardoned, perhaps, for giving briefly the well-known theories of the formations of these coloring matters: First and best sustained is that of their enterogenous origin, which is as follows:

Bilirubin is formed by the liver and passes into the intestinal tract, where, subjected to the action of bacteria in an atmosphere of hydrogen and water, it is thoroughly reduced and hydrated, according to the following reaction:

$$2\ C_{16}\ H_{18}\ N_2\ O_3 + 2\ H + H_2O = C_3\ H_{40}\ N_4\ O_7$$

This change takes place more particularly in the large intestine from which absorption is limited, yet we find the same substance in the urine, though in much less quantities than in the feces, as would be expected. Furthermore, hydrobilirubin is found very commonly in fistula bile, for which the common explanation is that the liver merely extracts it preformed from the blood and passes it again into the intestine. Hence we may have an intermediate circulation, from the liver into the intestine, from thence into the blood, from which it makes its way into the liver and therefore into the bile.

The proofs on which this assumption of the formation of hydrobilirubin rests are as follows: Quincke [1] and others found that, when a complete closure of the ductus choledochus took place, bilirubin was found in the urine, but no urobilin; if, however, bilirubin be ingested, the urobilin reappeared; the feces contained little or no stercobilin, but upon ingestion of bile the former reappeared, as has been shown by F. V. Müller.[2] Ladage [3] has demonstrated that if urobilin is given by the mouth by far the larger part is found in the urine, while if bilirubin be given, no such increase occurs; hence we are led to believe that absorption is much more rapid from the upper part of the small intestine.

From the labors of D. Gerhardt,[4] we learn that urobilin is absent in the urine of the newborn, probably from the absence of bacteria, and is also very much diminished when the bile is only scantily present in the intestine as in hunger. To all these statements we can agree, and this undoubtedly is the physiological origin of hydrobilirubin. A. Beck [5] still further confirms this by his researches, in which he showed that upon complete closure of the ductus choledochus in a dog, urobilin disappears from the bile. With Neubauer's [6] statement, however, that whenever the common duct is closed by disease, urobilin disappears from the bile, we cannot agree, for reasons which will appear later. Here pathological conditions at once arise and the normal course of production is disturbed. But before proceeding to our own investigations, it will be well to mention several facts which cannot be well reconciled with this theory of the enterogenous origin of hydrobilirubin. For instance, D. Gerhardt [4] found hydrobilirubin in hemorrhagic ascitic fluid from a case of cancer of the gall bladder, where there was a complete closure of the common duct and absence of the bile pigments or stercobilin in the intestine. The only conclusion from this is that hydrobilirubin may be found elsewhere than in the intestinal tract.

This deduction is still more fully warranted by the frequent discovery of this pigment in thrombi and effusions of blood into intercellular tissues by Hayem [7] and others, while Winter [8] has found this pigment in blood serum containing hemoglobin where its formation occurred entirely free from the action of bacteria, and Magnus-Levy [9] has shown the conversion of bilirubin to hydrobilirubin in liver subjected to autolysis.

Nor must we leave out of consideration the contention of Vitali [10] that the liver can convert the hydro product to bilirubin itself. His explanation, then, of the presence of urobilin in the bile is that in diseased conditions the liver is unable to convert this product to bilirubin, an act which it can accomplish under normal conditions. Riva [11] also recognizes this conversion of urobilin to bilirubin by the liver and makes this probable by showing that the ingestion of urobilin does not cause an increase of this substance in the urine but of bilirubin.

Of the more recent investigations, we have the results of Fischler's [12] experiments, which were based upon dogs whose ductus choledochus was tied, the bile led out through a fistula, the animals poisoned with blood destroying agencies like amyl alcohol, phosphorus, etc., and the bile, feces and urine examined for urobilin. The author found the urobilin of the bile increased, but it was absent in urine, and only present in traces in the feces, from which he concludes that this pigment may be found without entrance to the intestine, and regards the liver as the agent of formation.

How, then, are we to explain these departures from the physiological process? Several so-called theories or explanations are offered by different authors: First, that the normal liver produces bilirubin, the abnormal or pathological liver urobilin; second, the liver has nothing to do with the formation of urobilin, as that depends wholly on the amount of hemoglobin broken down; third, urobilin is formed neither in the liver nor in the blood, but by the renal cells; and fourth, the liver produces only bilirubin, but when from obstruction to the outflow of bile this is absorbed into the blood and eventually deposited in the tissues, the cells convert it into hydrobilirubin as a means of protection of the body against the imperious influence of the circulating bile pigment.

The explanation of the formation of urobilin in extravasations is, apparently, that reabsorption takes place through the agency of autolysis, an act which Magnus-Levy has shown in the liver takes place in an atmosphere of hydrogen, conditions most favorable for the conversion of either hemoglobin or bilirubin to urobilin.

Led by this marked variation of views, we have attempted to clear up some of these apparent contradictions. First, we demonstrated from the examination of fifty specimens of fistula bile that hydrobilirubin is usually found; in our examinations 94% had this form of pigment, but in all cases urobilin was also found in feces or urine. We then examined the fistula bile in 7 cases where examination of feces or urine or both showed the absence of hydrobilirubin in either. From this we concluded the common duct was closed or at least that no bile pigment was passing into the intestine—otherwise hydrobilirubin would have been found in either or both, according to the theory of enterogenous origin of this pigment. Three methods were employed for the isolation of urobilin:

A. In urine:

1. Precipitate 200 ccm. urine with lead subacetate.
2. Filter and wash once with water.
3. Dry precipitate with gentle heat.
4. Rub up with alcohol and 5 gm. oxalic acid.
5. Allow to stand twelve to twenty-four hours and filter.
6. (*a*) To one part alkalinised with ammonium hydrate, add zinc chloride solution, examine with spectroscope and note fluorescence.

(*b*) Shake out the other portion with chloroform, wash well with water and examine with spectroscope.

B. In feces add dilute sulphuric acid (2 gm. in 1,000 ccm.) to watery extract of feces.

1. Saturate with ammonium sulphate.
2. Filter.
3. Wash with saturated solution of ammonium sulphate.
4. Dry precipitate and extract with alcohol containing sulphuric acid.
5. Test alcohol solution in spectroscope.
6. Add excess of ammonium hydrate and zinc chloride solution, noting fluorescence.

C. In bile:

1. Concentrate, extract with alcohol and evaporate until alcohol removed.
2. Render slightly alkaline with sodium hydrate.
3. Treat with calcium chloride solution (precipitate calcium bilirubinate).
4. Alkalinise filtrate (urobilin and urobilinogen) acidified with sulphuric acid.
5. Shake out with chloroform and wash with water.
6. Examine with spectroscope.

The results of the examination of the bile from the seven individuals with biliary fistula together with results of examination of urine or feces or both are as follows:

1. From Carney Hospital. Nov. 17, 1906, day after operation, 125 ccm. bile, bile contained no urobilin nor did the urine.
2. From Massachusetts Homeopathic Hospital. Nov. 20, first day after operation; amount 90 ccm. Bile contained urobilin but the urine did not.
3. From the Carney Hospital. Dec. 1 and 2. First and second day after operation; amount respectively 66 ccm. and 164 ccm., total 230 ccm. The feces contained no urobilin nor did the bile.
4. St. Luke's Hospital, New Bedford, Dec. 8 and 9, second and third days after operation. The urine contained no urobilin while the bile did.
5. St. Luke's Hospital, New Bedford. Dec. 12, 1906, urine contained no urobilin nor did the bile obtained at operation.
6. Massachusetts Homeopathic Hospital. Jan. 9, 1907, second day after operation. The feces contained no urobilin nor did the bile.
7. St. Luke's Hospital, New Bedford, Jan. 14 and 15, 1906. Second and third days after operation. Neither urine nor bile contained urobilin.

Upon consideration of these cases as a whole, we find that in seven instances, where feces or urine was free from urobilin, the bile contained it in two. In these two instances, how are we to explain the presence of urobilin in bile? One ingenious explanation is that the bilirubin circulating in the bile is eliminated by the intestine as other foreign substances are, for instance urea, reduced and absorbed; this it appears to me is rather vague and as far as I know has never been subjected to proof.

Next we have the possibility above mentioned that blood coloring matter may be changed directly to urobilin without the aid of the liver, but in all probability this passes through the stage of bilirubin and hence we have the further possibility that tissue cells may convert bilirubin into urobilin. In order to clear up this possibility it seemed advisable to learn what blood could do with bilirubin under favoring conditions. Into sterilized bottles containing 5 ccm. .3% ammonium oxalate solution, 10 ccm. blood was drawn directly from the umbilical cord at confinement. To one series, 3 in number, .1, .2 and .3 ccm. of a solution containing .005 gm. bilirubin, placed at my disposal by my assistant, Dr. F. S. Hollis, in 3 ccm. 1-10 NaOH was added saturated with toluol and allowed to remain twenty-four hours in a brood oven at 38° C. A subsequent attempt at isolation showed no evidence of urobilin. Another series also of 3 had added to them, .4, .5 and .6 ccm. of this bilirubin solution and underwent forty-eight hours' digestion in the brood oven, also without a trace of urobilin being formed. From these results I think we may deduce the conclusion that the blood itself has no effect upon bilirubin, whatever its action may be upon its own hemoglobin and its allied products.

As most of these changes take place in the cells these experiments are not conclusive and it will be necessary to use organ extracts, or even to pass solutions of bilirubin through organs of animals *in situ*, to determine whether the change can be accomplished by cell activity, an effort which we hope soon to undertake.

Then we have the possibility, according to Vitali and Riva, mentioned above, that in those cases in which urobilin was not found, that it had been converted to bilirubin. This was based upon the fact that if urobilin be injected into the blood of an animal this substance is not found in the urine, but bilirubin is. As the opposite process is one of reduction and hydration, it seemed probable that the change of urobilin to bilirubin could be accomplished by mild oxidation, hence from the urine of an individual suffering from pernicious anemia, whose urine and feces were both impregnated with this pigment, urobilin was isolated and attempts were made with peroxide of hydrogen to oxidize it, but all attempts failed; if such change takes place, it is apparently much more than a mere oxidation.

While the problem is by no means solved, we think from these results we are justified in reaching the following conclusions:

1. When no bile enters the intestine (absence of urobilin in feces and urine) urobilin may occasionally be found in fistula bile.
2. This is not due to the conversion of bilirubin to urobilin by the blood; what effect cells actively may have upon it we do not yet know.
3. It is evident that the liver does not form urobilin, or it would be oftener found when complete closure of the common duct occurs.
4. If urobilin is ever regenerated to bilirubin, it is probably not an oxidative process, as so often stated.
5. As cholecystitis is often accompanied by bacterial infection of the gall bladder, from which these germs may easily make their way into the liver and there exercise their functions as in the intestines, the query appears a just one, if the formation of urobilin other than in the intestine may not be due to bacterial infection.

This supposition seems further substantiated by the labors of Adami, who has shown the presence of numerous bacilli in the liver.

We wish to express our thanks to Dr. F. J. Corley of St. Luke's Hospital, New Bedford, who placed much of this material at our disposal.

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A LIPOMA ARISING FROM THE BRACHIAL PLEXUS: A REVIEW OF SOME OF THE RARE FORMS OF THIS TUMOR.

BY W. P. COUES, M.D., BOSTON.

W. F. M., three and one-half years of age, was first seen May 28, 1907, at the Surgical Clinic, Boston Dispensary.

The history is as follows: The mother and father are living and well; one brother and one sister living and well. There is no family history of tuberculosis. The child was born without instrumental aid.

When he was three months old the mother noticed a slight swelling under the left arm; it was not painful or reddened and grew slowly; the growth did not at first interfere with the movements of the arm, but has done so of late.

Examination showed a well developed and nourished boy. The heart, lungs and other parts of the body except the left axilla, showed nothing abnormal. The left axilla was occupied by a smooth, rounded tumor the size of an orange. The surface was not reddened, there was no fluctuation; the mass seemed rather deeply attached, but did not seem adherent as far as could be judged by palpation. There had never been any opening in the tumor and it had never suddenly varied in size. Much doubt existed as to the diagnosis; the growth evidently was not glandular. There was a "doughy" feel to the mass; there was no dimpling of the skin and no lobules could be felt; there were no enlarged glands near the tumor. A diagnosis of lipoma was made by exclusion.

Operation, ether, May 29.

The tumor was dissected out with much difficulty. After superficial dissection in the axilla it was found that the tumor was encapsulated.

It was necessary to carry out the dissection of the axilla as completely as for carcinoma before the tumor could be enucleated. It passed down from the superficial axilla under the pectoral muscles to the chest wall. The tumor was adherent to the brachial plexus, one cord, the outer, passing directly through the substance of the tumor; this complicated the dissection as the tumor was freed from around the plexus with great difficulty, it was finally removed entire and grew from the sheath of the brachial plexus.

In its growth the tumor had stretched and spread the cords of the plexus to a considerable extent. The inner pole of the tumor lay free behind the nerves and vessels in the deepest posterior part of the axilla.

There was much shock for a short time after the operation. Gradually the condition improved. Considerable serum drained from the wound which after a few days became infected. Gradual healing took place without reopening incision. The lower angle of the wound had been drained. A sinus persisted for some time. In summer there was some wrist drop and loss of ability to move arm and forearm. The pathologic report showed the tumor to be a lipoma.

Examination in November showed no atrophy of arm or hand, wrist drop entirely disappeared, sinus closed, movements of the arm and hand perfect.

The occurrence of these fatty tumors, arising apparently directly from tissues free from gross fat, is of interest. Their diagnosis, when deeply seated, is often difficult, and sometimes impossible before operation.

Bland-Sutton [1] mentions the fact that lipomata may occasionally arise from a peripheral nerve sheath. There is a specimen in the Middlesex Hospital collection of a lipoma which grew from the sheath of the median nerve. Vickery records a case, quoted by Bland-Sutton,[1] in which a lipoma weighing 12½ oz. was removed from the thigh of an infant, nine months of age.

The tumor was adherent to the sheath of the great sciatic nerve and before operation had all the appearance of a sarcoma.

Schwartz and Chevrier [2] have recently called attention anew to the periosteal and osteoperiosteal forms of lipoma.

In one case a tumor the size of a mandarin orange, of ten years' duration, was found over the clavicle, the outer part was fluctuant, the inner part was very hard. Palpation showed intimate adherence to the clavicle.

At operation an encapsulated tumor was found fixed to the clavicle by a bony pedicle, which was removed with the tumor. The tumor was found to be a lipoma.

They also report the case of a woman fifty-eight years of age, who injured the lower part of the thigh a year previously. At that time there was an immediate hematoma; this gradually grew smaller and then a growth appeared at the same spot; it was hard, sub-muscular and adherent to the femur. At operation an encapsulated lipoma was found under the vastus externus; it was firmly fixed to a small exostosis.

Péraire [3] records the case of a woman of twenty-eight years, who for three years had a tumor of the left clavicular region; it grew to the size of a mandarin orange. A diagnosis of cold abscess had been made. At operation a lipoma arising directly from the periosteum of the clavicle was found; the tumor was partly in front and partly behind the clavicle; it was so closely adherent that a chisel was necessary to remove it.

Delbet [4] reported a tumor growing from the lesser trochanter. There were two tumor masses united by an isthmus about the bone. The tumor had the appearance of a sarcoma. At operation it was found to be a lipoma growing from the bone and periosteum.

Alglave [5] reports the case of a patient who entered the hospital for operation for intestinal obstruction. There was a large tumor growing from the upper part of the left side. The patient died of pneumonia. At autopsy the tumor, the size of a child's head, was found to be a lipoma, with a central calcified area. The tumor grew from the periosteum of the posterior inferior part of the scapula.

Microscopic examination of this variety of tumor shows frequently a fibrous change in the pedicle. Schwartz and Chevrier distinguish between the osteo-periosteal lipomata (very rare) which penetrate the bone, and true periosteal lipomata, merely adherent through the periosteum. The periosteal variety may be so adherent that extirpation is only possible by a wide removal of periosteum, as in a case recorded by v. Bergman. Ordinary fatty tumors may become fixed to the periosteum by chronic inflammatory processes. These periosteal tumors in children grow rapidly and may have all the aspects of malignant growths. Schwartz and Chevrier [2] speak of this in their article and of the difference in time of growth in children and adults. Traumatism and a subsequent nodular periostitis explain the adherence of these tumors, according to them. These growths may contain striped muscle fiber in such situations.

The intermuscular lipomata are more common, and have been found in the deltoid, biceps humeri, complexus and rectus abdominis. A lipoma has been found in the middle of a sub-mucus myoma of the uterus. Bland-Sutton.

Intra-pleural lipomata have been reported by Fitz,[6] Clark and Gussenbauer. In one case the tumor had the shape of a dumb-bell, one end lying beneath the pleura, the other being situated under the pectoralis major. The isthmus of the tumor passed between two ribs. The subpectoral end of the tumor led to the diagnosis of sarcoma.

One is struck with the fact that almost all these tumors, periosteal, subpleural [8] arising from nerves, have been mistaken for sarcomata, or had such a strong outward resemblance to them as regards growth and appearance that each author comments on it.

Bland-Sutton [1] speaks of a lipoma of the posterior triangle of the neck that was mistaken for an aneurism of the subclavian artery, and the vessel ligated in error. He also speaks of the care that should be taken in operating on fatty tumors in the middle of the back; they may be over and directly connecting with spinae bifidæ.

Encapsulated lipomata have been found in the subserous tissue of the intestine. These tumors pushing up through the muscular coat have appeared as polypi inside the intestine. Such tumors have been found in the colon, Bland, (Sutton, Knaggs) and in the ilium (Stabb). They caused intestinal obstruction in each case.

A lipoma has been recorded growing from the dura mater over the cella turcica, and extending into the middle of the skull. The tumor was as large as a child's fist.

Lipomata of large size have been found growing from the broad ligament, and giving rise to many different diagnoses.

In a somewhat extensive review of the subject I have been unable to find a case similar to the one I report.

H. Fischer [7] reported 190 different cases of lipoma; one of these was the nearest in similarity to mine that I was able to find.

W. L., an instrument-maker, had for twenty years a small nodule on the inner side of the right arm; in eight months there was great increase in size. There was numbness of the hand for a few days. Examination showed on the inner side of the arm, extending across to the front, a soft indolent tumor, 24 cm. long and 32 cm. in circumference. The skin, although thickened, was not adherent over this. The tumor was freely movable. but could not be raised from its base, which could be traced between the muscles to the bone. Operation showed that the tumor was adherent to the vessels and nerve sheaths.

The brachial artery, considerably narrowed, had to be cut and tied before the tumor could be removed. The nerves were not injured. The tumor was a lipoma.

It is interesting to note that Fischer had eight recurrences after removal of lipomata. Two in the infraclavicular region, 2 in the subscapular, 3 in the neck, and 1 in the inguinal region.

Johnstone [8] also reports the recurrence of a large lipoma. Two years after the removal of a large retroperitoneal lipoma weighing 21 lb. there was recurrence. The second tumor was removed. The tumor grew from the right flank, in the angle between the outer border of the kidney and the iliac crest.

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Medical Progress.

RECENT PROGRESS IN NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D.

SENSORY IMPULSES AND THE AFFERENT SYSTEM.

In the report of two years ago [1] some account was given of the investigations of Head and Sherren upon disturbances of sensibility following lesions of the peripheral nerves. These researches have been followed by further investigations by Head and Thompson [2] upon sensory disturbances from lesions of the spinal cord, which throw an entirely new light upon the conditions of sensory perception and conduction. While recognizing the existence of points in the skin especially sensitive to pain, heat and cold, as found by Blix and Goldscheider, Head and his colleagues have found that there were regions between those spots capable of responding to warm or cold objects and they have cast grave doubts upon the existence of special and exclusive points of sensitiveness to pain, temperature and contact as described by

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[1] See this Journal, clv, 344, Sept. 27, 1906.
[2] Brain, xxix, 537, March, 1907.

Frey. They find, on the contrary, that there are three afferent systems as applied to the peripheral nervous system, which have to do with the various forms of tactile sensibility:

1. A system corresponding to the group of deep sensory impulses. The end organs of this system respond to the stimulus of pressure and to the movement of joints, tendons and muscles. Painful impulses can also arise within this system in consequence of injury to a joint or excessive pressure. This sensory mechanism is capable of responding in such a way that the patient appreciates both the locality of the stimulus and the direction of movement in any joint which lies within an area innervated solely by this system; and yet the integrity of deep sensibility carries with it no power of appreciating a stimulus, such as that of cotton-wool, even over hairy parts. Nor does it permit of the discrimination of two compass points applied simultaneously to the skin, even when widely separated. The fibers which conduct these sensory impulses run mainly with the muscular nerves and are not destroyed by division of all the sensory nerves to the skin.

2. The protopathic system, capable of responding to painful cutaneous stimuli and to the more extreme degrees of heat and cold. Its end organs are grouped in points on the surface of the body, sensitive to one only of these stimuli. Their response is diffuse and unaccompanied by any definite appreciation of the locality of the spot stimulated.

3. The epicritic system. To the impulses of this system we owe the power of cutaneous localization, of discriminating two points and of recognizing the finer grades of temperature called cool and warm.

The whole body within and without is supplied by the protopathic system. The fibers of this system in the skin may be spoken of as somatic, those to the internal organs as visceral protopathic fibers. Another set of afferent fibers peculiarly associated with impulses of movement and pressure exist in connection with the Pacinian organs. In the body and limbs an analogous system is found peculiarly susceptible to pressure, to the localization of movement and to the appreciation of position. The fibers of this system run in conjunction with the motor nerves. In addition to these two systems, which are distributed to all parts of the body within and without, the surface of the body only is supplied by a third system, the epicritic. This endows the skin with sensibility to light touch. To the impulses conducted by this system we owe the power of localizing the position of cutaneous stimuli, of distinguishing between the contact of one or two points, of discriminating between minor degrees of heat and cold and other special attributes of sensation. The fibers of this system are more easily injured and regenerate more slowly than those of the protopathic system. They are evidently more highly developed and approach more nearly to the motor fibers that supply voluntary muscle in the time required for their regeneration.

The methods of testing sensibility are described at length and offer some new suggestions. Superficial touch was tested, as a rule, with a wisp of cotton-wool well frayed out, which proved insufficient in some cases. A set of hairs, affixed to handles prepared for them by Frey, was also used, but they found the esthesiometer devised by Frey, which consists of a single hair in a metal sheath, which can be protruded to a varying extent, unsatisfactory. The power of discriminating two points was tested by a pair of compasses with blunted points. These were set at a certain distance and then applied twenty times to the skin, so that the skin was touched ten times with two points and ten times with only one, the order, of course, being very irregular. Each series was so recorded that it could at once be seen how many mistakes had been made either with the single or double stimuli. In testing the sensation of vibration a tenor C fork (128 vibrations a second) was used. Ability to recognize objects of different sizes was tested by means of circular steel disks with diameters of 2 cm., 0.75 cm. and 0.2 cm., applying them to the skin with approximately equal pressure. They found that the normal skin cannot determine with accuracy the shape of simple figures, squares, triangles, etc., when applied to it, with sufficient accuracy to be of any value in testing. The best results were obtained by using the circular disks and learning whether the patient could determine their relative sizes. Sensibility to pain was determined by a pin prick or by the electric current. Sensibility to temperature was determined by test tubes, and as tests for the extremes of heat and cold they used ice and water at 50° C. The sensation of pressure was determined by pressure with any blunt object. When the peripheral nerves to the skin have been divided, a steady increase of pressure, when appreciated, causes pain. This was measured by a special algometer devised by them, giving the amount of pressure in kilograms. The power of recognizing passive movements is tested by grasping the joint next distal to the joint to be tested on its lateral aspect, making a movement, and then requiring the patient to say what movement has been made and how the part lies after the movement is over. Then,— a point of great importance,— he is asked to imitate the movement with the limb of the opposite side. Ten movements are made in one direction and ten in another, indiscriminately, and the results are noted above and below a line. To determine the accuracy with which the patient can indicate a point touched he was asked first to name the point, second, to point to it with the eyes closed ("groping" method), and third, he was stimulated through a hole in a sheet of stiff paper held about 1 cm. from the skin and given a pencil to mark on the paper the part touched.

To sum up these results. Loss of epicritic sensibility abolishes: recognition of light touch over hairless parts; cutaneous localization; discrimination of compass points; appreciation of differences in size, including the discrimination between the head and the point of a pin; discrimination of intermediate degrees of temperature (25°–40° C.).

Loss of protopathic sensibility abolishes: cutaneous pain (pricking, burning, freezing, a strong faradic current, pulling hair); sensations of heat from temperatures above 45° C.; sensations of cold from temperatures below 20° C.

After destruction of all cutaneous afferent fibers the part is still endowed with deep sensibility, conveyed by the muscular nerves. Pressure can be recognized and its gradual increase appreciated. Pain is produced by excessive pressure. Movements of muscles can be recognized. The point of application of pressure can be localized. The patient can recognize the extent and direction of movement produced passively in all the joints within the affected area.

In the spinal cord these afferent impulses become shunted into paths along which they travel in new combinations. After division of a nerve or of posterior roots those parts only become insensitive to the pain of deep pressure which are also insensitive to touch. If the lesion lies within the spinal cord sensibility to pain is abolished as a whole, both to pin pricks and electricity and to excessive pressure, while the patient may perceive light touch and may be able to recognize the position of a spot pressed and appreciate the gradual increase of the pressure. Injury to the nerves abolishes, in some degree, sensibility both to heat and cold, but when the lesion is situated within the cord, areas may be found insensitive to heat but sensitive to cold and *vice versa*. If sensibility to heat or cold be abolished in such cases, sensibility is lost for heat or cold in all degrees. With such insensibility, moreover, the patient may recognize the lightest touch and discriminate accurately between the two points of a compass. Such conditions can never occur from a lesion of the peripheral nerves alone. In lesions of the peripheral nerves light touch may not be appreciated, although deep touch and pressure are immediately recognized. In lesions of the cord both these impulses are affected together. In lesions of the nerves sensibility to pressure, pain on excessive pressure and the power of recognizing passive movement and position are affected together, but in lesions of the cord the power of recognizing passive movement and position is entirely dissociated from the afferent impulses produced by pressure, and both groups are dissociated from the sensibility to pain from excessive pressure. In lesions of the nerves sensibility to light touch and discrimination between the two points of a compass are affected together, but in lesions of the cord these two forms of sensibility may be dissociated, although, if the part tested be anesthetic to light touch, the power of discrimination is necessarily lost, but the power of discrimination may be lost when the power to perceive the slightest touch is retained.

Eight cases of Brown-Séquard paralysis were studied to elucidate the inter-relation of afferent impulses in their passage up the spinal cord. The writers found that afferent impulses from pain, heat and cold cross the spinal cord to pass up the opposite side. The remote loss of sensation may affect to a varying degree the impulses for the three forms of sensibility. The borders of this remote loss of sensation may correspond to the borders of intramedullary segments, but they usually merge gradually into parts of normal sensibility. Sensibility to touch and pressure is rarely disturbed in Brown-Séquard paralysis, but, when it is affected, it is on the opposite side of the body to the motor disturbance. The impulses of light touch, deep touch and the tactile element of pressure are lost together. Sensibility to light touch is not separated in the cord from tactile sensibility to pressure. The sense of passive position and movement is abolished on the same side as the motor disturbance, provided that the loss of motion be entirely unilateral and that no single sensation be disturbed on both halves of the body. This loss is independent of the tactile impulses and of those which underlie the power of cutaneous localization. It is closely associated, in Brown-Séquard paralysis, with inability to discriminate between two compass points. If all forms of tactile sensibility be perfect in Brown-Séquard paralysis, the power of discriminating between two points will be found to be diminished over the side of the motor disturbance. There is a close relation between loss of the sense of passive position and movement and the power of discriminating between two points; loss of the one is usually associated with grave disturbance of the other.

The loss of sensation at the level of a pure intramedullary lesion of the spinal cord follows the central rather than the peripheral type, although it is situated in those parts which lie on the same side as the disease. If sensibility to heat be disturbed, the patient no longer recognizes temperatures between 30° C. and 60° C.; but, over the same parts, he may be sensitive to all temperatures which normally produce a sensation of cold. Where the skin is insensitive to painful stimuli, deep pressure will no longer be painful. Sensations of light touch and the tactile aspect of pressure are linked together, so that the former is a less and the latter a more intense degree of tactile stimulation. When the patient becomes unable to recognize the position his limb assumes passively, it will be found that he is also unable to discriminate between two points at distances much in excess of that normally requisite. The sensory disturbance at the level of the lesion and the remote disturbance of sensation on the side opposite to the lesion show signs of intramedullary segmentation, — the familiar spinal root areas demonstrated by Thorburn, Sherrington, Head, Kocher, Wichmann and others. The remote analgesia and thermo-anesthesia produced by lesions of the cervical spinal cord point to a lamellar arrangement of sensory impulses in this region. Sensation may be retained in the sacral areas, indicating that impulses from the sacral segments, after crossing, pass up the cord in paths separate from those for the sensory impulses from the lumbar and thoracic regions.

The afferent impulses concerned with "localization" of the position of the limbs or of a spot stimulated were next studied. The sense of passive position and movement may be destroyed as a consequence of intramedullary disease, although sensibility to deep touch remains perfect. Conversely, the patient may be insensitive to all tactile stimulation, both superficial and deep, and yet may be normally sensitive to passive movements. Any loss of the sense of passive movement and position will be found on the same side of the body as the disturbance of motion and reflexes. The remote effects of intramedullary disease, if it be unilateral, may be manifested in loss of the sense of passive movement and position, disturbance of motion and changes in the reflexes on the one side of the body associated with analgesia and thermo-anesthesia of the opposite half. The local effects of an intramedullary lesion will all be found on the same side; paralysis and wasting of muscles, loss of the sense of passive movement and position, analgesia and thermo-anesthesia, may all exist together in the same limb. The power of discriminating between two points of a compass can be diminished over a limb completely sensitive to all cutaneous stimuli. If, as a consequence of the remote effects of an intramedullary lesion the compass test shows a diminution of sensibility, whilst touch is perfectly appreciated, the part so affected will lie on the same side as the disturbance of motion. Whenever tactile sensibility is abolished, in consequence of the remote effects of an intramedullary lesion, this loss of sensation will be found on the side opposed to the loss of motion, over the limb insensitive also to painful and thermal stimuli. Head and his associates have thus restored the compass test to the use originally prescribed by Weber and made it once again a test of significance which it had lost when used as a test for tactile sensibility. At the spinal level the impulses underlying spot-naming run independently of those for tactile discrimination and the recognition of passive position and movement, but, as soon as an attempt is made to indicate the point stimulated by pointing to it, it is necessary that the patient should recognize the position into which his limbs have been placed passively. The impulses for tactile localization seem to be intimately associated with those of tactile sensibility. The impulses underlying the recognition of passive movement and position and of the discrimination between two points differ from every other sensory impulse in that they pass up in the same side of the cord and do not cross until they reach the medulla (nucleus gracilis, nucleus cuneatus). Sensory impulses which pass up the same side of the cord have not reached the second level of the nervous system. All sensory impulses which have crossed the cord show signs of recombination, the tactile elements become united into one group, the pain elements in another and the thermal elements in a third, independently of their primary arrangement in the epicritic, protopathic and deep systems. Of epicritic impulses only those for discrimination between two points remain uncrossed and uncombined in the cervical cord, and of the deep system only those of passive motion and position remain uncrossed. These, therefore, must be conducted by the long extrinsic tracts of the posterior columns. Sensory impulses for pain, heat and cold cross over completely in the space of five or six segments. With tactile impulses the crossing is less rapid. Until the crossing is complete two paths are open for tactile impulses. They will continue to pass up the fibers of the epicritic and deep systems in the posterior column until the highest point in the spinal cord at which those impulses entering by any one posterior root are received by the secondary systems. Much nearer the point of entry, however, some impulses will have become transformed and have crossed to the opposite side. As soon as the impulses enter this secondary path they are recombined into a specific group associated with all forms of tactile sensibility. For impulses for pain, heat and cold these two paths co-exist for only a short distance, but for tactile impulses the double path is of considerable length. The spinal cord is the seat of the transmutation of most of the impulses of the peripheral into those of the secondary level of the nervous system. This transmutation and recombination take place on the same side as that by which the impulses enter the spinal cord. The secondary path for sensory impulses then crosses with greater or less rapidity, so that ultimately all except those subserving the sense of passive position and movement and tactile discrimination have passed to the opposite side within the limits of the spinal cord. Even these sensory impulses cross after reaching the nuclei of the posterior columns. At the same time, within the spinal cord afferent impulses become separated into sensory and non-sensory. Of the latter, many pass up in the secondary system of the direct cerebellar tract to reach the cerebellum. Thus the mechanisms of the secondary or intramedullary level are concerned with the separation of non-sensory from sensory afferent impulses and with the recombination and transmutation of sensory impulses into specific groups.

These investigations by Head and his colleagues, if accepted, require various modifications in our ideas as to the nature of sensibility and the different afferent tracts in the spinal cord. They are based upon the study of a large number of cases, which have been so carefully studied as to make it necessary to go over previous experiments and study individual cases afresh in the light of these new theories which have been advanced. May[3] has given an excellent digest of recent studies upon the afferent path, but judgment must be withheld in regard to some of the opinions based upon experiments and clinical studies until the data have been corroborated by other observations after consideration of these new theories. From this digest, however, we may quote certain of the writer's conclusions as to the paths of conduction, which have been formed from a study of recent work in the light of Head's researches. The posterior root fibers subserving the conduction of painful impulses enter the posterior columns and rapidly end around cells in the neighboring gray matter. Thence a secondary path arises,

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[3] Brain, xxix, 742, March, 1907.

most, if not all, the fibers of which cross almost immediately to the opposite side of the cord and ascend in Gowers's tract. Some of these ascend to the optic thalamus whilst others terminate in the intermediate gray matter and thus, by a series of short chains, afford secondary paths to the same end station, which may supplement the direct path, or be made available after that is interrupted. Thermal impulses follow an almost identical course; the paths for heat, cold and pain are separate but are anatomically very closely associated from origin to termination. Impulses of touch and pressure pass upward for a number of segments in the posterior columns of the same side and then cross through the gray matter to the anterior columns of the opposite side. Muscular sensibility is conveyed along two paths, unconsciously along the spino-cerebellar tracts of the same side to the cerebellum and consciously along the posterior columns of the same side and thence by the mesial fillet to the optic thalamus and cortex of the opposite side. The second sensory neurons probably all go to the thalamus, which is an important element in the afferent path, destructive lesion of which, as Roussy[4] has shown, is very constantly followed by hemianesthesia of the opposite side. The study of the localization of sensation in the cortex is very complex and still somewhat indefinite. The sensory area is situated chiefly in the posterior central convolution and neighboring portions of the parietal cortex. Lesions here may produce disturbances of touch, pressure, localization, muscular sensibility and perhaps of pain and temperature on the opposite side of the body and these disturbances may be dissociated, but the exact localization of the different sensory qualities is still uncertain. Stereognostic perception is also thought to have an independent cortical area, but the evidence of this is still doubtful. Mills,[5] Campbell and others maintain that the cortical representation of cutaneous and muscular sensibility is independent of motor representation, but this, though probable, is not absolutely proven by Mills's experiments and reported cases.

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Reports of Societies.

NEW YORK PSYCHIATRICAL SOCIETY.

Stated Meeting, March 4, 1908.

August Hoch, M.D., President, in the chair.

THE RELATION OF HYSTERIA, PSYCHASTHENIA AND DEMENTIA PRECOX.

Dr. Adolf Meyer read this paper, basing his discussion on two cases which demonstrate the occasional close relationship between hysteria and psychasthenia and dementia precox.

The first case shows that in a woman, who as a child had a period of over six months of hysterical limping and during adolescence a period of one year with hysterical convulsions and paraplegia and later one year of hysterical convulsions and invalidism with normal intervals of several years, a psychosis occurred which developed first along the lines of an hysterical anxious state with stupor and later an excitement followed by classical catatonic deterioration. The second case began as a psychasthenia which gradually passed into a rut and automatism with indifference and loss of the affect. While cases of such fusion of conditions are not very frequent they suggest a discussion of the relation of the ordinary concepts of disease types to a constructive presentation of the facts in terms of reaction types, their determining conditions and their modifiability.

That it is difficult to get generally acceptable definitions of the traditional disease types used in diagnosis by simple identification of a case with a diagnostic entity has been shown by the recent discussions as to the definition of hysteria and other neuroses. (Compare the definitions of Dana with those of the French and German schools.) The difficulty seems to lie in expecting definition at the wrong end where, on account of the complexity of every individual case, the final symptom-complex is bound to vary.

Dr. Meyer suggests work with the "reaction types" which one must be able to demonstrate as they are at work in the evolution of the disease and not merely by inference from a more or less summary picture of results. The issue then is, What reaction is at work? What are the determining conditions? What is their modifiability? What are the alternatives of perspective and their determinants?

Dr. Meyer works with the diffuse nervous, the neurasthenic and the hypochondriacal, the psychasthenic, the hysterical, the deterioration reactions, etc.

Several of these reaction types tend to be exclusive of each other, hence the relative frequency of the "classical" cases. But in practice one meets with fusions which with this method can be frankly acknowledged and met. Thus Dr. Dana's hysterias would seem to be hysteria plus decided non-psychic nervous disorders produced by railroad accidents, collisions, alcoholism, etc.

Dr. Meyer next discussed what constitutes the unfavorable reaction type. Instead of appealing to mere paraphrasing such as that of stabilization of the complex or the assumption of toxins (Jung) he insists on the differences of the domain in which the reaction types occur and the rôle of fundamental defective balancing instincts and of habit collisions as developed in the dementia precox discussion. It takes little skill to realize how different the sexual evolution of the hysterical is from that of the dementia precox case, but the issue of the sizing up of the developments will remain difficult as long as physicians still vacillate merely between the negation of all importance and the mere assumption of a fundamental defect in such a plastic issue as that of masturbation.

The method proposed does not interfere with our teaching didactically simple facts concerning "pure cultures" of hysteria, psychasthenia, dementia precox, etc., but it spares the pupil the illusion incidental to a plan of mere identification with names of arbitrary patterns and puts him into a position to work with the facts at hand in each case without arbitrary expurgation.

DISCUSSION.

Dr. Henry S. Noble, of Middletown, Conn., was glad to note, in Dr. Meyer's paper, a tendency to get away from names and to adhere to conditions as they are found in the patient. The name of a psychosis might satisfy some, but it was certainly not so satisfactory to the student as the actual condition which the patient presents and which is the thing to study.

Dr. A. R. Diefendorf, of New Haven, Conn., was impressed with the fact that Dr. Meyer has been and is now illuminating the way to a safer and sounder conception of the psychoses. He was glad, however, that he did not advocate casting away altogether the terms representing certain types which alienists had so well learned to recognize; that is, some types of dementia precox with certain features of deterioration, manic-depressive types, hereditary types, etc. In the light of present knowledge it would seem that these mental states must be recognized; but there is a more or less prolonged period during which the reaction types are the only differentiating features. This period should be studied with great care in order to understand the determining features in dementia precox and the other psychoses.

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[4] La Couche Optique, Paris, 1907.

[5] Journal of Nervous and Mental Diseases, Oct., 1906.

Dr. August Hoch, of Bloomingdale, said: The paper of Dr. Meyer again brings up the question of the one word diagnosis, upon which Dr. Meyer has, on various occasions, expressed himself from his broad standpoint. It is, of course, not without reason that we have been severely criticised in psychiatry for our classifications, and for the degree to which they absorbed our interest. The more I analyze cases of mental disorders, the more inadequate does the diagnosis in the ordinary sense appear to me. That which I wish to know from the standpoint of research, as well as from the practical standpoint of treatment and prognosis, is why and upon what soil did the condition develop, what was the development like and what is the present situation? If these events occur sufficiently often in a sufficiently similar manner, then we have a perfect right to symbolize the sequence of occurrences by one word; this is often possible, but quite often it is not possible and then it is much better to say so. I mentioned something of the same sort in my remarks upon Dr. Kirby's paper regarding involution melancholias and the criticism upon the views of Dreyfus. Dreyfus has shown that involution melancholias are in a way cases of manic depressive insanity, but they are a different type of cases with differences in the symptom-complex arising from a somewhat different basis, etc. Consequently, the name " manic depressive insanity " does not express anything like the situation, while it does, in a great number of other cases. Similar remarks may be made about different groups of dementia precox where the conditions are undoubtedly much more complicated. We are, in psychiatry, suffering from the evil of making either the infectious diseases or general paralysis the *paradigma* for all diseases. I have been very much interested in Dr. Meyer's presentation of the relationship of dementia precox and hysteria. It is difficult to see how any one can speak of the two conditions as wholly different, as has been done so often of late. I would like to mention only one point to which Dr. Meyer has not called attention: it seems to me that one of the important differences between the two conditions is to be found in the fact that in hysteria the outlet, so to speak, of the disharmony, is very often in the direction of physical symptoms, in a direction, therefore, in which the relationship of the individual to the outside world and to other personalities is very little touched, in which, therefore, one of the features which, to my mind, give to dementia precox development its cumulative, malignant character, is excluded.

Dr. Charles L. Dana believed it possible for Dr. Meyer and others to follow the lines which Dr. Meyer had worked out so philosophically, and yet for others to pursue their own way with a good deal of helpfulness. For example, he was in perfect harmony with Dr. Meyer with reference to hysteria being a reaction type and not a disease in the general sense of the word; but when this reaction type reached a certain stage of definiteness it became a condition which one could recognize and at once know its symptoms, its course and pretty well what to do with it. It had a natural history and as such deserved, like other clinical types, a name. The fleeting, transitory reactions need not have a special name, but might be referred to as states resulting from an unstable constitution. If Dr. Meyer wanted to employ the term " substitutive reactions " that would be very well and would afford opportunity for further study from the psychological side, but he did not think it especially illuminating to define hysteria as being a reaction type or a substitutive reaction, except for purposes of psychological analysis. There were certain other types, psychasthenia, for example, which were perfectly definite and distinct. The term psychasthenia, which corresponds mainly to what he had described as phrenasthenia he considered a very useful and definite term, and the condition should be taught under that or some similar name. Students could get a better idea of its cause, course and prognosis than if told that the individuals affected were patients with certain reaction types. Dr. Meyer had certainly proved conclusively that there was a transition from a reaction to a dementing type. There was, however, not often any important relation between the two. As a rule patients with hysteria did not dement. He had been over a great many and at least he had not found this to be a part of the clinical history of hysteria.

Dr. Adolf Meyer, in closing the discussion, said that his special object in speaking of the substitutive activities was to get out of a rut, which has done excellent service and which even to-day has a good influence, but which had led Kraepelin, for instance, to use general paralysis as *paradigma* of all mental diseases, which is preposterous. How could it be said at the present time that hysteria should be looked upon with the same principles as a post-infective disturbance? Apart from the fact that general paralysis is by no means so absolutely clear as to serve as a *paradigma*, it in no way compares with hysteria, which is the product of totally different components. If the diagnosis of general paresis was made there was a tendency to leave the case to his fate; in hysteria one could also get at a " diagnosis " at first sight, but it would be dangerous to stop there, at least in those cases which depend in their development on definite factors which have to be *corrected* and which the patient must learn to meet if there is to be any question of radical change in the situation. The same holds for dementia precox. If only 5% or perhaps 10% of the cases of dementia precox could be favorably influenced by timely help in meeting difficulties it would be our duty to penetrate beneath the mere diagnosis by identification with a formal type. If, with an understanding of the situation, the patient could more quickly be helped over these difficulties, a reconstructive knowledge of the case was of far more importance than being able to identify it with a certain group. The whole matter would doubtless be settled one way or the other if the situation were not really a very complex one, many of the components of the condition being too deeply constitutional and often too far settled when the patient is first seen. A knowledge of certain factors entering as components in a definite development made one deal with the case differently when seen before it is too late. The identification method of diagnosis was apt to satisfy the student and to prevent him from studying the individual situation which, after all, is the very essential thing. It was largely a matter of individual temperament with the psychiatrist as to whether he would give up his time to the study of the situation in these cases. From the point of view of prophylaxis this was, however, most important.

Book Reviews.

Christian Science. The Faith and its Founder. By Lyman P. Powell, Rector of St. John's Church, Northampton, Mass. New York and London: G. P. Putnam's Sons. 1907.

The Rev. Lyman P. Powell, of Northampton, makes in this book a critical analysis of the widespread doctrine of Christian Science. We sometimes wonder whether it is desirable or necessary to attack a doctrine of this character which on its face bears so much evidence of inconsistency. We are, however, glad to commend this careful discussion of the founder of the church and of its so-called philosophy to the attention of our readers who may wish to go below the surface in their estimate of a movement which, with all its absurdity, demands a certain consideration. The volume is concluded with a series of copious notes which attest the care with which Mr. Powell has undertaken his task.

A Text-Book of Materia Medica for Nurses, Including Therapeutics and Toxicology. By George P. Paul, M.D., Attending Physician and Adjunct Radiographer to the Samaritan Hospital at Troy, N. Y. Philadelphia and London: W. B. Saunders Company. 1907.

This volume of 242 pages, including an index, is what its name implies,— a description of many drugs with their action and therapeutic indications. The inclusion of a great number of drugs which are practically never used is certainly not to be commended in a textbook for nurses, and serves rather to add to the necessarily dictionary-like form of such a treatise. A list of newer medicinal agencies, including many drugs of doubtful status, is a questionable addition to the book. A useful chapter is one on Practical Therapeutics, in which methods of using drugs and various mechanical means of treatment are discussed.

Trypanosomes and Trypanosomiases. By A. Laveran and F. Mesnil. Translated and much enlarged by David Nabarro. Chicago: W. T. Keener & Co. 1907.

In 1892 Laveran within the limits of a short paper was able to give a summary of what was known in regard to trypanosomes. The only pathogenic species that had then been described was in the disease of horses and cattle in India, known as surra. In 1904, Laveran and Mesnil found that a whole volume was required to describe these hematozoa and the diseases they produce. The discovery that the sleeping sickness of Africa is a stage of human trypanosomiasis showed that henceforth these parasites must be carefully investigated by students of human pathology and gave a great impetus to this particular branch of protozoölogy.

So great has been the activity in this field during the past three years that Dr. Nabarro, in order to bring the work of the French investigators up to date, has been obliged to write what is practically a new volume. As a result the book has been increased by more than half the original size. Over two hundred references to recent papers are given in this edition. Justice is done American investigators and the results of their studies are fully presented.

A Practitioner's Handbook of Materia Medica and Therapeutics, Based upon Established Physiological Actions and the Indications in Small Doses. To which is added Some Pharmaceutical Data and the Most Important Therapeutic Developments of Sectarian Medicine as Explained along Rational Lines. By Thos. S. Blair, M.D. Philadelphia: The Medical Council. 1907.

Dr. Blair writes upon the general subject of pharmacy, materia medica and therapeutics from the standpoint of a practitioner who has studied the various so-called sectarian schools, and is inclined to derive from each what good it may contain. The result of this effort is a small, practical book in which a number of drugs are discussed, some used more particularly by the homeopathic school and others by the medical profession at large. The book is a fair, simple statement from an eminently practical standpoint of the results of the author's researches in drug therapy. As such it should be useful to a wide circle of readers.

Hospital Training-School Methods and the Head Nurse. By Charlotte A. Aikens, Late Director of Sibley Memorial Hospital, Washington, D. C., etc. Philadelphia and London: W. B. Saunders Company. 1907.

The author of this book has written from the conviction that the whole subject of the training school and its relation to the hospital requires restatement in the light of recent experience. She has also been impressed with the fact that there are few books on the subject of methods of teaching and supervising, and that many nurses undertake positions of responsibility, after finishing their course of study, for which they are ill prepared because of their incapacity to teach and to direct. The volume before us is an attempt to obviate in some degree these shortcomings. It is written in an admirably practical manner, and as such stands out in somewhat marked contrast to many recent textbooks on nursing, which are rather statements of fact than guides to methods. We, therefore, take pleasure in commending most highly not only what this book contains, but the eminently practical way in which its ideas are expressed. With the present danger that certain nurses and training schools are forgetting the real work of the nurse in their eagerness toward a higher education this plain-spoken book cannot fail to be salutary.

THE BOSTON

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A DENTAL AND ORAL HYGIENE EXHIBIT.

IN a recent number of the JOURNAL, we commented at some length on the question of the care of the teeth in public school children, urging the desirability of attention to this important branch of public hygiene, and referring especially to the pioneer work of Professor Jessen, of Strassburg. Within a few days a public exhibition, for the benefit particularly of the poorer classes, on dental and oral hygiene has been closed in Boston, after a most successful continuance of ten days. The object of this exhibit, which was held in one of the poorer quarters of the city, was essentially that which has been recognized as useful in bringing the subject of tuberculosis before the people. To meet this end exhibits relating to the teeth and to the care of the mouth cavity in general were displayed and a number of lectures given by prominent men with the object of instructing the audience in certain commonplace, practical matters which are little understood, regarding the care of the teeth. A number of institutions and associations entered into the spirit of the work by supplying special exhibits. These were the Harvard Dental School, Tufts Dental School, the Town of Brookline, the Bath Department of the City of Boston, where, in fact, the crusade for improved oral hygiene had its beginning, the Boston Association for the Relief and Control of Tuberculosis, the State Department at Washington, the Out-Patient Throat Department of the Massachusetts General Hospital, the Boston Dispensary, the Instructive District Nursing Association, St. Bartholomew's Hospital, New York, and finally an exhibit sent by Professor Jessen, from Strassburg, Germany. Dr. William H. Porter gave a lantern slide lecture on "Dental Caries and How to Prevent It," which must have brought before his auditors a much clearer picture than they had ever before had of the ravages of this affection of the teeth. Dr. George A. Bates, Dr. William E. Chenery and Dr. E. H. Burnham were among those who gave lectures on the general subjects of dental and oral hygiene.

The general interest which the exhibition aroused, as indicated by the attendance, was highly gratifying to those having the matter in charge. The Dental Hygiene Council, which represents a number of important institutions connected with dental medicine, is responsible for the success of the exhibit. The work of this council has received the endorsement of the Massachusetts State Board of Education, of the Health Commissioner of the State of New York, and of the Medical Director of the Boston public schools. During the week of May 25 the exhibit is to be opened in Salem, Mass., under the supervision of the city.

With so auspicious a beginning, it is not to be questioned that this campaign for improved oral hygiene among the masses will accomplish results of great significance. It is perfectly clear to the most casual observation that attention to this matter is needed, and that a decided improvement in health as well as in the appearance of both children and adults may be expected through the public attention given to the subject and through means which it is hoped may be provided, for wide-spread work upon the teeth of those who are not in a position to pay for such service.

PLAGUE IN VENEZUELA.

FOR some weeks the daily press has presented dispatches indicating more or less definitely the presence in Venezuela at La Guayra, its principal port, and perhaps at Caracas, the capital, of plague in an active form. According to the statements a Venezuelan physician, who seems to have been both a well-informed and courageous man, was sent to La Guayra to report upon the nature of the disease which was causing numerous and sudden deaths there. After due investigation he reported that the disease was the plague. Whereupon he felt the full and prompt force of a centralized government and was thrown into prison. A second doctor was sent to report on the situation, and he, not being of the stuff of which martyrs are made, reported that it was not the plague. But neither the action of a strenuous president nor the report of a timid and subservient doctor changed the fact that there was mysterious disease and that people continued to die from it quickly.

It seems to be an undoubted fact that the port of La Guayra is now closed to foreign commerce, that the conditions there are deplorable, and that the American consul, who apparently has behaved with much vigor and good judgment, is shut up there. Just what the condition is at Caracas is not definitely known. The reports of the United States Public Health and Marine-Hospital Service for April 24, May 1 and May 8 contain the following from the American minister, through the Department of State, under date of April 18:

" The Venezuelan government to-day officially announced the existence at La Guayra of a suspicious contagious disease, the nature of which is not determined. La Guayra quarantined for fifteen days." The following was received from the American consul, through the Department of State: "April 15. The nature of the disease has not been announced officially. . . . I have every reason to believe the disease now present at La Guayra is plague." " April 22. Deaths continue to occur. Entire families are being taken to the hospital. The disease is spreading. Private information convinces me that the disease is plague. Nothing has been officially announced." " April 24. From the American consul at Trinidad: The governor of Trinidad declares the Venezuelan Republic infected. Quarantine is established."

As we write we understand that a virtual quarantine against all Venezuelan ports has been declared by the Health Officer of the port of New York.

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REGULATION OF EXPERT MEDICAL TESTIMONY.

At the New York Academy of Medicine on April 30, President Wyeth read the text of a tentative bill for the regulation of expert medical testimony. It was drawn up by a committee appointed by the State Medical Society to confer with a committee from the New York State Bar Association in regard to the matter, and Dr. Wyeth expressed the opinion that the bill would prove acceptable to the latter committee. Among the provisions of the act are the following: The Academy of Medicine, for New York City and the State Medical Society, acting for the state outside of New York City, shall, through committees appointed by these organizations, furnish the courts with a list of names of members of the medical profession of not less than seven years' actual practice, from which an expert or experts may be selected as required. Such official expert shall be paid, out of the treasury of the county in which the court sits, a minimum fee of $50 for the examination of and written report on any case in question, $50 additional for the first day's attendance in court and $100 a day thereafter while attendance is called for. The expert witnesses so listed may be called by any court of the state, and if called from the county of their residence, reasonable compensation shall be added for such extraordinary service. Upon the appointment of such an expert by the Court, or if the parties concerned file an agreement designating an expert for the case at issue, the Court shall issue an order for the person so appointed or agreed upon to be served in the manner provided by law for the service of subpenas. As soon as may be after service thereof, the expert shall make such examination of the case as in his judgment may be necessary and practicable and shall file his report. Such report shall thereupon be open to the inspection of either party and may be read in evidence and the expert may be called as a witness by either party at the trial. The last section provides that either party at the trial may call other witnesses than those appointed or agreed upon, but at his own expense.

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THE AMERICAN HEALTH LEAGUE.

We are glad to call attention to a new periodical entitled " American Health," being the official organ of the American Health League. For the benefit of those who may not have followed this movement, it should be stated that the American Health League, represented by a committee of one hundred citizens in various walks of life, is an amalgamation of an association called the Public Health Defence League, which was founded about two years ago, for the purpose of suppressing fraudulent medical practice and conserving public health and morals, and a committee of the American Association for the Advancement of Science created for the same general purpose. Inasmuch as the component elements of the present society had precisely the same objects in view, it was altogether desirable, if from no other standpoint than an economic one, that they should become one organization. This was formally accomplished Nov. 18, 1907, and ratified by a signed agreement Dec. 14. This union has resulted in the " American Health League of the Committee of One Hundred on National Health," of which the present membership is about 3,000. It is not to be doubted that, conducted with wisdom and discretion, such an association as this should exert a beneficent influence on all matters relating to public health, and particularly those which demand federal legislation. The movement has been endorsed by President Roosevelt and by many men prominent in politics, science and the various professions. The somewhat modest journal before us gives details of what has been accomplished, and what is hoped may be accomplished, by the growth and increasing influence of this league. Its aims should certainly receive the hearty endorsement of all interested in the broader fields of public hygiene. The membership is already representative, but it should in addition be large.

MEDICAL NOTES.

A Society for Coping with the Emergencies of Peace and War. — The National Volunteer Emergency Service, instituted in 1900, has recently been reorganized by the election of Dr. James Evelyn Pilcher, the distinguished editor of *The Military Surgeon*, as its Director-General, and Dr. F. Elbert Davis, of New York, as its Adjutant-General. Its work will be conducted along military lines, the details being worked out in three separate corps, a First Aid Corps, a Public Health Corps and a Medical Corps, the latter consisting of physicians, with rank from lieutenant to colonel, according to length of service, to whom are afforded special opportunities for emergency training. It includes among its *personnel* a large number of notable personages and is rapidly extending its membership throughout the country. Full details regarding the Service and its work may be obtained by addressing Director-General Pilcher at Carlisle, Pa.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, May 13, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 68, scarlatina 66, typhoid fever 34, measles 338, smallpox 0, tuberculosis 52.

The death-rate of the reported deaths for the week ending May 13, 1908, was 20.77.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, May 9, 1908, was 232, against 242 the corresponding week of last year, showing a decrease of 10 deaths and making the death-rate for the week 19.85. Of this number 118 were males and 114 were females; 226 were white and 6 colored; 141 were born in the United States, 90 in foreign countries and 1 unknown; 30 were of American parentage, 189 of foreign parentage and 13 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 69 cases and 3 deaths; scarlatina, 75 cases and 1 death; typhoid fever, 35 cases and 12 deaths; measles, 340 cases and 7 deaths; tuberculosis, 46 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 32, whooping cough 3, heart disease 29, bronchitis 3, and marasmus 2. There were 16 deaths from violent causes. The number of children who died under one year was 35; the number under five years 68. The number of persons who died over sixty years of age was 47. The deaths in public institutions were 78.

Optometry Bill not Favored. — A bill to provide for a board of registration in optometry has been adversely reported by the Committee on Ways and Means of the Massachusetts Legislature.

Bequest. — By the will of Mrs. Catherine A. Ransom, of Haverhill, Mass., about $100,000 is left to charitable purposes, of which the Haverhill hospital receives a small portion.

Meeting of the Massachusetts Association of Boards of Health. — At the quarterly meeting of the Massachusetts Association of Boards of Health, recently held, Dr. D. D. Brough read a paper on "The Transmission and Methods of Control of Measles," and Dr. E. O. Otis, one on "The Function of Boards of Health in the Control of Tuberculosis."

New Building for Newton, Mass., Hospital. — A new building, to be known as the Founders' Memorial Building, has recently been dedicated and presented to the Newton Hospital corporation. The building, which was erected at a cost of $60,000, is completely equipped for various classes of disease, including surgical cases.

Illness of Dr. G. H. M. Rowe. — Dr. G. H. M. Rowe, superintendent of the Boston City Hospital for nearly thirty years, has been forced to give up his active duties through illness. Dr. J. H. McCollom, superintendent of the South Department of the same hospital, has been made the executive officer of the hospital, pending Dr. Rowe's recovery.

Appointment of Dr. Horace D. Arnold. — Dr. Horace D. Arnold has been appointed State Medical Director by the trustees of the General

Insurance Guarantee Fund. This is a new office, created for the purpose of conducting life insurance transacted by savings banks under a bill recently passed by the Massachusetts Legislature. Dr. Arnold is a graduate of the Harvard Medical School, Professor of Clinical Medicine at the Tufts Medical School and an assistant visiting physician at the Boston City Hospital. Dr. Arnold has long been associated with work connected with life insurance.

Death. — Dr. Herbert H. Lyons died of pneumonia in Fitchburg, May 6, at the age of fifty-three years. He graduated from the Harvard Medical School in 1881. He was prominent among the practitioners of Fitchburg, was at one time medical examiner of his district, and was rather active in Democratic politics.

Award of the Boylston Prize. — At the meeting of the Boylston Prize Committee, held May 7, it was voted to award the prize of 1908 for "The Results of Original Investigations in Pathology, Bacteriology, Therapeutics, or Pharmacology" to an essay entitled, "The Histogenesis of the Blood Platelets," by Dr. James Homer Wright of the Massachusetts General Hospital.

Death. — Dr. Charles H. Perry died in Worcester, Mass., May 1, at the age of seventy-three years. He was born in Worcester in 1835, and had his early training in the Worcester schools. He graduated from Brown University and subsequently from the Bellevue Hospital Medical School. Later he took a post-graduate course at the Harvard Medical School. He served actively through the Civil War in the medical corps of the navy. He began to practice in Worcester in 1874, his practice grew rapidly and his professional services were much sought for.

Massachusetts Medical Society, Berkshire District. — The following officers were elected at the annual meeting, April 30, 1908:

President, J. J. Hassett, M.D., Lee; Vice-President, H. B. Holmes, M.D., Adams; Secretary, I. S. F. Dodd, M.D., Pittsfield; Treasurer, W. L. Paddock, M.D., Pittsfield. Councillors: J. F. A. Adams, M.D., Pittsfield; O. J. Brown, M.D., North Adams; Homer Bushnell, M.D., North Adams; Henry Colt, M.D., Pittsfield.

Resolutions on the Resignation of Dr. H. W. Cushing. — At a recent meeting of the Senior Staff of the Boston City Hospital, the following vote was passed: Voted: That the resignation of Dr. Hayward Warren Cushing occasions much regret among the Senior Staff. Exhaustive in diagnosis and deliberate in opinion, his judgment is mature, while the results of his surgical operations show a finish and completeness due to patient technic and well planned design. Among the earlier experimenters on animals he devised mechanical measures which were adopted successfully by both armies in a sanguinary and obstinate war. No higher justification of vivisection could be sought than from this suture devised by Dr. Cushing, as well as the study of the toxins which have saved more human lives than they have imperilled or destroyed those of the lower animals.

Surgical Instrument Dealers Assist. — At a meeting of the Boston Surgical Instrument Dealers, held April 22, it was voted to aid the Chelsea physicians to replace their equipment destroyed by the recent fire, by selling them the articles which they require at cost prices, under the following conditions: Each applicant must be furnished with a letter of introduction from the Relief Committee; purchases must be for cash; the offer to hold good for a term of two weeks from the above date.

The firms represented at the meeting are as follows: Codman & Shurtleff, C. H. Goldthwaite & Co., Partridge & Co., F. H. Thomas Co., Sampson-Soch Co.

NEW YORK.

Reappointment of Dean S. W. Lambert. — At a meeting of the trustees of Columbia University, held May 4, Dr. Samuel W. Lambert was re-appointed dean of the College of Physicians and Surgeons.

Continuance of Metropolitan Sewage Commission. — Major McClellan has signed the bill passed by the recent legislature, which continues in existence the Metropolitan Sewage Commission and fixes the salary of its members at $3,000.

Scarlet Fever. — During the week ending May 2 there were 60 deaths reported from scarlet fever, as against 19 in the corresponding week of 1907. The general death-rate in the city, however, was less than last year. In 1907 this was 18.37 and in 1908, 17.69.

Red Cross Nurses. — Six Red Cross Nurses were sent, on May 5, by the New York State branch of the American National Red Cross Society, to

Hattiesburg, Miss., to assist in caring for persons injured in the tornado, which recently devastated that section of the country. These nurses, together with others sent by the District of Columbia and Pennsylvania State branches of the society, serve under the direction of Major W. L. Simpson, U. S. A., special Red Cross agent at Hattiesburg.

Bulletin of State Department of Health. —The *Monthly Bulletin* of the State Department of Health for April shows a considerable decrease in the number of deaths reported in the state during the month of March, as compared with those in March, 1907. The mortality represented an annual death-rate of 17.8; the city death-rate being 18.7, and the rural death-rate, 16.6. While the city birth-rate was 28.5, the rural birth-rate was only 16.6. Measles and scarlet fever still show high mortalities as compared with the corresponding month of last year and the five years' average, both as causes of death having more than doubled the record of March, 1907. Pneumonia and other acute diseases of the respiratory system, as well as influenza, show a large falling off, both on March of last year and the five years' average. There was also a considerable decrease in the deaths from pulmonary tuberculosis. Among the cities, Watervliet shows the highest annual death-rate, 25.3, and Oneida, the lowest, 6.8.

Easter Collection, Grace Church. — The Easter collection at Grace Church, a special centennial thank-offering, amounted this year to the very large sum of $168,000. Of this, $40,000 was given for a fund in memory of Dorothea Wolfe Hoffman, by her mother and sister, to be used for the endowment of the home for old men, which forms a part of Grace Hospital.

A Famous Abortionist in Prison. — Francis Blinn, a well-known abortionist who formerly conducted an establishment for his practices in New York, and who recently was convicted of attempting to perform an illegal operation, was sentenced by Judge Malone, on April 23, to a term of not more than two years in State prison. The offense, the evidence in regard to which was secured by the County Medical Society, was committed in 1903, and Blinn fled the city before he could be tried. He recently returned to New York, apparently thinking that the case would have been forgotten.

Longevity among Princeton Graduates. — Recent statistics of the graduates of Princeton University show that as regards longevity the professions stand in the following order: law, the ministry, medicine. The oldest living alumnus, however, is a physician, Dr. James Curtis Hepburn, of Orange, N. J., who recently passed his ninety-third birthday. He was graduated from Princeton in 1832 and from the medical department of the University of Pennsylvania in 1836.

The Eyes of Public School Pupils. — At the last meeting of the Board of Education the Association of Women Principals presented a series of recommendations looking to the protection of the eyes of the pupils in the New York Public Schools which had been determined upon after consultation with a number of prominent specialists, among whom were Drs. J. E. Weeks, Alexander Duane, W. E. Lambert, C. S. Bull, T. R. Pooley and D. S. Webster. These recommendations were to the effect that hereafter no textbook be used in the schools which is printed on calendered paper, casting a glare; that halftone cuts shall not be allowed for the illustration of books used; that only frosted globes shall be employed for electric lights; that all lights in night schools be provided with green shades; that each pupil when studying from a book shall be required to hold it an angle of 45 degrees, and when studying or reading shall be required to look up frequently from the page; that the seats in all the schools shall be of a size to suit that of the pupils using them.

Death Supervenes on Heart Suture. — Robert Inglis, the young athlete of Yonkers, who was stabbed in the heart in the early hours of April 5 (Journal, April 16, p. 529), died on April 24, in St. Joseph's Hospital where he was operated upon, after surviving for nineteen days and seven hours. For the first few days after the cardiac wound had been sutured his condition was extremely favorable. Sepsis then developed, however, and although he exhibited remarkable vitality, his system gradually sank under the strain. When death supervened he had lost some forty pounds since the stabbing. At the autopsy it was found that the knife wound had severed the cartilage of the fourth rib and penetrated deeply into the heart substance, and that, although it had been successfully closed by the sutures inserted, all the organs had become more or less involved in the septic process which resulted.

Mortality in February. — The *Monthly Bulletin* of the State Department of Health for March shows that the mortality in New York State in the month of February represented an annual death-rate of 17.5, as against 18.8 in February, 1907, and an average of 18.7 for the corresponding month in the past five years. The most notable increases were in the deaths from scarlet fever and measles. From the first of these diseases there were reported 232 deaths, as against 85 in February, 1907, and an average of 99 for the past five years. The deaths from measles numbered 140, as against 44 in February, 1907, and an average of 89 for the past five years. Pneumonia and other acute diseases of the respiratory tract decreased considerably from the rates of last year, the number of deaths from them being respectively 1,154 and 1,160, as against 1,465 and 1,432 in February, 1907. This issue of the *Bulletin* contains an article by Walter F. Wilcox, of Cornell University, on the death-rate of the state, in which it is shown by statistics that during the past ten years the reported death-rate of New York City has diminished, while that of the rest of the state has increased. During the first five years of the ten the death-rate of the city was about 15% higher and that of the rest of the state about 14% lower than the average for the state; but during the last five years the death-rate of the city was about 7% higher and that of the rest of the state about 6% lower than the average for the state. The difference between the city and the rest of the state during the last five years was, therefore, less than one half as great as during the first five. The sharp increase in the death-rate of the state, outside of New York City, the writer believes, is not an evidence of a heightened mortality, but is to be attributed rather to the fact that the state is rapidly approaching a stage when, for the first time in its history, its death-rate, and therefore its sanitary condition, are susceptible of trustworthy measurement. Conditions in the state at large in recent years, he says, resemble those in New York City between 1804, when the published records begin, and 1854. During these fifty years the general tendency of the death-rate was upward; but the figures are best explained as due, not to increase of sickness and death, but to progress in accuracy and completeness of registration. About 1854 the trend changed; the decline since then has been more regular and marked than the preceding increase. It is to be hoped and expected that a similar change in the trend of the figures for the rest of the state will be apparent in the next five years.

Current Literature.

Medical Record

March 21, 1908.

1. Janeway, H. H., and Bulkley, L. D. *A Study of Four Hundred Cases of Epithelioma, in Private Practice, with Remarks on Treatment and Results.*
2. Thompson, W. H. *Acute Invasion of the Kidneys by the Bacillus Coli.*
3. *Bushnell, G. E., and Treuholtz, C. A. *Arneth's Method in the Clinical Study of Pulmonary Tuberculosis.*
4. Brothers, A. *The Diagnosis and Treatment of Early Ectopic Gestation.*
5. Scripture, E. W. *Treatment of Hyperphonia (Stuttering and Stammering) by the General Practitioner.*
6. Clark, L. P. *Freud's Method of Psychotherapy.*

3. The authors have made use of Arneth's method in the study of cases of pulmonary tuberculosis. According to Arneth's assumption, the leucocytes enter the circulation with an undivided nucleus, and as they grow older are characterized by an increasing number of nuclear subdivisions, and by a fuller development of the granules. The condition of the neutrophiles in a given case is determined by a comparison of the percentages of cells with one, two, or more nuclear subdivisions, with the normal percentages obtained by averaging the counts of a number of healthy individuals. If it is found that there is a relatively high percentage of neutrophiles with single or few nuclei, it is inferred that the older cells have been destroyed in some way, probably as a result of contact with bacteria and bacterial toxins, and their places supplied by young cells, which have not yet completed their development. The study undertaken was purely clinical in its scope, to determine whether this method might be of practical assistance in the treatment of pulmonary tuberculosis. The authors find that this method furnishes an objective proof that toxic absorption is present in a degree which constitutes a tax upon the resistance of a febrile patient, and thus enables them to judge more accurately of the kind of treatment to be applied to the individual case where the subjective signs are negative and the ordinary objective signs point to a complete arrest of the morbid process. [W. B. R.]

March 28, 1908.

1. *Sachs, B. *Grave Chorea and Its Relation to Septicemia.*
2. Stone, W. J., and Miller, E. C. L. *Theoretic Considerations Relative to Immunization by Means of the Tubercle Bacillus and Its Products.*
3. Dorland, W. A. N. *How Much Gynecology and Abdominal Surgery Should the General Practitioner Know?*
4. Cocks, E. L. *The Diagnosis and Treatment of the More Common Diseases of the Skin.*
5. Rector. J. M. *A Rational Method of Treatment in Chronic Endometritis.*
6. Floyd, R. *Examples of Chronic Productive Inflammations in Early Life.*

1. Sachs calls attention to a grave form of chorea which he has studied for several years. He reports two cases due to staphylococcus infection in one instance, and in the other to an organism as yet undetermined. He discusses the cases of septicemic or infectious chorea which have been reported, and classifies the evidence in favor of this special infectious type. He insists on the importance of blood cultures in the severe types of the disease as at least a help in diagnosis. He believes the clinical symptoms of this type are suggestive. Prodromal restlessness and twitchings are followed by extravagant choreic movements, with severe jactitations which require constant restraint. Speech becomes difficult and later impossible, owing to the extreme choreic movements of the muscles of speech and to an accompanying mental change, to apathy or delirium. After one or two weeks, stupor, coma and death supervene. He gives a classification of the various forms of chorea. First, chorea minor, which has not yet yielded

the slightest evidence of being due to an infection, and therefore for the present must be regarded as an expression of exhaustion of the nerve elements. Next come the cases associated with endocarditis, rheumatism and fever, then chorea gravidarum and senile chorea, and finally the septicemic chorea here dealt with. The prognosis of this last form the author considers extremely grave, though not necessarily fatal. The treatment is that of the ordinary severe forms of chorea, with the possibility of the use of some appropriate antitoxin. [W. B. R.]

New York Medical Journal.

April 18, 1908.

1. *Jacoby, G. W. *A Colony Sanatorium for the Nervous and Neurasthenic; a Much-Needed Work of Philanthropy.*
2. Taylor, J. M. *The Most Useful Specialty in Medicine.*
3. Bierhoff, F. *The Palliative Treatment of Prostatic Hypertrophy.*
4. Chance, B. *Attempts to Repair the Effects of Great Destruction of the Lids and Orbital Tissues Caused by Disease of the Antrum.*
5. Lofton, L. *Dislocation of the Neck, with Recovery.*
6. Wachenheim, F. L. *The Principles of the Climatic Treatment of Children.*
7. Stoll, H. F. *A Retrospect in Phthisiotherapy.*

1. Jacoby comments on the increase in neuroses and psychoses. The proper treatment consists primarily in the opportunity for rest and recuperation and the incitation to good satisfactory work. Jacoby believes emphatically that most patients cannot be instructed to lead the proper life, either in their own homes, or anywhere away from an institution. Colony sanatoria have now been established in Berlin, Switzerland and other places. The aim is, above all, the cure of the patient, not only in the hospital sense of the word, but also in an economic sense; that is, stable health, with the capacity for work and self-support. Persons with insanity, epileptics, and those addicted to drugs are not admitted. Patients with organic diseases of the nervous system are also excluded. In those institutions work has been looked upon as a part of the cure, but in no sense as a substitute for physical rest. Carpentering has proven of great value. Gardening, bookbinding, printing, basket making, etc., are taught to suitable cases. Although there is no doubt of the crying need for their existence, and although the state must ultimately support such institutions, yet it seems probable that as abroad private charity will have to take the initiative in founding such colony sanatoria. [R. I. L.]

The Journal of the American Medical Association

April 11, 1908.

1. Mayo, W. J. *Pancreatitis Resulting from Gallstone Disease.*
2. Scripture, E. W. *Detection of the Emotions by the Galvanometer.*
3. Wherry, W. B. *Plague among Rats in San Francisco.*
4. Valk, F. *Ocular Rotations in Paresis.*
5. Martin, H. H. *The Treatment of Interstitial Keratitis.*
6. *Rosanoff, A. J. *Disturbance of Nitrogenous Metabolism in Epilepsy.*
7. Wallace, W. L. *Intussusception and Its Cause.*
8. *Tileston, W. *Passive Hyperemia of the Lungs and Tuberculosis.*

6. Rosanoff investigated the ratio of the quantity of nitrogen in the form of ammonia to that of total nitrogen in seven cases of epilepsy. He found that this ratio is apt to vary much more in epileptics than in normal individuals. Moreover, that the striking fluctuations in the ratio of the amount of nitrogen in the form of ammonia to the amount of total nitrogen bear a constant relationship to the seizures, namely, immediately preceding the seizure this ratio corresponds to the normal, while immediately following the seizure, this ratio invariably rises, often far above the normal standard. His findings coincide with the theory already formulated that the phenomena of epilepsy are due to a disorder of nitrogenous metabolism.

8. Tileston found that one hundred and twenty-eight cases of mitral stenosis at autopsy showed a much lower percentage of pulmonary tuberculosis than the material from which they were drawn. The cases with a high degree of stenosis were more free from tuberculosis than those with a moderate stenosis, and were entirely exempt from active tuberculosis. This relative immunity is ascribed to passive hyperemia of the lungs consequent on the mitral lesion. Tileston believes that on theoretical grounds artificially-induced hyperemia of the lungs, as with Kuhn's mask, might be a valuable adjunct in the treatment of pulmonary tuberculosis. [R. I. L.]

April 18, 1908.

1. *Beck, C. *Malunion of Bones.*
2. *Babler, E. A. *Malignant Degeneration of Warts and Moles.*
3. Snow, W. B. *Static Electricity. Its Physical Properties, Modalities, Physiologic Effects and Therapeutic Indications.*
4. Crowell, A. J. *Etiology and Treatment of Hypertrophy of the Prostate.*
5. Stone, W. J. *Blood Depletion in Pernicious Anemia, with Recovery.*
6. Taylor, F. L. *A Case of Transient Heart Block Due to Intestinal Toxemia.*
7. Woldert, A. *How the Malarial Parasite Perpetuates Its Existence.*
8. Cohn, E. *The Systematic Occupation and Entertainment of the Insane in Public Institutions.*
9. Weisenburg, T. H. *Diagnosis of Tumors and Other Lesions in the Cerebello-Pontile Angle.*
10. Cunningham, O. J. *General Anesthesia.*

1. Beck believes that most cases of malunion of bones are due to the failure to utilize the x-ray in the treatment. He cites illustrative cases. For wiring he prefers the aluminum bronze wire suture applied through drill holes. He always removes the wire.

2. Babler reports a series of eighteen cases of malignant degeneration of warts and moles. He believes that the moment that warts and moles begin to grow they are almost invariably malignant growths, and should be treated as such. In his eighteen cases all were over fifty-three, and eight were over seventy. All but five were apparently senile keratosis, and hardly either warts or moles. The pathological diagnosis in all the cases was epithelioma, rodent ulcer or carcinoma. [R. I. L.]

The American Journal of the Medical Sciences.

March, 1908.

1. *Thomson, W. H. *Graves's Disease and Its Treatment.*
2. Anders, J. M. *Adiposis Tuberosa Simplex.*
3. *Finney, J. M. T. *The Choice of Operation in Pyloric Stenosis.*
4. *McMurrich, J. P. *The Occurrence of Congenital Adhesions in the Common Iliac Veins and Their Relation to Thrombosis of the Femoral and Iliac Veins.*
5. *Jones, G. I. *Acute Glandular Fever.*
6. Steiner, W. R. *Epidemic Cerebrospinal Meningitis in Hartford, Conn., during 1904–1905, with Speciol References to Cases Treated at the Hartford Hospital.*
7. *Spiller, W. G. *Tumors of the Cauda Equina and Lower Vertebræ. A Report of Nine Cases: Seven with Necropsy, Three with Operation.*
8. Hecht, D. *Morbid Somnolence.*
9. Diller, T. *A Fatal Case of Pontile Hemorrhage, with Autopsy.*
10. Auspach, B. M. *Chorio-epithelioma of the Uterus. Report of a Fatal Case with Operation and Autopsy.*
11. *Crane, A. W. *Specific Immunity and X-ray Therapeutics.*

1. Thomson in his article supports the theory that in Graves's disease the primary seat of the disorder is not in the thyroid, but that the thyroid is only secondarily affected in a general toxemia originating probably in the alimentary tract. He cites cases of fatal Graves's disease in which the thyroid was atrophied, and refers to the familiar fact that simple goiter occurs without signs of toxemia. He mentions briefly the conflicting opinions as to the importance of the parathyroid glands. His theory of intoxication from the alimentary tract as a cause of the disease is based upon the beneficial effects which

have followed regulation of diet in his patients, combined with the use of intestinal antiseptics. The principles upon which the diet is planned are not clear, although directions are given with considerable detail. "Butcher's meat" is apparently the most important article to avoid, but poultry, fish and eggs are allowed sparingly. The diet should consist largely of fermented or peptonized milk, and of vegetable foods, such as bread and cereals, although "starchy crackers" are to be avoided in persons much troubled with headaches, and oatmeal is to be excluded. In medicinal treatment he uses sodium phosphate, 30 gr. at the beginning of each meal, a mercurial laxative twice a week, and sodium salicylate and benzoate after meals. [The article is far from conclusive.]

4. Finney maintains that in operating upon pyloric stenosis, the surgeon should be prepared to make his choice of operation after the abdomen is open, and should not try to hold to preconceived plans. In cases of much debilitated patients, as in advanced cancer, a rapid anterior gastro-enterostomy, perhaps with the Murphy button, may be the operation of choice. In case of obstruction from early cancer, pylorectomy is to be tried if there is any possibility of a radical cure being effected, also in cases where there is doubt whether the disease is cancer or induration from ulcer, and in cases of ulcer that have run a chronic course, pylorectomy is to be performed. In cases of benign stenosis, in spite of certain theoretical objections, gastro-enterostomy by the "no-loop" method is the operation of choice with most suregons. Post-operative ulcer of the jejunum is rare in this country. Spur formation and vicious circle are eliminated by the "no-loop" method. Yet the advantages of pyloroplasty, preserving as it does the natural and physiological outlet, are obvious. The authors' cases of this operation now number forty-five, comprising all classes of benign stenosis. In no case was the operation impracticable from the presence of adhesions or cicatricial tissue. The difficulties resulting from these conditions were readily obviated by "mobilization of the duodenum," so that it was brought easily into apposition with the stomach wall. Too large an opening is to be avoided, since it may result in regurgitation of bile. Subsequent tests of gastric function in a number of cases have shown practically normal conditions. The author therefore regards pyloroplasty as deserving preference over gastro-enterostomy.

4. McMurrich describes adhesions occurring in the common iliac veins close to the vena cava. In 107 cases examined these were present in 35, or 32.7%. In all but 3 cases the adhesion was found only in the left common iliac vein. The author suggests that the presence of these lesions may explain the fact that a large majority of thromboses occur upon the left side. The cause of these adhesions may be found in incomplete disappearance of an embryonal artery.

5. Jones calls attention to the disease described by Pfeiffer in 1889 as "Drüsenfieber," an acute febrile disease accompanied by slight redness of the throat, and swelling and tenderness of the lymph glands of the neck. The fever is of short duration, but the glandular enlargement persists for ten days to four weeks. Most cases occur in children. The infection has been supposed to enter through the tonsils; the streptococcus and the influenza bacillus have been suggested as possible causes. The onset is sudden, with headache, abdominal pain, vomiting, anorexia and often with chills. On the second to the fifth day the enlarged glands appear, quite tender, but rarely with any redness or swelling of the skin. The axillary and inguinal glands are almost always involved. The spleen is enlarged in 80% of the cases and the liver in 90%. In differential diagnosis are to be considered acute leukemia, syphilis, pseudoleukemia, tuberculous adenitis, typhoid fever and influenza. Jones believes the disease to be more common than is recognized.

7. Spiller reports eight cases of tumor of the cauda equina. The diagnosis requires consideration also of hysteria, multiple neuritis, intrapelvic tumor, tumor or caries of the lumbar vertebræ or sacrum, lesions within the vertebral canal, but external to the dura, and tumor or other lesion of the conus. The points of value in distinguishing between these conditions are carefully described. The important symptoms of tumor of the cauda equina are: pain in the lower limbs simulating sciatica, appearing first in one side, but later bilateral; flaccid paralysis with reaction of degeneration and later atrophy of muscles; anesthesia, usually not dissociated, to be sought for especially in the perineum and external genitalia, and in a narrow zone about the anus; rarely paralyses of bladder and rectum. The symptoms are usually of gradual progression, and the sensory symptoms are apt to be the first to appear. Operation has been performed in but few cases, and in these the results have been discouraging. In the author's cases, of which three were operated upon, death followed the operation in all.

11. Crane has tested the opsonic index of certain patients with acne, with lupus, and with tuberculous adenitis, before and during courses of x-ray treatment, and has found striking rises of opsonic power following the exposures. He believes that the x-ray sets free in the tissues substances equivalent to doses of autogenous vaccination, and that by regulation of the time of exposure, according to the behavior of the opsonic index, the dosage, so to speak, can be adapted to the needs of the individual case, and excessive negative phases can thus be avoided.

[F. W. P.]

BRITISH MEDICAL JOURNAL.

FEB. 8, 1908.

1. TATE, W. *Clinical Remarks on the Symptoms, Diagnosis and Treatment of Tubal Gestation in the Early Weeks.*
2. HICKS, H. T. *Case of Ruptured Ectopic Gestation Occurring in a Rudimentary Horn of a Uterus Bicornis Unicollis.*
3. PARKINSON, C. H. W. *Rigor Mortis in the Stillborn.*
4. LOCKWOOD, C. B. *On the Use of Chemicals in Aseptic Surgery.*
5. TAYLOR, J. G. *On Spleno-Medullary Leukemia and Splenic Anemia (Banti's Disease).*
6. SOWTON, S. C. M. *Some Experiments in the Testing of Tincture of Digitalis.*
7. *DOBSON, T. H. B. *On Migraine.*
8. PATERSON, D. R. *The Removal of Foreign Bodies from the Air and Food Passages.*

7. Dobson gives an interesting clinical article on the diagnosis and treatment of migraine. He believes that it is hereditary to a large extent, or rather that the tendency to suffer from neurosis is hereditary, but that the neurosis may appear in one generation as migraine and in another as spasmodic asthma, etc. There is generally a history of either migraine or gout in one branch of the ancestors of the patient. Most cases begin at puberty and improve about the age of sixty. In his experience there has been a preponderance of cases among men. He gives a most interesting description of the onset of a typical attack in his own case. There may be (1) simple hemicrania, unilateral, responding to every arterial beat, recurring every few weeks; (2) so-called sick headache, periodical; unilateral, culminating in nausea followed by vomiting and prostration. This form is hereditary; (3) so-called blind headache, an attack of which is preceded by marked disturbance of vision and of the mental state. In this last form there may be in addition a numbness of the lips or the arm, drowsiness, motor aphasia and squint. The typical characteristics of the headache are that it responds to every heart-beat, is made intolerable by stooping and coughing, and is in a great majority of cases unilateral. Its periodicity, its association either with vomiting or blindness, render it unmistakable. Nothing definite is known as to the pathology. In regard to the treatment, it should be along two general lines: first, to lessen the tendency to the explosive action in the nerve centers; second, to avoid the immediate exciting causes, which are gastric disturbance, constipation and eye strain.

[J. B. H.]

FEB. 15, 1908.

1. PHILIP, R. W. *Clinical Lecture on Chorea of Aggravated Type with Certain Unusual Phenomena.*
2. *AULD, A. G. *Clinical Lecture on Chronic Bronchitis.*
3. BARNARD, H. L. *Address on Surgical Aspects of Subphrenic Abscess.*
4. *ROBERTS, J. R., AND BHANDARKAR, R. S. P. R. *Preliminary Note on the Existence of an Acute Tubercu-*

lous Fever in India which has been Confused with Continuous and Remittent Fevers.

5. Millar, J. G. *On the Spread and Prevention of Tuberculous Disease in Pondo Land, South Africa.*
6. Gunn, A. R. *The Prevention of Tuberculosis; a Suggestion.*
7. *Robb, A. G. *The Treatment of Epidemic Cerebrospinal Fever by Intraspinal Injections of Flexner and Jobling's Antimeningitis Serum.*

2. Auld, in a clinical lecture on chronic bronchitis, recommends potassium iodide, 5 to 7 gr. after each meal if the expectoration is scanty and difficult to expel, otherwise he is a firm believer in balsam of Peru in doses of 10 to 20 minims three times a day, disguised in an emulsion with oil of wintergreen, anise and syrup. For the local treatment he recommends soothing inhalations of various kinds, vapor of tar and belladonna being often very efficacious. He makes no mention of the relation of this condition to chronic influenza.

4. Roberts and Bhandarkar believe that a large proportion of the so-called remittent fevers of India, hitherto supposed to be malarial, are really of tuberculous origin. There is one form in which the patient experiences a long period of ill health of an indefinite kind; relapses of fever, periods of general depression, with temperature below normal, with loss of weight, and in some cases anemia. Practitioners are apt to consider this due to Indian climate and conditions, and recommend a change to Europe or the hills. Another set develops obvious tuberculosis of the lungs, kidney, etc. They report in detail thirteen cases which have been treated by means of injections of tuberculin T. R. with remarkably good results.

7. Robb reports a series of thirty-two cases of epidemic cerebrospinal meningitis treated by means of Flexner's antimeningitis serum. His results in Ireland correspond with those obtained in the recent epidemic in New York and Boston, and Akron, Ohio, in which there was a reduction of the death-rate from 70% to 80% to about 26%. He describes the method of injection and the dosage.

[J. B. H.]

Feb. 22, 1908.

1. *Robson, A. W. M. *Address on Some Abdominal Tumors Simulating Malignant Disease and Their Treatment.*
2. *Barnard, H. L. *Address on Surgical Aspects of Subphrenic Abscess.*
3. Cheatle, G. L. *Observations on the Incidence and Spread of Cancer.*
4. Duncan, G. E. *A Form of Oral Filter to be Worn during Operations by All Persons Inside the Operating Room.*
5. Johnson, A. E. *Appendicitis at Sea. With Remarks on the Surgical Equipment of the Mercantile Marine.*

1. Robson presents an interesting clinical article in which he gives the details of numerous cases of abdominal tumors simulating malignant disease, with a discussion of each case, the diagnosis, pathology and treatment. It includes cases of chronic tuberculosis, diseases of the cecum, of the appendix, of the stomach and duodenum, gall bladder, liver and pancreas. Some of these cases of chronic inflammation would undoubtedly have ended fatally but for surgical intervention. He believes that an exploratory operation, if undertaken with proper care and skill, is almost devoid of danger. After every diagnostic effort has been made, even though the prognosis may seem hopeless, if there is any element of doubt about the case, he believes the question of an exploratory incision should be seriously considered.

2. Barnard gives an exhaustive and careful paper on the surgical aspects of subphrenic abscess. Out of 76 consecutive cases occurring at the London hospital in eight years, 21 were due to perforated gastric ulcer, 12 to appendicitis, 8 to suppurating hydatid cyst, 6 to tropical abscess of the liver and 5 to duodenal ulcer. It is evident that perforated gastric and duodenal ulcers are responsible for about one third of all cases, appendicitis for one sixth, and hydatid and tropical abscess of the liver for another one sixth. He considers ordinary routes of infection and localization of subphrenic abscesses due to gastric ulcer. In 16 cases the perforation was on the anterior wall of the stomach and near the lesser curve, the septic matter escaping directly into the left anterior intraperitoneal space, and the abscess being localized there. In 10 cases where the abscess followed appendicitis the pus was localized in the right anterior intraperitoneal fossa. He considers the various ways in which such an abscess may occur from appendicitis, and takes up the various routes of infection where the abscess is due to other causes than those mentioned. He considers the signs and symptoms under five headings: (1) A history of diseases which may produce a subphrenic abscess and the character of the onset. (2) The general signs and symptoms which indicate that suppuration is going on somewhere in the body. (3) Abdominal signs and symptoms. (4) Thoracic signs. (5) Under the heading of local signs the direct evidence of the abscess itself. These five headings he takes up in detail. In regard to the use of the exploratory needle in subphrenic abscesses, he considers that the proper use of a good aspirating needle upon the operating table, under full anesthesia, is the most certain means of diagnosis we possess, and in his own experience has never failed or deceived. He believes the only safe rule in thoracic operations is to follow the needle, and that it is useless to make a large opening and admit air to the pleura where the needle can demonstrate that no pus is present. He gives the technic of this operation. The needle should be passed to its full length of about three inches, in the region where the signs are localized, then slowly withdrawn while suction is maintained. He takes up in detail the various operations which have been recommended for this condition. He believes that the posterior routes should always be followed when it is possible, as they are more favorable to drainage than the anterior. In his own operations, in a series of 26, the mortality has been 27% by the posterior route, 39.5% by the anterior and 75% by the lateral route. He adds an appendix to this article in which the various cases are tabulated according to anatomical varieties, etiology, micro-organisms present, method of onset, etc. The article is illustrated with numerous cuts and diagrams. [J. B. H.]

Münchener Medizinische Wochenschrift. No. 9.
March 3, 1908.

1. Schottmüller, H., and Much, H. *The Opsonin as a Means for Differentiating and Identifying Pathogenic Bacteria.*
2. *Preti, L. *The Hemolytic Action of Anchylostoma Duodenale.* (Preliminary report.)
3. Sachs, H. *The Relation of Cobra Toxin to the Red Blood Cell.*
4. Theilhaber, A. *Venesection, and Local Scarification in Neuroses, and in Gynecologic Conditions in General.*
5. Rosenbaum, B. *Researches on the Blood Serum Reactions in Carcinoma of the Stomach and Intestine.*
6. Jaquet, A. *A Method of Taking Graphic Records of the Blood Pressure on Man.*
7. Hessmann, A. *General Rules for X-Ray Dosage.*
8. Zirkgraf, G. *Saponin Inhalations in Diseases of the Upper Air Passages.*
9. Bimbaum, R. *Certain Causes for Sudden Death after Spinal Anesthesia.*
10. Bunzl, V. *A Case of Tuberculosis of the Liver; Operation, Recovery.*
11. Scheven, O. *The Pathology of Laryngocele.*
12. Weisner, B. *The Value of X-Ray Examination of the Colon.*
13. Rühl. *The Treatment of Placenta Previa by Vaginal Cesarian Section.*
14. Quadflieg. *A Case of Traumatic Dislocation of the Ulnar Nerve.*
15. Brenner. *A New Infusion Apparatus.*
16. Flatan, S. *The Decrease in Laparotomies owing to the Employment of Vaginal Section.*
17. Weygaudt, W. *Are the Objections against Legal Determination of Sexual Anomalies Scientifically Justifiable?*
18. Jesionek. *Obituary Notice on Lassar.*

2. For some time the question as to whether the anemia found in patients with anchylostoma is due to hemolysis or actual loss of blood has been open. Preti, using suspensions of the anchylostoma, has experimented on its action on blood corpuscles in the test tube. He finds

that the anchylostoma duodenale contains a hemolytic substance which acts on the red blood cells of many different animals. This substance is insoluble in physiological salt solution, only slightly so in alcohol and ether, also it cannot be destroyed by boiling. Lecithin nor cholesterin does not affect its activity, while digestion with trypsin sets free the hemolysin and makes it soluble in water. The alcoholic extract of anchylostoma possesses neither tryptic nor anti-tryptic peculiarities. The author further plans to study the mode of action of this hemolysin in animals and men. [R. D.]

Berliner Klinische Wochenschrift. No. 9.
March 2, 1908.

1. Virchow, H. *Demonstration of the Position of the Heart Valves by Means of a Specially Arranged Skeleton of the Thorax.*
2. Virchow, H. *An Aneurism of the Ascending Aorta Fixed in Situ.*
3. Ebner, A. *Traumatic Appendicitis.*
4. *Campbell. *Gummatous Involvement of Both Caudate Nuclei.*
5. *Martel, H. *The v. Pirquet Method in the Diagnosis of Human Glanders.*
6. Lehn-Dorff, H., and Zak, E. *Myeloid Leukemia.*
7. Frankenhäuser. *The Development of Balneology During the Last Ten Years.*
8. v. Pirquet, C. *Discussion of the Comparative Values of Skin and Conjunctival Tuberculin Reaction.*
9. Wolff-Eisner, A. *A Reply to the Above Remarks.*

4. Campbell believes that the evidence obtained up to the present time goes to show that the caudate nuclei are concerned in part with the body movements, more especially with maintenance of equilibrium. In the case of a young man who developed certain psychic symptoms, a lessening in motor power, and an unsteady gait with right-sided hemiparesis, agraphia and slight aphasic symptoms, autopsy showed gummata in both caudate nuclei, without other demonstrable involvement of the brain or meninges. In this case the author believes that the paresis, agraphia, etc., were dependent on the localized involvement of the caudate nuclei.

5. The author reports a definite skin reaction to Mallein after glanders in three cases, one of which was himself. In all the control experiments no reaction was obtained. He believes that in cases of glanders, active or healed, a skin reaction may be obtained resembling the v. Pirquet reaction in tuberculosis. [R. D.]

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Correspondence.

THE MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

Boston, May 11, 1908.

Mr. Editor: The next meeting of this association will be held in Chicago on June 2–5 inclusive. The occasion will be an important one for several reasons, and it is especially desirable that New England shall be represented to the greatest possible extent.

The railroad associations have granted a rate of one and one-half fares for the round trip, as below. Tickets will be on sale from May 28 to 31 inclusive, good for return on same lines to June 12, inclusive. While these tickets will be honored upon any train within the specified limits, yet the following itinerary is suggested as tending to make the trip sociable and agreeable:

Sunday, May 31. Leave Boston (via Boston & Albany Railroad), 1.45 p.m.; Worcester, 2.56 p.m.; Springfield, 4.27 p.m.; Pittsfield, 6.19 p.m. Due in Chicago, 3.30 p.m. Monday.

Round trip rates: From Boston, $32.95; Worcester, $31.80; Springfield, $30; Pittsfield, $28.75.

Sleeping car rates: Boston and Worcester, $5.50 per berth; Springfield and Pittsfield, $5 per berth.

This train will consist of Pullman Sleeping Cars from Boston to Chicago without change. Station opposite Auditorium Hotel. Cars for the exclusive use of members of the association and their ladies will be provided without extra charge if a sufficient number, twenty or more, engage passage on this train. For tickets, accommodations, etc., apply to

Osgood Packard, *City Passenger Agent,*
366 Washington Street, Boston, Mass.

Approved: George W. Gay, M.D.,
President of Massachusetts Medical Society.

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REUNION OF HARVARD MEDICAL ALUMNI AT THE CHICAGO MEETING OF THE AMERICAN MEDICAL ASSOCIATION, TUESDAY, JUNE 2, 1908.

Mr. Editor: There will be an informal dinner at the Great Northern Hotel, on Tuesday, June 2, 1908, at 6 p.m. It is desired that every Harvard medical graduate in Chicago at that time shall consider it his duty to attend this reunion. The committee will endeavor to make it also his pleasure. Tuesday night has been reserved by the American Medical Association as Alumni Reunion Night. Harvard should have a creditable number at her particular gathering. In order to provide best it will be necessary for the committee to know something of the probable number attending. Therefore, it is requested that all Harvard men who expect to be present at the Fifty-ninth Annual Session of the American Medical Association shall notify the undersigned at once. Do it Now! (Each cover two dollars.)

The general alumni headquarters will be in the Auditorium Hotel, where a register of Harvard men will be placed and where any information and assistance possible will be furnished.

Very truly yours,
Henry F. Lewis (H. M. S., '88).

Address:
Dr. Henry F. Lewis,
42 Madison Street, Room 1401,
Chicago.

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CHELSEA FIRE. PHYSICIANS' RELIEF COMMITTEE.

377 Beacon St.,
Boston, May 4, 1908.

Mr. Editor: The following additional contributions have been received in aid of the physicians who suffered in the Chelsea fire.

Previously acknowledged in the Boston Medical and Surgical Journal of April 30: $2,897.00.

Drs. J. B. Ayer, $25, F. P. Drew, $2, L. R. Stone, $15, C. C. Foster, $10; W. F. Whitney, $10, "J," $20; Drs. F. Plaff, $25, Henry S. Kilby, $2; "In Memory of B. M. H.," $10; Mrs. Henry Clarke, $25; Dr. R. F. O'Neil, $10, Francis H. Williams, $25, M. C. Lathrop, $5, F. B. Flanders, $10, E. S. Boland, $5; Cambridge Medical Improvement Society, $100; Drs. R. W. Greene, $5, E. A. Daniels, $10, G. W. Tinkham, $5, E. Peabody Gerry, $15, E. L. Oliver, $10, J. T. Bottomley, $25; Boston Homeopathic Medical Society, $100; Orlando J. Brown, $10; Middlesex North District Medical Society, $45.50; F. P. Sprague, $25; G. P. Cogswell, $5. Total, $3,451.50.

Robert B. Greenough, M.D.,
Treasurer, Physicians' Relief Committee.

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CORNELL UNIVERSITY.

Ithaca, N. Y., May 10, 1908.

Mr. Editor: In your enumeration of American "Festschrifts," in the Fitz issue, May 7, you omit that for Dr. Mark, of Harvard, a few years ago.

Very truly yours,
B. G. Wilder.

[The Mark anniversary volume, published in New York, in 1903, was in recognition of twenty-five years of successful work, 1877 to 1903, by his former pupils. Dr. Mark is Hersey Professor of Anatomy in the Museum of Comparative Zoölogy at Cambridge. This Festschrift was not included in the Journal's list, not having any direct medical bearing. Ed.]

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, MAY 2, 1908.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	16	4
Chicago	536	150	Waltham	8	—
Philadelphia . . .	—	—	Pittsfield	10	—
St. Louis	—	—	Gloucester	4	1
Baltimore	205	45	Brookline	12	1
Cleveland	—	—	North Adams . .	7	3
Buffalo	—	—	Chicopee	6	3
Pittsburg	—	—	Northampton . .	6	2
Cincinnati	—	—	Medford	4	1
Milwaukee	—	—	Beverly	1	—
Washington . . .	—	—	Leominster . . .	4	1
Providence . . .	67	25	Hyde Park . . .	9	0
Boston	286	93	Melrose	3	1
Worcester	36	7	Newburyport . .	—	—
Fall River	52	25	Woburn	2	0
Cambridge	27	7	Westfield	10	5
Lowell	40	13	Marlboro	5	2
Lynn	22	6	Revere	6	3
New Bedford . .	23	8	Attleboro	4	0
Springfield	18	2	Peabody	—	—
Lawrence	27	12	Adams	2	—
Somerville	20	4	Clinton	5	2
Brockton	10	2	Gardner	4	3
Holyoke	14	5	Milford	2	—
Malden	10	1	Watertown . . .	3	0
Chelsea	14	2	Plymouth	—	—
Newton	14	3	Weymouth . . .	2	0
Salem	9	5	Framingham . .	2	1
Haverhill	12	1	Southbridge . . .	7	2
Fitchburg	4	1	Wakefield	—	—
Everett	9	4	Webster	—	—
Taunton	15	6	Arlington	3	1

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 9, 1908.

F. C. COOK, surgeon. Orders to the "North Carolina" revoked; ordered to continue duty at the Naval Academy.

R. A. WARNER, assistant surgeon. Detached from the Naval Hospital, Pensacola, Fla., and ordered to Washington, D. C., May 7, for examination for promotion and then to await orders.

J. T. MILLER, assistant surgeon. Detached from the "Franklin" and ordered to the "North Carolina" when commissioned.

C. E. STRITE, assistant surgeon. Ordered to the "Franklin."

A. MCK. JONES, acting assistant surgeon. Detached from the Naval Recruiting Station, Des Moines, Ia., and resignation accepted to take effect May 1, 1908.

K. C. MELHORN, L. W. MCGUIRE, assistant surgeons. Appointed assistant surgeons from April 11, 1908.

H. B. MCMURDO, acting assistant surgeon. Appointed acting assistant surgeon from April 15, 1908.

J. L. BELKNAP, assistant surgeon. Detached from the Naval Training Station, Newport, R. I., and resignation accepted to take effect May 6, 1908.

APPOINTMENTS.

THE George Blumenthal, Jr., Fellowship in Pathology at the Mount Sinai Hospital for the current year has been awarded to D. Reuben Ottenberg, of New York City.

J. H. MCCOLLUM, M.D., has been appointed Professor of Contagious Diseases at the Medical School of Harvard University.

M. VEJUX TYRADE, M.D., has been appointed instructor in Pharmacology in the Medical School of Harvard University.

R. H. FITZ, M.D., LL.D., has been appointed Hersey Professor of the Theory and Practice of Physic Emeritus.

RESIGNATION.

DR. H. W. CUSHING has resigned as a Visiting Surgeon at the Boston City Hospital.

SOCIETY NOTICES.

THE MASSACHUSETTS MEDICAL SOCIETY. ONE HUNDRED TWENTY-SEVENTH ANNIVERSARY.—The annual meeting will be held at 9.30 A.M., Wednesday, June 10, 1908, in the building of the Massachusetts Charitable Mechanic Association, on Huntington Ave., Boston. Meetings of Sections will be held in the same building, on the preceding day, Tuesday, June 9.

FRANCIS W. GOSS, M.D., *Secretary.*

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY.—This society will hold its regular meeting at Hotel Nottingham Thursday, May 21, 1908, 7.30 P.M. Section of General Medicine, Dr. Sara A. Bond, Chairman.

A symposium on Typhoid Fever.

BLANCHE A. DENIG, M.D., *Secretary.*

THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY AND THE CARE AND TREATMENT OF EPILEPTICS. — The meeting of the National Association for the study of epilepsy and the care and treatment of epileptics is to be held at Indianapolis, Ind., on Tuesday and Wednesday, Nov. 10 and 11, 1908. Those desiring to attend the meeting and present papers should communicate with Dr. J. F. Munson, Secretary and Treasurer, the Craig Colony for Epileptics, Sonyea, N. Y.

WM. T. SHANAHAN, *Chairman Executive Committee.*

RECENT DEATHS.

HERBERT HENRY LYONS, M.D., M.M.S.S., died in Fitchburg, May 6, 1908, aged fifty-three years.

DR. HORACE M. HOLMES, who died at Adams, Mass., May 3, was eighty-two years of age. He graduated from the Berkshire Medical School in 1852. He began to practice in Adams in 1853. He represented the towns of Adams and North Adams in the legislature for two years, 1878 and 1879.

DR. EDWARD DODD, a retired physician of North Babylon, Long Island, N. Y., died from pneumonia on April 27, in the sixty-ninth year of his age. During the Civil War he was in the Army Medical Service and was with General Sherman in several of his campaigns.

DR. JOSEPH O. FARRINGTON, of New York, died on May 4, in the Johns Hopkins University Hospital, Baltimore, Md., where he had gone for an operation, which was performed two weeks previously. He was in the seventy-ninth year of his age and a native of New York. In 1857 he was graduated from the medical department of New York University. Dr. Farrington had been in continuous practice since 1858, and was one of the most prominent and successful practitioners in the upper part of the city. In 1872 he was president of the Harlem Medical Association, and when the Medical Association of the Greater City of New York was organized in 1899 he was one of its incorporators and charter members.

DR. WILLIAM HALSTED CASWELL, a retired physician of New York, died on May 3, at his home at Shelter Island, N. Y. He was graduated from Columbia University in 1864, and later from the College of Physicians and Surgeons, New York.

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Address.

SOCIAL LEGISLATION IN GERMANY AND ITS RELATION TO THE PRACTICE OF MEDICINE.*

BY FRIEDRICH MUELLER, M.D.,
Professor of Clinical Medicine in Munich.

I wish to express my appreciation to your President for his kind invitation to take part in your meeting; it is a great pleasure and honor for me to be allowed to address you. I propose to speak about modern social legislation in Germany, because I have seen that this subject was new and of some interest to many American physicians who have visited our country. It is not at all my intention to give you advice as to the way help and medical service may be provided for the working classes in your country. An institution which has proved useful in one country can be impractical and even unsuccessful in another. I only wish to tell you something about a social evolution which has deeply influenced the medical profession in Germany.

Our new social legislation started from a message of our old beloved emperor, William the First, to the Reichstag in the year 1881. The Emperor recommended to the House that they pass a bill for the benefit of the working classes with the purpose that times of illness should no longer be times of misery and starvation. The Emperor suggested to the Reichstag to make good speed with this legislation, for he said, "I wish to see this work of charity and justice fulfilled before my eyes close, and I feel that the end of my days is near."

During the last two decades the social laws in Germany have undergone many changes and it was natural that many errors were made in a matter which was totally new and where no prototype existed. Therefore many amendments and improvements have proved necessary. In the course of the years this social legislation expanded and developed more and more, and further expansion is forthcoming, especially in regard to the laws for widows and orphans. For in such a movement there is no halting, and withdrawal is impossible. A benefit once given to the people can never be taken back. This rule must be well kept in mind whenever a state intends to start such legislation. If some idealists imagined that by these social benefits the gratitude of the poorer classes would be awakened, they were disappointed. But a man who really understands the poor people and is earnestly willing to help them will never look forward to receiving their gratitude, but he does the charitable work because he thinks it is his duty. The greater the benefits that are given to the working classes, the greater their demands become, and the radical political parties and their agitators stimulate their excessive demands.

The German social legislation comprises three branches: first, the insurance against illness; second, the insurance for old age and invalidism, and third, the insurance for accidents.

All these classes of insurance are obligatory, and that is the principal point. They all comprise large classes of the population, and therefore they are relatively cheap.

The first of these laws, *the insurance against illness*, includes every man and woman who does work as an employee or a servant, so long as his salary is not above $750 a year. The statistics of Germany have shown that not more than 4% of all adults have an income of more than $700, and consequently it is easy to understand that this insurance includes not less than fifteen millions of people. As soon as a servant or a workman accepts a position, his employer is obliged by law to notify the insurance corporation (Krankenkasse) and the employee is placed upon their lists. The fact alone that a man or female servant is able to enter service and to begin work is considered as a sufficient guarantee of his health, and no preliminary examination of the state of health is required from a doctor. The premium for this sort of insurance is low, and is in proportion to the salary. It varies from three to thirty cents a week; that is, from five to seventeen dollars a year. Two thirds of this premium are paid by the employee and one third by the employer. But often the employer pays the whole amount, and this is the rule in the households of the better classes for the benefit of the housemaids. The employer is responsible for the payment. The law prescribes that the employer too shall contribute to this insurance, because he is interested in the health of his employees and derives his profit from their work.

The law has defined only the general rules and limits of the obligations, leaving all the details to the individual insurance corporations. The insurance corporations (*Krankenkassen*) are founded upon the system of self-government in order that the workmen as well as the employers may take more interest in the system. In a general assembly of all the members of the insurance corporation, a committee is chosen, and this committee elects the president, governs all the affairs and appoints all officials, including the treasurer, the clerks and auditors. This committee also makes all agreements with the physicians. We have seen that the employees pay two thirds of the premium and the employers one third, and therefore in the General Assembly the employees have two thirds of the votes and the employers one third.

As the workmen belong in great part to the Socialistic party, it is natural that the committee which is chosen and the president are to a great extent members of this radical party; therefore this political party has a great influence upon these corporations and often puts its own members and agitators into official positions. As the physicians of these corporations often have dealings with these officials and are to a certain extent dependent upon the committee, it is easily seen that many difficulties arise.

The number of these insurance corporations is great and there are many varieties. Some of them are institutions of the municipality (*Ge-*

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* Address delivered in Boston, before the Suffolk District Branch of The Massachusetts Medical Society, March 27, 1907.

meinde Krankenkassen), and to these belong principally the domestic servants. In the towns and villages as a rule only this sort of municipal insurance exists. In large cities, and especially in industrial centers, there are insurance companies for the different classes of workmen. Workmen with larger incomes, for example the miners, the blacksmiths and other metal workers, pay high premiums, and their insurance corporations offer greater advantages to their members. Large industrial establishments and factories have their own corporations, and these corporations are often assisted by the owners and stockholders of these industries with large sums of money, so that they can offer greater benefits to the members. The poorest paid classes, the sweat-shop workers, have difficulty in paying even the minimum price which the law exacts. In recent years practical experience has led to the tendency to unite the smaller and poorer corporations into greater concerns, because it reduces their expense and broadens their possibilities. Thus, for example, in Munich most of the insurance corporations have united in one large company, and this concern includes more than one hundred thousand workmen, the equivalent of one fifth of the whole population, including the children. The budget of such big corporations is, of course, very great and reaches a million and more a year.

All of these various insurance corporations are under the supervision of the state or municipality; they are compelled to keep within certain limits and to carry out definite obligations.

The law demands that every insurance corporation afford for its members in case of illness, at least the following advantages: First, free medical treatment during half the year. This medical treatment must be given at the patient's home if he is unable to go to the physician at his office during his office hours. The insurance corporations are obliged to provide sufficient medical attendance, and therefore they must make all arrangements with the physicians. Second, to give medicine free of charge. It is for the interest of the corporations, as well as of the physicians, to have prescriptions as reasonable as possible and to avoid the use of expensive patent medicines. Further, the corporation is obliged to give certain small medical supplies, such as eyeglasses, trusses, bandages, ice bags, baths and so forth. Third, in case the patient is unable to work, the corporation is compelled to give him a certain sum each day during his illness, even if it lasts for half a year, but no longer. This sum must amount to one half of his wages. Richer corporations are able to pay larger amounts, but not more than two thirds of the wages. It is for the advantage of the members to make this sum as large as possible and to economize in medical expenses. The physician must testify that the patient is unable to work. It is easily seen that many patients who are only slightly ill prefer to draw their insurance money rather than work, especially when the work is slack, and that many people only slightly ill come to the physician for this purpose. These people prefer those physicians from whom they know they can easily get this testimony, and this is a temptation for some physicians to acquire a large practice.

Many people who are only slightly ill and yet are able to work, or who are only affecting illness, will go from one physician to another in order to obtain new testimonials. The corporation must in its own interest stop this fraud, and it therefore demands that a patient suffering from one illness shall confine himself to one physician, and only with special permission of the corporation is he allowed to change his doctor. Besides this the corporation appoints inspectors to see that the patient is really ill and at home. If the patient, against the order of the physician, is known to frequent barrooms, his insurance money can be withdrawn. Whenever a female member of the insurance corporation is confined, whether married or single, she receives a grant of money for four weeks, even if the confinement is a normal one, in order that she may remain at home during this time, gather her full strength and care for her child during this first important period. This is one of the wise acts of the legislation, not only to afford help in sickness, but also to prevent it. When a patient dies the corporation appropriates a certain sum, at least ten dollars, for the family, and a new measure is in preparation which will give further help to the widow and to her children up to a certain age. Instead of receiving medical attendance at home or in the physician's office, the patient can be taken to a hospital, though never without his consent, except under certain circumstances; for example, when ill with a contagious disease, or when his disease is such that special treatment is required which is not available at home. Patients can also be compelled to go to the hospital when it is suspected that they feign illness. In some cities it is the law that unmarried members of the corporation, who have no home of their own, can be forced to enter the hospital. When the patient is taken into the hospital the corporation must pay the hospital expenses, which amount to fifty or seventy-five cents a day. The patient in consequence receives no insurance money. This is unfortunate for married people, and in consequence many of them prefer to remain at home, rather than go to the hospital and have better care, because their families are often obliged to use some of this money. Therefore, the wealthier corporations pay a part of this sum to the families, in order to allow the patient to go to the hospital and receive the better treatment. Wealthier corporations are able to give more than the law demands. They may grant larger sums of money, furnish orthopedic apparatus, pay dentist's bills and give false teeth, allow their patients to go to health resorts, and build and maintain convalescent homes in the country in order to restore their members to full health. They can also give free medical attendance to the wives and children. This is of great importance to the physician, because the illness of the children increases his work more than threefold. The money can be withdrawn when the patient has willfully hurt himself, or has acquired his illness through drunkenness. Formerly, money was not given for sexual disease, but this rule has been changed, in order that venereal diseases may be treated as thoroughly as possible.

We have seen that the corporations are obliged to furnish medical help and to make agreements with the physicians. We have seen further that a large majority of the population are members of the Insurance Corporations, and have the right to demand medical attendance free of charge. This has been of great consequence to the medical profession. Formerly a young physician in the beginning of his career found his patients among the poorer classes, and received from them small fees, until his name became so well known that he acquired a practice among the better classes; but now the poorer classes and a great proportion of the middle classes, too, are in the hands of the insurance physicians, and it is very difficult, if not totally impossible, for a young physician to start a practice, if he cannot become one of these. On the other hand, large classes of the people, who formerly were only able to call in a physician in extreme cases, now that they have the right to free medical attendance, make use of this freely, much more than those who are obliged to pay their physician. At the outset it was customary for the corporations to appoint a small number of physicians of their own who were obliged to take charge of all their cases. These physicians were paid a fixed salary, and they, therefore, had charge of all the corporations' patients. Consequently these physicians had very many patients to look after; they often had forty to fifty persons at their office hours and therefore the time that they could give to each patient was very short and insufficient and treatment suffered. This system worked also to the dissatisfaction of other physicians, who were excluded from the corporations. On the other hand, this system was favorable to the corporations, because the expense for the small number of physicians was very slight. The committee had a greater interest in a cheap medical service than a good one. The corporations preferred this system because it made the physicians depend upon them, and more or less upon their officials. Though the salary of the physician employed was very low, the competition for these appointments grew very great among the poorer physicians, and they underbid each other in the competition for these places. Therefore, the corporations were able to secure physicians for less and less money. The whole institution took on more and more the character of a charitable work for the working classes, but at the expense and to the damage of the medical profession. In the course of time dissatisfaction arose with this system of medical service and it steadily grew, first among the greater number of physicians, who were not employed by the corporations and, therefore, found difficulty in building up a practice, and second among the patients, who through this system received insufficient attendance and found out that their physician had not enough time for them. The patients, therefore, often preferred in serious cases to call in another physician. The respect which the patients had for the corporation physician (the *Kassenarzt*) grew visibly less, and it became evident that this state of conditions could only improve if the insured patients were allowed to choose those physicians in whom they had confidence. The directors of the corporations resisted this change in their affairs to the utmost, because it was more expensive and lessened their power over the physicians. The physicians saw that improvement was only possible if the people were given a free choice of their own physician, and were not obliged to confine themselves to one physician or to a number of physicians, but could apply to any physician to take charge of their treatment. The physicians realized that in this struggle against the influential corporations the single physician was powerless, and therefore the physicians formed associations, which at first included the majority of physicians in one town, but later extended throughout the whole country. A bitter struggle resulted between the insurance corporations and the associations of the physicians, and in a considerable number of cases this terminated in a strike on the part of the physicians, they refusing to treat the patients of the corporation at the expense of the corporation and to give them certificates. By the unanimous action on the part of the physicians the insurance corporations were forced to raise the fees of the doctors, and the majority of the insurance companies were forced to grant free choice of the physician to the patient. The system worked very satisfactorily to the patients, as well as to the physicians. But it has greatly increased the expenses of the corporations, and this has raised many difficulties. Among the great number of physicians in large towns, there were always some who would visit a patient much oftener than was necessary, and would consequently send to the corporation a much larger bill than was their due. As a result the expense of the corporations grew to such an extent that they could hardly stand up under it. In consequence it became necessary to make some new arrangement. The associations of the physicians were therefore obliged to establish a supervisory board from among their own members, in order to control the action of its physicians, and to put a stop to unnecessary attendance.

An entirely satisfactory settlement has not yet been reached as to how best to pay the physicians in accordance with their services. In some corporations it has been arranged that a certain proportion of the income, on the average one sixth or one fifth, shall be set aside for the physicians' fees and this sum was to be distributed among the physicians who assisted in the care of the corporations' patients. This distribution was so planned that each single visit or service was paid for, an operation and confinement, of course, being paid at a higher rate than an ordinary visit at a physician's office. This system tempted some physicians to give more of their services than the case required. To avoid this difficulty another system of distribution was adopted by some associations. By this plan the physician was not paid according to the number of visits he made. but according to the number of patients he treated. This system of distribution was open to the objection that the physician received for a case of long duration, such as typhoid fever. no more compensation than for a simple case of angina. and there was thus a temptation to neglect the patient suffering with an illness of long duration. But all these difficulties will be overcome in time, and now that the free choice of physicians is given to the patients, it will be the duty of the physicians to solve the question by the exercise of strong self-control.

We have seen that among the working classes nearly all are members of the insurance corporations, but what is to become of those patients who are poor, not able to work, and are, therefore, not members of the insurance corporations? For these destitute people the municipality or electoral community must provide, furnish free medical service when they are ill, and if they cannot be treated in their poverty stricken dwellings, then the municipality is obliged to send them to the hospital at its own expense. When any patient comes to the hospital, and the physician sees that he is seriously ill, the hospital is obliged to take him in and cannot send him away. The hospital investigates whether the patient is a member of an insurance corporation or not; if not, what municipality is responsible for him. It is, therefore, not an act of charity to take a poor patient into the hospital, but the law accords him the right to be cared for. This is an advantage of the German legislation, namely, that the poor patient has not the depressing feeling that he is an object of charity, but understands that he is simply receiving his rights. It is, of course, necessary that the municipalities provide large hospitals, because the number of patients who have the right to hospital treatment is very large, and in the time of an epidemic much increased. The hospital with which I am connected in Munich has 1,200 beds, and besides this there are several other large municipal hospitals in Munich. In Berlin the city supports 5 large hospitals; the Charité Hospital has nearly 2,000 beds, and the latest hospital, the Rudolph Virchow Hospital, with its huge buildings, gives more the impression of a town than a hospital. The expenses of all these hospitals are mostly met by the insurance corporations, who pay for each patient on the average of half a dollar a day.

The second branch of our social legislation is the insurance for invalids and old age (*Invaliditäts- und Alterversicherung*). This insurance includes still broader circles of the population. Every paid workman or workwoman, whether working for some one else or for themselves, but whose income is not greater than $500 a year, is obliged to take part in this insurance. Independent workers and tradesmen are not forced to enter this insurance, but they are allowed to do so if their income does not average more than $750 a year, and if they do not employ more than one journeyman. This law provides that an annuity is paid to the members when they reach the age of seventy years, because one can take for granted that at that age a workman has become unable to support himself. On the average a workman becomes unable to work at the age of sixty-five and therefore it would be well to lower the age limit. This same annuity is paid if the man has become unable to work on account of some long continued illness, for example, chronic pulmonary tuberculosis, rheumatism and gout, cardiac failure, diseases of the kidney, nervous trouble, loss of sight, or the loss of the use of his limbs in a surgical case. In order to receive this annuity he need not be absolutely invalided, but must be sufficiently ill to be unable to earn less than one third of his former wages, according to the testimony of the physician. The physician's certificate is given to the insurance office. This variety of insurance is not self-governing, but is controlled by a board of officers paid by the government. This board decides whether or not the patient is really unable to work, and whether he has the right to receive his annuity. If the patient thinks himself not justly treated, and the board considers him able to work, while he feels that he cannot, he has the right to resort to law. The legal proceedings are entirely free of charge to the working man, and he often avails himself of this privilege. The lower court is the Court of Arbitration (*Schiedesgericht*), which consists of an equal number of employers and employees, presided over by a lawyer appointed by the government. If the patient is not satisfied with the verdict of this court he can appeal to the higher court. The highest court in the empire, to which these cases can be taken, is composed of a certain number of judges and the representatives of the employers and employees. It holds its sittings in Berlin and belongs to all the states of Germany.

This system of insurance embraces more than 12,000,000 of the people and the premiums amount to a very large sum. The capital which is thus amassed by the boards is invested in bonds, but these must have the same security which the law demands for money invested for minors. The entire capital secured from the invalid and old age insurance amounts to more than a thousand million marks (1,242 million marks). In the last few years invalid insurance has been paid to 350,000 persons, aggregating $40,000,000 a year. In addition to this, old age insurance was paid to 200,000 persons, and the expense of that amounted to $3,500,000 a year. The annuities are paid through the post-offices. The sum is not sufficient to support a person, but enables him to keep the wolf from the door, and prevents the necessity of becoming a beggar. It is not the intention of the law that these annuities shall be so large that people will neglect to provide for themselves for the future, but that the working classes shall be compelled to economize for their future. The annuities paid for old age and invalid insurance are in proportion to the amount previously earned by the patient.

The premiums are paid, one half by the employer and one half by the employee. The mode of payment is a very simple one; the employee keeps a card upon which the employer pastes a stamp for each week of his employment, the stamps being in proportion to his salary. These range from two to five cents a week. Each card has room for stamps for one year. When a card is filled it is handed in to the board, who keeps it and returns a receipt for it. The greater the number of cards the workingman is able to collect during the years of his employment, and the greater the price of the individual stamps, the larger is the annuity which is paid if the person becomes invalided, or if he comes to old age. For this reason the annuities vary greatly in amount, ranging, as said before, between $45 and $120 a year. As the amounts of premiums collected would not be sufficient to allow the corporations to pay these annuities, the German government pays $12 a year toward each annuity.

The annuity for invalids is paid, as we have seen, whenever a person has lost by illness his ability to work, or if his earnings are less than one third of his former wages. It is, therefore, clear that it is for the interest of the insurance corporations to prevent this illness when possible. For this reason the insurance corporations have the right and permission to use their immense capital freely to prevent the invalidism of its members. They can take charge of the treatment of chronic cases, especially in such instances which are likely to result in invalidism; they can encourage the patient to enter the hospital, or to undergo an operation that is likely to enable him to return to his work, but a patient can never be operated upon against his will. As tuberculosis plays a very important rôle in producing invalidism, so the insurance company takes care of tuberculous patients and sends incipient cases to sanatoria for this disease; anemic and weakened patients are cared for in convalescent homes in the country. The insurance corporations may make use of their capital in building sanatoria, or maintaining others by the gift of large sums. The great number of sanatoria now existing for the poorer classes throughout Germany could only have been started and maintained by the help of the insurance companies for invalidism, who loaned some of their large capital at low interest.

In special cases the insurance for invalids has taken care of the water supply in the workingmen's dwellings, established health resorts, and assisted such other institutions as are in use for the public health. So we can see that this insurance is not only used for bettering the condition of the invalid, but also to prevent disease.

The third of the Social Laws is the Accident Insurance against accidents. Included are all workers in factories where steam or electricity is used, the brick masons, carpenters, blacksmiths, the workers in the transportation business, the miners, diggers and farmers; in short, all workers whose occupation is attended with some danger. This law is formed on the principle that the employer is responsible for every accident which occurs in his establishment, without regard to the fact whether the employee is at fault or not. If an employee is hurt during his work or if he falls and breaks his leg, that is a case for the insurance, but should this occur to him while walking on Sunday, it does not hold good. It is further of no importance whether the accident was caused by the carelessness of the workman. For the benefit of the working classes the definition of accident is very broad. This law not only applies to trauma and mutilation of the body, but also in every case where a sudden and harmful accident caused damage to the internal organs or to the nervous system of the employee, or if through such an accident some internal illness resulted. But, on the other hand, it is not considered as an accident if through the long-continued hurtful influence of his trade the employee acquires some illness; for example, if a house painter contracts chronic lead poisoning at his work, this would not be considered as an accident, but if the employee is injured by the sudden inhalation of poisonous gases, this would be classed as an accident. It is immaterial whether the injury is physical or mental, or whether the disease is organic or psychical. It is the duty of the physician to decide whether an existing illness is connected with a previous accident or not. This decision is simple if the case is one of obvious surgical injury but in the case of an internal disease this decision becomes very difficult, e. g., if a judgment must be reached upon the connection of a preceding accident with gastric cancer, heart failure or some disease of the lungs, and, most of all, some nervous disease or psychical derangement.

The physician must decide to what extent the accident has diminished the patient's ability to work. The law prescribes that if a workman has lost by an accident his whole ability to work, the annuity comprises two thirds of the patient's former wages; if he is not totally unable to earn his livelihood and has lost only a part of his ability to work, he is rewarded with the corresponding part of the whole annuity, that is, he gets two thirds of the income which he lost by accident. For example, if a workman earned $1,000 a year, and through accident becomes totally unable to work, he receives $660 a year, but if his ability to work is only reduced to one half, he receives $330. The amounts paid in annuities for accidents are much greater than those paid for invalidity. It is easy to understand that the opinions of different physicians do not agree as to whether an illness bears any relation to a preceding accident, or to what degree the ability to work has thereby changed. In cases of litigation certificates from several physicians are taken and an impartial verdict is given. In the course of time several general rules have resulted, so that entire inability to work is estimated at 100% when a workman has lost the use of both eyes, both legs or both arms, through an accident; the loss of the right hand is estimated at 60%, the left hand or foot at 50%, the loss of one eye at 33%, the loss of one thumb at 20%. In the cases of internal disease or nervous disease the decision is much more difficult. If a workman loses his life through an accident, the insurance fund must provide freely for the widow and children.

The law is based on the principle that the employer alone is responsible for the accident; for that reason the entire premium for accident insurance must be paid by the employer, and nothing is required from the employee. The employers, therefore, have united themselves and formed great associations, and as the dangers in the different industries vary greatly, so there are associations for builders, transportation companies, farmers, metal workers, printers and so forth.

When an accident occurs the police must be notified. They arrange for the necessary details, and if death or damage has resulted the association must pay for the injury.

If the workman thinks his injury is not considered to be as serious as he himself feels it to be, he has the right to appeal to the Court of Arbitration (*Schiedsgericht*), which thereupon secures new certificates from other physicians, who have special experience in these questions. This is the same Court of Arbitration which we encountered in the Invalidity Insurance. If the verdict of this court does not satisfy the patient or the employer's association, either is free to appeal to the highest court. Also in this case the litigation is free of expense to the patient, and for this reason the workmen take advantage of it freely and a great many cases are brought before the highest court. The verdicts of the courts have usually resulted very favorably for the injured workmen, even in those doubtful cases where the doctor was not able to give positive evidence of a connection between the accident and the disease. Whether these courts have done justice to the employer is an open question. But since the abuse which the workmen made of this privilege has become evident a somewhat stricter method has been enforced and the rule has been established, — that justice goes before charity. As the annuities paid are very large, there is a temptation on the part of the workman to bring every illness into connection with an accident, and to consider his inability to work most definite, and to exaggerate his complaint and even to affect illness. It is a great temptation not only for the working classes, to be supported without being obliged to work, but people of weak character are tempted to such a degree that they really believe themselves unable to work, and this auto-suggestion often makes them really ill. The long wait during litigation with its excitements and its uncertainty occupies much of the patient's mind and makes him think so much of his accident that he often reaches a state where he really is unable to concentrate his mind on other ideas and to begin work again.

The associations have the right to do anything necessary to revive the patients' ability to work, and they make free use of this, sending the patients to convalescent homes or placing them in hospitals.

We see then the curious fact that injured workmen often do not wish their ability to work restored. Their only wish is to receive as high an annuity as possible, and thus they often hinder everything done for them to effect a cure and even consider the assistance given to them as an injustice. Consequently, through this accident insurance law, there has arisen an entirely new disease, a traumatic psychasthenia and hysteria which is due to accidents and increased by litigation. Many cases in which there is no organic disease become in consequence of this psychical influence really unable to work. The prognosis of such cases is very poor. We often find that in the course of this psychical condition arteriosclerosis and heart failure arise. It is significant that psychasthenia often appears after mild accidents. The patients have lost their mental equilibrium, and the desire to get an annuity makes them really ill to the end. It is really a question whether more good or harm is done through this law, and this question is of special interest to the physicians, who often must deal with the unjust exaggerations of the patients, with greediness or even real simulation, while treating this unfortunate psychasthenia. But in spite of such cases we can truly say that the good effect of this law is far greater than the harm which it does. The physician, however, is often more impressed by those cases where injury has produced inordinate desires, because the patients who have rightfully received their annuity trouble him less. Moreover, since we have had this accident insurance law we have forgotten what misery occurred in former times among the families of injured workmen.

Just as the insurance legislation for illness and for invalidity proved useful in the prevention of disease and invalidism, so also legislation relating to accident insurance is of great use in prevention of accidents. The associations of employers are greatly interested in doing everything possible to prevent accidents, because they must pay the damages. Therefore regulations and precautions for the prevention of accidents are carried out as far as possible. In every factory, at the erection of every building, in every stable and farm, printed regulations are pasted up, and a fine is imposed for any neglect of the rules. Machinery is so constructed as to prevent accidents as far as possible, and as a result accidents have decreased despite the growing industries.

So we can truly say that the three Social Laws have not only brought help to already existing illness and misery, but have to a high degree prevented illness and misfortune, and this preventive effect is still more satisfactory than the curative.

Gentlemen, I am sure that you expected that a professor of medicine would speak to you of some new aspects of medicine, and you were perhaps astonished and deceived that instead I chose the topic of Social Laws and Progress, but I hope that this topic has awakened some interest. It is an old privilege of the medical profession not only to deal with the curing of the sick, but also to take an interest in the welfare of the community, and in all states and countries the physicians have been the first to take an active part in the public health.

Please consider my discourse of the evening as the simple tale of a traveler, who while among you wishes to tell you about some new institutions of a foreign land.

Original Articles.

CERTAIN COMMON DISORDERS FREQUENTLY MISINTERPRETED.*

BY GEORGE L. WALTON, M.D.,
Consulting Neurologist to Massachusetts General Hospital, Boston.

> "Sing, Muse (if such a theme, so dark, so long,
> May find a Muse to grace it with a song),
> By what unseen and unsuspected arts
> The serpent Error twines round human hearts.
> . . . .
> Truths that the theorist could never reach,
> And observation taught me, I would teach."
> —*Cowper.*

During a service of nearly twenty-five years in the neurological department of a general hospital, the fact has been impressed upon me that the usefulness of the neurologist is not limited to the practice of neurology, but that it falls to his lot quite as often to assist in the diagnosis of conditions not strictly nervous, but coming so frequently under his observation, through being mistaken for nervous disease, that they become quite familiar to him. It has seemed to me possible that I could prove useful, at the risk of broaching topics with which you are perfectly familiar, by contrasting the present with the old view of certain disorders not yet made clear in the textbooks, including some which are not strictly neurological. The conservatism appropriate to the textbook, while precluding too rapid adoption of untried ideas, necessarily results in the promulgation of many theories of disease that are no longer tenable.

According to Diogenes Laertius, "it was an old saying of Myson that men ought not to investigate things from words, but words from things; for that things are not made for the sake of words, but words for things."

The diagnosis *facial neuralgia* gives, as a rule, very little clew to the real nature of the malady, especially in the case of young and middle-aged persons. Here is a common picture which should be more generally recognized. A supra-orbital pain, often accompanied by tenderness, appears after rising in the morning, reaches great intensity at noon, to disappear in the afternoon, giving place to a night of sleep unbroken save by dread of the morrow. The pain does not always appear with just this periodicity, but may come and go, for example, in the afternoon instead of the morning. This variety of "facial neuralgia" is still often regarded as of malarial origin and to be treated with large doses of quinine, though no other suspicion of malaria is present. We now recognize the fact that, in the large majority of cases, these symptoms point to infection of the sinuses extending from the nasal cavity. Inquiries for antecedent coryza and nasal discharge are more pertinent than those regarding sojourn in malarial districts; exploration of the sinuses is more important than that of the blood. The explanation of the periodicity seems to be that the activity of the circulation in the early morning increases the secretion and results in blocking the passages, relief coming tardily through gradual escape, in the course of the day, of the confined contents. In the treatment of this affection the rhinologist has succeeded the neurologist, whose only duty is to make such tardy amends as he can, by way of diagnosis, for his own earlier misconception of the pathology of these cases. Quinine has now given place to the adrenalin spray, and the question of operation on the nerve to that of operation on the frontal sinus and the antrum.

The diagnosis, facial neuralgia, has come to mean very little to me excepting in elderly people whose nerves have become degenerated by atheroma, in which case a true nerve pain, tic douloureux, does exist, paroxysmal, severe, and, as a rule, only to be relieved by operation. I have been forced to the conclusion that by far the greater number of facial neuralgias in young and middle-aged persons come from the eye, the ear, the nasal cavity and accessory sinuses, from the teeth, or skeletal disorders such as necrosis or pressure from periostitis or tumor growth upon the trifacial nerve in its long course through bony orifices and around bony prominences.

At the risk of being reminded that

> "No wild enthusiast ever yet could rest
> Till half mankind were like himself possessed,"

I will take up dental irritation, the etiological factor which has long seemed to me to overshadow all others in importance and frequency as far, at least, as concerns the facial neuralgia of early and middle life.

The trigeminal is the only nerve in the body that comes to the surface to subject its tender terminal filaments to changes of temperature, to pressure of foreign bodies and to the chemical and infectious influences nowhere more active than in the mouth. Nor is dental facial neuralgia limited to cases in which the teeth are neglected. It may occur when they are well cared for. An unerupted wisdom tooth, a "dying" nerve, or the presence of a metallic filling too near the nerve-ending, with the variations of temperature to which it is subject, the change to pulp-stone of the jelly-like contents of the tooth-core, may produce, in a case of apparent oral integrity, the most violent paroxysms of pain, not by any means limited to the point of origin of the irritation, sometimes even remote from it. The paroxysms may be succeeded by intervals of absolute freedom from discomfort and there may be throughout no suggestion of toothache. The general acceptance of this fact has been hindered by time-honored tales of patients who have had an apparently offending tooth removed only to have the pain jump to another tooth. Aside from the fact that this history pertains rather to toothache than to facial neuralgia, even this experience sometimes shows, not that the trouble is not dental, but that the pain is not necessarily referred to the affected tooth. I was taught a lesson by the case of a man in whom the ineffectual removal of one tooth led not to abandoning the search for the tooth at fault, but to his deciding to have them *all* removed with immediate and lasting relief of a troublesome facial neuralgia from which he had suffered for many years.

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* Read before the Berkshire District Medical Society, April 30, 1908.

I have elsewhere reported the case of a middle-aged lady who had suffered from paroxysms of extreme pain generally starting from the left ear and extending, sometimes into the orbit on that side, but more frequently to the other side. She was referred to me by Dr. Blake, who had found in the ear no explanation of the pain. The trouble completely and permanently disappeared upon the removal of a wisdom tooth on the left side, which had been pronounced, like her other teeth, in good condition, but which had a small and undiscovered cavity. I could mention a dozen similar, though less striking, instances, emphasizing the fact that the attention should not be too readily diverted from the teeth by the fact that they have been examined by a competent dentist and reported in good condition.

I have recently seen a young woman of thirty-three, who has suffered for fourteen years from left facial neuralgia of the most intense and paroxysmal variety with painless intervals. So frequent use of morphine has been required as to lead to the fear that the habit would be established. Minute examinations by the most skillful dentists have revealed nothing. Several teeth have been removed and examined for pulp-stone without success. Examination by the x-ray has now revealed an unerupted wisdom tooth.

Before leaving the head I must mention *facial spasm* and "*tic*." The distinction between them is that facial spasm is generally unilateral, is apparently independent of the will and is not amenable to relief by mental training. The movements in facial spasm are lightning-like, oftenest in the lids, sometimes remaining there, again spreading to the lower branches of the seventh nerve. The etiology of the textbooks is vague and unsatisfactory, the treatment recommended generally futile, apart from the recommendation to examine the eyes and teeth, a recommendation apt to be hidden amongst advice as to galvanism and drugs, methods which in my experience have not proved of the least value. In case the twitching begins about the lips one should always look for dental irritation; in case it begins about the eyes, for ocular defect; relief of these two conditions alone (in my experience) cures this variety of facial spasm. Even stretching or cutting the facial nerve only produces temporary disappearance of the spasm which returns after motion is re-established.

A single case, seen in consultation with Dr. Fitz, will serve to illustrate facial spasm produced by eyestrain. A prominent lawyer has suffered for years from obstinate facial spasm beginning in the eyelids, spreading to other parts of the face and accompanied by distressing sensations especially about the ear. The trouble has for years disturbed his work by day and absolutely precluded reading or other evening occupation. When he was referred to me the spasm was practically continuous and most distressing. He wore heavy glasses combining prism with cylinder. Leading oculists at home and abroad had agreed that nothing further could be done in this direction. I noted, however, that *closure of the eyes caused disappearance of the spasm* and insisted on one more ophthalmological effort. At my request Dr. Mansur made a thorough study of the case and among other modifications recommended exercises in place of the lateral prism, thus greatly simplifying the glasses. Relief was almost immediate and within a month the spasm had disappeared. He can now read till midnight with ease. My only fear is that he will overtax his eyes in making up for lost time.

In view of the confusion in the textbooks between the forms of abnormal facial movement, a confusion increased by multiplicity of terms, it is not surprising that these movements are often misinterpreted. For practical purposes they may be sharply divided into two classes, — one the spasm we have just considered, a purely mechanical process as shown by its capability of limiting itself to muscular fibers which cannot be contracted separately by the will, the other, by far the more common, movements involving muscles and groups of muscles quite under voluntary control. To such movements the French have limited the word "*tic*," and have named the maker of the movement a "*tiquer*." These movements may become so habitual that they are unconscious in the sense of automatic, just as the act of twirling the watch chain or of whistling may be performed automatically, but none the less they are under the control of the will and if the patient has the patience to acquire the needful self-control they may in time be inhibited. Into this class of movements fall blinking, grunting, frequent throat clearing, sucking, blowing, sniffing, elevating the brows, grimacing and the like.

The only possible treatment of these cases is mental training, and that with so earnest co-operation of the patient that it really amounts to self-training. These movements are made primarily to gratify an obsession, or insistent thought, whether to gratify a sensation or to complete a mental picture, and the training consists in learning to subjugate the insistent thought.

To gain this mastery of oneself may take as much pains and time as to acquire the game of golf, but it is well worth the trouble, for the training is bound to affect the various other results of the compelling impulse, such as undue sensitiveness to slight and criticism, undue emotional tendency, causeless fears, intolerance of odors, foods and noises; in short, of all the obsessive tendencies which serve to make the life of the chronic comfort-seeker uncomfortable. The words of Epictetus are as applicable now as in the days of the Roman Empire: "No one is free who commands not himself."

Let us next consider one or two of the frequently misinterpreted disorders affecting the upper extremity. First comes the case in which pain in the shoulder and upper arm, with wasting of the deltoid muscle, and loss of ability to raise the arm, give rise to the diagnosis "neuritis." In point of fact, a neuritis giving rise to this set of symptoms would be very rare. The chances are altogether in favor of a joint affection. It must be remembered, in the first place, that joint disease produces sometimes, with great rapidity, wasting of adjacent muscles (so-called joint atrophy). In the second place, we must assure ourselves that it is not *mechanical obstruction* rather than paralysis which prevents the elevation of the arm. This is easily discovered by attempting to raise the arm ourselves, an attempt which generally discloses the fact that the scapula follows the humerus in its upward movement and that holding the scapula down prevents raising the arm. Dr. Curtis, then a promising young surgeon of the Massachusetts General Hospital, studied these cases thirty years ago, and named the affection periarthritis. Forcible breaking up of adhesions under ether was the first treatment undertaken, but the relief was generally only temporary. Carefully graduated attempts at passive motion were found more promising, but these cases were never quite understood until Dr. Codman recently demonstrated the fact that the real lesion is generally an inflammation of the subdeltoid bursa, which is thereby prevented from slipping under the acromion when the shoulder is elevated. He finds this bursa readily accessible to operation in cases not relieved by passive movement.

In illustration of this disease, I have recently seen in consultation with Dr. Allen, of New Bedford, a married woman of forty-seven, who has for a long time suffered from severe pain just above the insertion of the right deltoid. It has gradually increased and is now present, not only on movement, but also when the arm is at rest. There is moderate tenderness of this region. She can raise the arm to the vertical position by a sinuous movement, but it cannot be raised directly outward, either actively or passively. This offers an unusually exact example of subdeltoid bursitis, since the lesion is extremely limited; probably something in the nature of a fringe, is the diagnosis of Dr. Codman, who advises operation.

Another variety of painful affection of the upper extremity, sometimes mistaken for neuritis, is the *occupation neurosis.* The term "writer's cramp" has brought the *cramp* of occupation neurosis into such undue prominence that the more frequent *pain* is relegated to comparative obscurity: hence the pain of occupation neurosis is frequently misinterpreted. Continuous overuse of a part produces pain far oftener than cramp.

This pain, though seated in the overused part, represents, not merely muscle pain, but, as Gowers has pointed out, rebellion on the part of the exhausted cerebral centers. This explains the rapid appearance of the same symptoms when the attempt is made to do the work with the other arm. The pain, at first present only on movement, may finally appear when the arm is at rest, sometimes continuous, sometimes paroxysmal, not infrequently accompanied by tenderness. A common characteristic is the inability to place the arm in a comfortable position even in bed. Electricity and massage are the usual resources. Electricity is of no use in these cases, and massage, except of the most gentle variety, oftener aggravates than relieves the discomfort. The only effective treatment is abandonment of the occupation for months, and rest — generally absolute rest, even with the arm in a sling, and sometimes with the addition of a light splint in the early part of the treatment. When the affection is well established, a single attempt at work may undo the result of a week's rest. This affection is not limited to the followers of trades, but appears in women who constantly sew, practice upon the piano and the like, and sometimes results from the simplest habits unconsciously prolonged. It is more common among the neurotic, partly because of their lesser resistance, and partly because of their obsession to finish at any cost what they have undertaken. Nor is the history of the patient always to be relied upon. In the case of one lady who has long suffered extreme pain, formerly accompanying movement of the arm, now practically continuous, with no physical sign to explain it, a negative reply was given to all my inquiries regarding overuse of the part. The enlightening statement of her husband that, to the distress of the rest of the family, she sewed day and night, she indignantly denied, saying she only took short stitches anyway. Further questions brought out the fact that she did this simply because she could no longer take long ones!

It is peculiarly hard to urge even temporary abandonment of the employment upon which the patient, perhaps his family, depends, but the wayside of every profession and of every trade is strewn with wrecks, who seem to

> "Cry aloud in every careless ear,
> 'Stop, while ye may; suspend your mad career;
> O learn from our example and our fate,
> Learn wisdom and repentance ere too late.'"

In every case, then, of intense pain in the arm without obvious cause, careful search should be made for overuse of the part, before resorting to the diagnosis *neuritis*, a diagnosis which, in the majority of cases, without known infection or other toxic influence, is generally only a cloak for our ignorance of the real pathology of the case in hand.

Coming now to the lower extremity, the most common source of pathological misconception along these lines is *sciatica.* Pain and tenderness along the course of the sciatic nerve placed this disease long ago among the disorders presumably completely understood though generally intractable. It was thought quite a step in the right direction to suggest that the affection of the nerve was a neuritis rather than a neuralgia. In this connection it was noted that sciatica was often accompanied by lumbago. But it was left for the orthopedist to teach us that in the majority of cases the trouble with the nerve is merely secondary to, and a symptom of, disease of the spinal column at the point of emergence of the nerve-roots — most commonly an osteo-arthritis or a sprain of the sacro-iliac synchondrosis, as taught by Goldthwait. This can be, as a rule, easily demonstrated by making the patient bend the back forward, backward and sidewise. One or more of these movements will show marked rigidity of the lower spinal column, and elicit pain in that region. Curiously enough, prior to this realization, the most satisfactory treatment of sciatica by neurologists consisted in strapping the back in case of lumbago, or Dana's rest in bed with splint reaching from the leg to the armpit and secured about the *trunk.*

So many cases of otherwise intractable sciatica have readily succumbed to orthopedic treatment (oftenest mechanical support to the spinal column) that recourse to the orthopedist for this symptom has now become, with some neurologists at least, a routine practice.

One of the most important directions in which the orthopedist has helped the neurologist, and the neurologist in turn has frequent opportunity to help others, is in calling attention to the symptoms of flat foot. My own attention was called to this subject in a striking manner. A recurring pain in the inside of the right knee had been for years attributed to an old injury to that joint. An increase of the pain in recent years led to the suspicion that rheumatism (another stock diagnosis) had been added to the results of trauma. Flat foot had been considered, but eliminated, because *the pain often persisted during rest,* even in the recumbent posture. This is a very misleading sort of reasoning to apply to pain; it reminds one of the argument of the lawyer called to a client in jail.

" Why! " he exclaimed, " they cannot arrest you for that."

To which the client replied, " But they have."

In the case in hand rheumatic and other treatment having proved ineffectual, a visit was made to the orthopedist, who promptly pronounced the pain that of flat foot, a diagnosis substantiated by the fact that the patient, who had limped to his office, walked back in comparative comfort with the simple aid of a temporary support to the arch. This patient, after using for a time a plate and exercises, finally needed no further treatment than the use of the Thomas heel.

While the commonest seat of pain from flat foot, other than in the foot itself, is perhaps inside the knee, this diagnosis is always to be considered in case of unexplained pain occurring almost anywhere in the lower extremity; for example, on the outer aspect of the thigh, and even in the small of the back. A history of increase of weight, especially combined with excessive exercise, favors the diagnosis; signs of sluggish circulation in the foot with puffiness below the outer malleolus tend to confirm it.

The aim of this outline sketch is not so much to present new subject-matter as to emphasize the practical importance of bearing these diagnoses constantly in mind. The trouble, I find, is, not lack of familiarity with the fact, for example, that neuralgia may come from the teeth, or pain in the knee from flat foot, but lack of readiness in application of this knowledge to the particular case, and lack of persistence in the pursuit of these etiological factors in the face of contemptuous indifference on the part of the patient, and notwithstanding the assurance, by those apparently better qualified than ourselves to judge, that the suspected organs are not the source of the symptoms. I wish further to emphasize the fact that these conditions are not merely of academic interest, but are constantly recurring in the daily round, though unfortunately quite as often overlooked as recognized, in spite of, perhaps partly on account of, exceptional skill and learning on the part of the practitioner.

I have by no means exhausted the list of everyday disorders frequently misinterpreted, but hope that what I have mentioned will constitute an effective plea for the independent investigation of each case in place of blind reliance upon time-honored diagnoses.

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MEDICAL NOTES ON NORTHERN ALASKA.

BY G. P. HOWE, M.D., LAWRENCE, MASS.

The following are some general impressions gathered in the course of a year spent on the north coast of Alaska. The inhabitants of this country consist of Eskimos and a few white floe whalers and traders, mostly married to native women. Whale ships wintering north usually stop at Herschell Island, a place I did not visit.

In order to understand the course of disease amongst these people one must know something of their general scheme of life. In winter a typical Eskimo family lives in a house or igloo, made of logs, or stones covered with sod, and later snow. To economize heat this house is so low that the head of a tall man, kneeling, almost reaches the roof; and in size it is no larger than is necessary to contain the family and a few household utensils. The level of the floor is below the ground level outside. A long, low passage — that one must crawl through on one's hands and knees — having two or more doors in it, communicates with the exterior. Light is admitted through the roof, by a small window, covered with the peritoneum of the seal. Some air may enter through this, otherwise there is usually no ventilation. If the house is too warm, a door to the outside is opened. The floor is covered with logs, on which the sleeping skins of the family are laid. Heat is furnished for the most part by blubber lamps, consisting of a shallow dish, often made by hollowing out a soft stone, filled with seal oil, with a wick made of dried moss or calico. Where driftwood is plentiful, as it is all along the North Alaska coast where there are no permanent villages, metal camp stoves have come into use.

The staple food of the coast Eskimo is seal meat, summer and winter, though whale, deer, bear, fish and ducks are important in their seasons. Though the primitive Eskimo diet was almost entirely animal, at present most reasonably prosperous natives get considerable tea, flour, sugar and tobacco. In fact, the children suffer considerably if deprived of flour and sugar now.

The best clothing is made from the skins of deer killed in August. At this season the deer has finished shedding one coat and is just starting to grow the next. The typical male costume consists of two shirts, each with hoods attached, made of deer skin, the inner worn with the hair next the body, the outer worn with the hair outside. Over these a light calico snow shirt is worn to keep the snow from driving in to the hair. The trousers and stockings are also of deer skin, worn with the hair in. In winter the boots are deer skin with the hair inside, but in the spring and summer waterproof sealskin boots are worn. The dress of the women is essentially similar to that of the men save that the shirts are worn longer, like short skirts. The entire suit of clothes weighs very little more than our winter clothes minus the overcoat, and is incredibly warm, owing to its imperviousness to wind, and to the non-conducting properties of the warm air held in the fur.

The same clothes are worn summer and winter, save that in summer one shirt is usually sufficient. By the time summer comes some of the hair is worn off the shirt, making it cooler. As soon as the snow begins to melt, the winter igloo begins to leak, and the family move out and live in tents. At present the tents are mostly canvas — two thicknesses — low and dome shaped. Formerly tents were made of deer or seal skin. The tent sticks are bent arctic willow or whale ribs. Two thicknesses of the lightest canvas are much warmer than one of the heaviest, on account of the air space between. The tents and winter igloos are kept so warm that formerly when indoors the natives removed their shirts and sat naked to the waist. The missionaries have somewhat discouraged this habit, without, I think, improving the general health of the community.

Tuberculosis is the great plague of the country. It was present, I am told, when white men first came into the country. I saw 5 cases of Pott's disease, 1 case of caries of the sternum, which, I believe, was tuberculosis, and a large number of cases of pulmonary phthisis. In summer the pulmonary cases improved markedly, while living out of doors, only to relapse again in winter.

Venereal disease is less common now than formerly in Alaska, as the natives come in somewhat less contact with the crews of the whale ships. I, personally, saw no gonorrhea or secondary syphilis, and only 3 cases of tertiary.

Very soon after the settlement of Nome an epidemic of measles swept up the coast with frightful mortality. Many who recovered fell victims to pneumonia and phthisis. This epidemic carried off nearly half the inhabitants of some of the villages.

A disease, similar to, if not identical with, influenza, is endemic at Point Barrow, and any stranger passing through is almost sure to contract it. The natives recognize the contagious nature of this disease, as one of them told me he should never take his children to Point Barrow lest they get sick.

Human nature is very much the same in the Arctic as elsewhere, and imaginary diseases and neurasthenia are not uncommon. There was one native who, for no apparent reason, decided that he was going to die, so he smashed his drum and sat moping in his tent. I could find nothing the matter, but gave him a placebo of about 1 oz. of castor oil, with excellent results. This same fellow on another occasion saw a picture of a white man's devil and promptly decided he had one inside him. Forty-five minims of tincture capsium were efficacious in removing his satanic majesty. The man showed me a place on his stomach where he said the devil came out. An old woman came to me saying that her head was (nayictok) broken. I could find nothing the matter, but gave her a couple of migraine tablets and some methylene blue. The break was entirely mended and the woman who had done no work for a month went joyfully to making me a skin suit of clothes. The old women, like some old women down here, are fond of describing marvelous diseases and suggesting absurd cures, each trying to outlie the other.

The Eskimo's original idea of disease, in fact, his idea at present, was that a devil got into one. The cure was to drive the devil out. This could be done by frightening him with incantations, consisting largely of dancing, yelling and beating of drums. A man might cure himself in this way, but it was desirable that his friends should assist. If a native doctor was present he would probably collect as large a fee as possible for presiding at the performance. In any case a large number of volunteers could be obtained by promising a feast. If the yelling, drumming and dancing failed to help the patient, cutting would be tried. This consisted in cutting a hole in the afflicted part as large as the doctor thought wise or the patient would allow. Whether the devil comes out through this hole or " bad blood " is supposed to escape, I do not know. The skill of the physician is shown by knowing where and how large a hole to cut. If the first cut does not cure, another is made somewhere else. The cut for snow blindness is usually made above or at the outer side of the eye.

For the prevention of snow-blindness, the natives have one really efficient device, consisting of a wooden eye shade, blackened on the inside, with a narrow slit to look through. This effectively shields the eye both from the glare of the sun above and from the reflected light of the snow below. I saw one case of trachoma in a Point Barrow native.

Formerly, at the time of childbirth, a woman retired to a separate house or tent to have her child. No one entered the house or offered any assistance. Now, frequently, other women are present, and, if there is any trouble, the help of a white man is welcomed. When twins are born, if it seems feasible, both are raised, if not, one is exposed to die. The natives are sorry to do it, but take it calmly as a matter of course. A woman nurses her child as long as she is able, or till another child is born. This is rather necessary, as native food is not very satisfactory for weaning a young child. It is not an uncommon thing to see children three and four years old nursing. A large infant mortality, due to improper feeding, makes large families the exception. A child is allowed to eat anything its parents do. Abortion is occasionally practised, by means of violent abdominal massage, but is not common, as, generally speaking, children are desirable assets.

In cases of frozen hands and feet some crude surgery is practised, consisting usually of amputation after the part is very gangrenous. There is little liability to sepsis in the country, so the results are not as bad as might be expected. So far as I know, they have no proper knowledge of making skin flaps to protect an amputation. Usually the natives show remarkable self sacrifice and patience in caring for a crippled member of the the family, but in times of severe trouble they may abandon him to die with the greatest calmness.

It has been said that cancer does not exist among the Eskimo. So far as I could find out this is true, not only of cancer, but of all classes of tumors among men. Smallpox, chicken pox, scarlet fever and mumps have not yet visited this country. There were a few cases of probable typhoid at Point Barrow last winter. They were described as cases of prolonged high fever with hemorrhages from the bowels. On account of the unsanitary habits of the people, it seems probable that there will be more of it later, as the country round is practically a marsh, with no drainage in any direction.

In spite of the fact that there is very little danger of serious sepsis and traumatic wounds, even when the peritoneal cavity is opened, usually giving no trouble, pus bacteria must exist in the country. Boils are not uncommon, and I saw 3 cases of chronic osteomyelitis of the long bones.

A curious disease, known by the local name of "mollycolly," exists among the dogs of the country. Though somewhat similar in its symptoms to rabies, I am very sure it is a separate disease. The etiology is doubtless a micro-organism present in the mouth of the dog affected, since the bite is undoubtedly infectious. The disease is most common in the spring and summer, when the dogs are picking up scraps and digging in the ground, but occurs occasionally at all seasons. It is much more likely to break out near permanent villages than among dogs brought up in the back country or distant parts of the coast. Young dogs from six months to a year and a half old are most susceptible. The incubation period I was unable to determine with any certainty, but it is probably more than ten days. The onset of the disease is shown by restlessness and a causeless desire to pick fights with other dogs. Usually the affected dog loses his appetite, but is apt to chew wood or other unnatural objects. As the disease progresses the dog seems to be in great pain and death usually ensues in about ten days, due, probably, to exhaustion. Very rarely a dog recovers. Convulsions occur, but are not characteristic; the dog, however, is not rational. In none of the cases that I saw, about 6 cases, did the dog make any deliberate attempt to attack men, but all were likely to snap if handled. My principal reason for believing this disease distinct from rabies is that, while men, both white and native, have frequently been bitten by dogs in this state, I have never heard of their being affected by it. The natives are no more afraid of the bit of a mollycolly dog than of a healthy one. Foxes and wolves are said to be subject to this disease, and to be able to transmit to it dogs.

I kept records of the hemoglobin of a party of six white men from September to March, covering the whole period while the sun was away. There was no diminution of hemoglobin attributable to the absence of sunlight. Similar experiments were tried on the Jackson-Harmsworth expedition to Franz Josef Land, the Duke of Abruzzi's expedition and Scott's Antarctic expedition with the same results, In no case was it found that the absence of sunlight caused anemia.

In winter frost bites are common. The best treatment is to hold the warm hand against the affected part till it is thawed. In no case should rubbing with snow be tried, as then the skin is sure to come off. Later treatment is the same as for an old burn.

Many Arctic travellers have complained of extreme thirst while traveling, and said that eating snow or ice only increases this. If proper precautions are used snow and ice can be eaten in moderate quantities with great relief. If good ice can be obtained it is better. The ice should be held in the hand till the surface begins to melt, for if it is put into the mouth before this it will stick to the tongue like cold iron. If snow is used it must first be melted in the hand till it is almost slush. By observing these precautions glossitis may be avoided, and one's thirst fairly well satisfied.

In closing, I will say that the Eskimo race in Alaska has greatly diminished in numbers in the past twenty years, in a large part because of disease inevitably introduced by the whites. Whether the race will acquire sufficient immunity to withstand this sort of thing time alone will tell. I think the outlook for the Eskimo in his natural condition is better than that of the North American Indian,

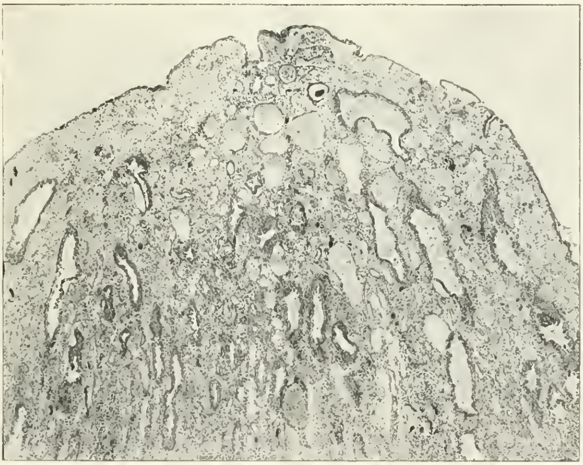

FIG. 1. Section through the top of the papilla showing dilated and varicose vessels projecting above the surface.

because the Eskimo is industrially valuable to the whites in the extreme north. The Eskimo, while useless for steady day labor, is docile and satisfactory as a hunter and trapper. He makes a good sailor on a whale ship and is practically necessary to the men engaged in floe whaling.

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VARICOSE VEINS OF THE PAPILLA OF THE KIDNEY. A CAUSE FOR PERSISTENT HEMATURIA.*

BY WILLIAM F. WHITNEY, M.D., BOSTON.

The following case is of interest as throwing some light on those which have been noted from time to time and have been spoken of as symptomless or painless hematuria, or renal hemorrhage from a sound kidney; in other words, where the observer has been unable to discover an adequate cause for the trouble. While one case alone may not be sufficient to furnish the explanation for all of these, it will indicate a further line of inquiry, and as an independent observation help to confirm a few somewhat similar ones previously recorded. Certainly the conditions here found must be taken into account before a case can be relegated to the limbo of the unknown.

A middle-aged man entered the Massachusetts General Hospital, in October, 1907, in the service of Dr. M. H. Richardson, with the history of repeated attacks of hematuria, covering a considerable period. Careful examination failed to reveal any of the well recognized causes, and upon cystoscopic examination by Dr. Hugh Cabot, bloody urine was seen to come from the orifice of one ureter. It was decided to operate and one kidney was removed.

I examined it at once, and in general it appeared as a somewhat pale but otherwise normal kidney. On closer inspection it was noticed that the tips of one or two of the papillæ, at one end of it, were reddened and a little spongy. These were cut out at once carefully and hardened in Zenker's fluid, embedded in paraffin, sectioned, mounted and stained with eosine and methylene blue.

The microscopic examination showed the small venules, at the tip of the papilla, dilated irregularly to twice or three times their normal size, and covered on their free surface with the finest possible film of connective tissue and a single layer of epithelial cells. Here and there they projected as varicose knuckles above the surface. (Fig. 1.) The conditions, in fact, were such that the slightest violence must have caused a rupture with subsequent escape of blood. In one specimen a rent was found in one of these thin walled channels, but it cannot be stated positively that it may not have been an artefact. The lumen of the vessels, in many places, was filled with a finely granular detritus and occasional blood corpuscles, but no well-marked thrombi were seen. That hemorrhage must have taken place here, however, is borne out by the fact that the straight tubules of this region contained blood corpuscles, which were not found higher than the base of the pyramid.

The anatomical conditions above described are certainly adequate to cause frequent and severe hemorrhage. For we have only to call to mind what an insignificant lesion will produce a very severe epistaxis to realize what might happen after the rupture of one of these small varicose vessels.

It is interesting to find what an abundant vascular plexus there is at the apex of the normal papilla and by what thin tissue the vessels are separated from the external surface. The size of the normal vessels, however, is very much less than in this case, so that their covering is actually and relatively very much thicker. It is only to be wondered at that hemorrhage is not much more frequent from this source, and it possibly may be, and may account for the blood found in the urine in some cases of congestion of the kidney.

After this case had been studied, my attention was called to a series of cases reported by Fenwick,[1] under the title: "Painless Hematuria of Angioma or Capillary Nevus of a Renal Papilla." Among these the above case should be classed, although the condition is one of varicose veinules rather than angioma or nevus. It might aptly be designated in the graphic language so often used by Mr. Fenwick, as bleeding piles of the papilla. As an independent observation, therefore, it should help to confirm his excellent ones, which have been doubted in some places. His are the only other cases I have found as yet, of which the following is a brief summary:

Case I. March, 1898. Woman, eighteen. Intermittent hematuria for five years. Papillectomy. On examining under water it was not villous as was supposed, but the vessels of the mucous membrane clothing the papilla were markedly varicose. Mr. Targett reported there was no evidence of growth, but there was a congestion of the vessels with extravasation of blood and an increase in the cellular stroma. This might be an early stage of a fibrous condition, such as is not uncommon at the tips of the papillæ.

Case II. September, 1899. Woman. Profuse hemorrhage two weeks before without any other symptoms. At operation a bright red varicosed condition, similar to that which had been encountered in the first case, was seen. Papillectomy. Mr. Targett reported the vessels in this part of the kidney distended with blood and with some extravasations.

Case III. July, 1902. Male, thirty-six. Hematuria on slightest exertion. Pelvis opened and blood seen to issue from the lower infundibulum. Sulphate of iron applied. No benefit. Nephrectomy two months later. Kidney was found in a state of subacute nephritis, possibly the results of first operation. Regards it as primarily an angiomatous papilla.

Case IV. Male. Hematuria for eight weeks. Operation consisted of an incision into the cortex of the lower third without entering the pelvis. Bleeding disappeared after a few days and healed rapidly. No return at the end of six months.

Case V. April, 1898. Male, thirty-eight. Ten days previous symptomless hematuria. Cystoscopy. Blood efflux from left ureter. Operation. The finger was inserted into the pelvis through a deep incision in the cortex of the lower third. Hemorrhage ceased and had not returned after a year.

Case VI. September, 1902. Woman, forty years. Had dark blood in her urine for two years without cessation, without symptoms. Operation, a deep incision made in the convexity of the cortex of the lower third. Hemorrhage persisted. Two months later nephrectomy. On dissection a dark purple papilla appeared and oozing from a bright point in the apex was a little blood.

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* Read before the Boston Obstetrical Society, March 24, 1908.

[1] Fenwick, H.: Clinical Cystoscopy, London, 1904, p. 392.

Mr. Targett reported that the cortical tissues appeared quite healthy, both as regards the glandular tubules and the glomeruli, but on passing up the papilla toward the pelvis of the kidney was found an extensive dilatation of the small vessels running up the papilla. Indeed, the condition was so marked at the summit of the papilla that it constituted a capillary nevus or angioma, and many of the larger vascular channels were distended with clots. In consequence of this growth of vessels the papilla was greatly enlarged and the covering of transitional epithelium was greatly thinned or actually wanting at the apex. The capillary vessels must, therefore, have been placed in direct communication with the cavity of the pelvis of the kidney.

In the 3 cases in which a microscopic examination was made, 2 are reported as varicose and 1 as angiomatous. Unfortunately, the illustration of the microscopic appearances in the last case is so poor that I could get no good idea of the actual condition. But I should judge it was rather more extensive than in our case.

Fenwick considers the lesion as more apt to occur at the lower end of the kidney; in our case it was at one end, but whether upper or lower was not determined.

The number of cases is as yet too small for wide generalization, but it will be necessary in the future also to exclude a varicose condition of the renal papilla before it can be said that a hematuria is without cause.

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In the place of Prof. Dr. Max Verworn, professor of physiology at Göttingen, who was unable to accept, Dr. Albrecht F. K. Penck, professor of geography at Berlin, has been appointed by the Prussian Ministry of Education to serve as Kaiser Wilhelm professor for 1908–9 in this country, and has been assigned to a seat in the Columbia University faculties of pure and political science. — *Science.*

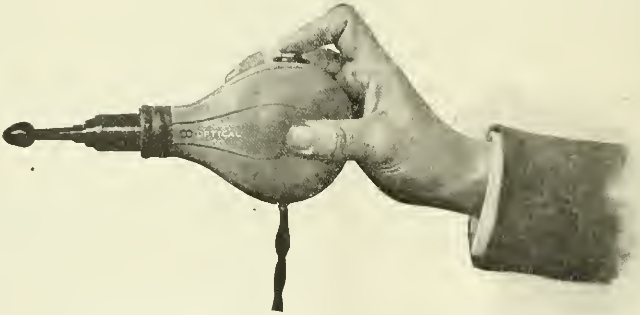
New Instrument.

AN ELECTRICAL ATTACHMENT FOR A POLITZER BAG, IN TREATING DISEASES OF THE EAR BY AIR INSUFFLATION AND CATHETERIZATION.

BY JOHN H. BLODGETT, M.D., BOSTON, MASS.,
Assistant to the Surgeons of the Boston City Hospital and Boston Dispensary, Nose and Throat Departments.

In treating many diseases of the ear which require air insufflation or catheterization of the Eustachian tube, it is often desirable to employ warmed air, rather than that of room temperature, which often feels decidedly cool to the sensitive structures of that organ, and warm air is also more comforting and beneficial to the patient.

The air in the Politzer bag at the ordinary room temperature is cool, if it is projected against the cheek; and seems much more so in catheterization and in politzerization of the Eustachian tube.



In order to overcome this objection, I have had made, and have used for some time, a modification of the ordinary Politzer bag, whereby an electrical coil of considerable heating power is placed between the bag and its ordinary end, forming a not unsightly addition to the bag, between the rubber bulb and its usual tip. This is connected by a contact-button in the middle of the outer surface of the bag, by wire and plug, to any electric-light socket; and this improved bag is manipulated in the same manner as the ordinary Politzer bag.

If *warmed* air is desired, this can be obtained by pressing the button-contact for a period of only five seconds; and if hot air is desired, this may be obtained in the same way, by a pressure of the button for twenty seconds. A continuous contact for forty-five seconds will produce a flow of air so hot as to be uncomfortable. For ordinary uses a constant temperature of sufficiently warmed air may be maintained by making contacts at intervals of ten or fifteen seconds.

I have found this improved bag, by furnishing warmed air, to be of great benefit in the treatment of all diseases of the ear, in which the Politzer bag is employed; and my cases have shown a marked improvement over the usual treatment with cold air. It may also be employed with the Siegel Otoscope, and in these cases the patient at once perceives a change in his comfort, if the cold air is employed after the warmed insufflation.

This appliance may also be of great service to the dental profession, for warming and drying tooth cavities, thus doing away with the present unsatisfactory method of the interrupted application of hot air from the flame of an alcohol lamp. The old method means a loss of a part of the heat during the transfer to the patient's mouth, and this loss is wholly overcome by the appliance here described.

This bag was made for me by Mr. H. M. Lord. of the Ear and Throat Instrument Department of the Globe Optical Company, Boston.

Medical Progress.

RECENT PROGRESS IN DIABETES.

BY ELLIOTT P. JOSLIN, M.D.,
AND
HARRY W. GOODALL, M.D., BOSTON.

NEW TESTS FOR ESTIMATION OF SUGAR, ACETONE, DI-ACETIC ACID, B-OXYBUTYRIC ACID AND AMMONIA.

Many new tests for the quantitative determination of the sugar in the urine appear each year, but as yet the fermentation test for simplicity and accuracy has not been surpassed. If the reaction of the urine should be alkaline, this should be changed by the addition of a crystal of tartaric acid.[1]

Benedict [2] has modified Fehling's test by securing the alkalinity with sodium carbonate instead of sodium hydroxide. Qualitatively he finds this modification many times more delicate for the detection of sugar in pure solution and in urine, owing to the fact that alkali hydroxides are much more destructive to dextrose solutions than the carbonates. He uses the same solutions for quantitative estimations, adding a solution of potassium sulphocyanate. The precipitated cuprous sulphocyanate is insoluble and is not liable to undergo reoxidation. The snow-white color of the precipitate permits a sharp end point. The solutions are best freshly prepared, but can be made to keep weeks by the addition of sodium hydroxide.

Kreatinin is the only important nitrogenous constituent of normal urine, according to McLean,[3] which markedly interferes with the results obtained by Fehling's test in detecting a small amount of sugar. From his experiments he concludes that the various color shades from yellow to red depend upon the state of subdivision of the precipitate, the fine precipitate giving a yellow color, the coarse precipitate a red color, and that the character of the precipitate is influenced by the kreatinin present. If the amount is small a fine precipitate results. By varying the amounts of kreatinin and sugar this writer was able to get all shades of color from greenish yellow to red. Benedict [4] questions McLean's results and considers it more likely that an excess of the hydroxide exerts a dehydrating action, because if the carbonate is substituted for the hydroxide the precipitate on boiling is at first green, then bright yellow and slowly turns red; whereas, with Fehling's solution the same sugar solution almost immediately turns red.

Urotropin is to be added, according to Abt,[5] to the list of drugs which, when eliminated in the urine, reduce copper solutions. This is of importance because of the increasing use of this preparation.

Grossman [6] has pointed out the danger of error in the use of alkaline solutions of lead salts for the clearing of urines preparatory to polariscopic examination. The per cent may be lowered or raised. On the other hand, B-oxybutyric acid is only slightly affected, and lactic acid, glycuronic acid and the glucosides hardly at all. It is, therefore, necessary to always add a few drops of acetic acid to alkaline urines before clearing with lead salts. Infusorial earth, suggested to us for the purpose by v. Brügsch, answers quite as well, though often no clarifying agent is required.

Folin's [7] apparatus for the estimation of ammonia is becoming more generally employed, and the relative ease with which this test can be performed will probably make ammonia the measure of the diabetic acidosis for the next few years. His method has been modified by Spiro,[8] who has combined it with that of Mörner-Sjöquist. An air stream is driven through the urine, made alkaline with barium, and the ammonia then collected in an acid solution, and after precipitation with alcohol and ether the nitrogen is directly estimated in the filtrate.

Folin's simple device for the estimation of acetone [9] apart from di-acetic acid constitutes a distinct advance. The principle, like that employed in the ammonia apparatus, depends upon the passage of an air current through the urine to be examined, the air taking with it either the ammonia or acetone as desired. Embden and Schlief [10] have attained the same object in another way, by distilling the urine under lowered pressure from a water bath, whose temperature does not exceed 34° to 35° centigrade, for thirty to thirty-five minutes. The distillate can be titrated in the usual way with the Messinger Hüppert test and the result subtracted from the total acetone and di-acetic acid. The amounts of acetone and di-acetic acid can thus be obtained by difference.

Acetone cannot constitute more than a small per cent of the total acidosis in diabetes, according to Folin; and further, the ease with which spontaneous decomposition of di-acetic acid into acetone may take place must always be considered. Minkowski [11] feels so confident that acetone does not exist preformed in the urine that he says outright, "there is no such thing as a diabetic acetonuria." And this is not the only blow acetone, the first of the series of acid bodies in diabetes to be discovered, has received, for

Folin[12] has brought forward excellent evidence to show that the so-called acetone odor of the breath is not due to acetone at all, but to fatty acids in the stomach. Whether these observations will be confirmed it is early to say, but this writer does not usually make mistakes.

No new quantitative tests for the direct estimation of diacetic acid have come to our attention, but Minkowski[13] finds the qualitative ferric chloride reaction more delicate, if the urine is allowed to flow into a diluted ferric chloride solution, instead of pouring the ferric chloride solution into the urine, another tube being held alongside for comparison.

The use of Zelmanowitz's[14] apparatus simplifies the extraction of B-oxybutyric acid, but it is too complicated to be of value, save in large laboratories. All of the various methods are discussed and a new one suggested in a paper by Shindo.[15]

A microchemical diagnosis of acidosis is now apparently possible. Mossé[16] has shown that protoplasm becomes less basophilic in inanition and with certain poisons, and Heiberg[17] has found the same condition with patients on a carbohydrate-free diet, composed alone either of fat or albumin. There is not only a greater amount of basophilic substance in the protoplasm, but also a diffuse coloring, which does not appear if carbohydrates are given. Heiberg noticed no change in the pancreatic parenchyma, just as Mossé observed none in the cortex cerebri and muscles, but in the *liver* it was always present.

A clinical method for the determination of the variation in the alkalinity of the blood has been suggested by Adler.[18] This depends on the use of ash-free filter paper, soaked in an alcoholic solution of rosolic acid, which becomes a delicate salmon pink when dry. Serum is obtained in the usual way from the finger or ear of the patient by capillary tubes which, after the blood has clotted, are put in the centrifuge. After the serum is separated, the tubes are opened with a file and a small drop of the serum placed by means of a pipette on the prepared paper. Normal serum produces a marked red color, while the serum of a patient in diabetic coma failed to give this change.

ACIDOSIS.

Acidosis in Diabetes was discussed at the last meeting of the Association of American Physicians by various[19] men, from the chemical and clinical points of view, and in their papers will be found a full consideration of the subject. In our last report[20] in this JOURNAL, we called attention to the work of Embden, who obtained acetone after perfusing the excised liver with some of the fatty acids, particularly leucin. Friedmann,[21] employing the same method, has shown that di-acetic may be thus formed out of acet-aldehyde. This is of physiological importance, because acet-aldehyde can appear as an intermediary product in the breaking up of sugar in the organism. Baer and Blum[22] have carried the work one step further by feeding some of the same acids which Embden employed to diabetic patients, and "the results indicate that those products, which, in Embden's experiments yielded acetone after being acted on by the liver, also gave oxybutyric acid and acetone when fed to diabetic persons." Normal fatty acids with an even number of at least four carbon atoms can yield B-oxybutyric acid, which, on the other hand, cannot be formed from normal fatty acids with an uneven number of carbon atoms, unless these are arranged in a branched chain with four carbon atoms in a row. Oleic, palmitic and stearic acids can thus give rise to but one molecule each of oxybutyric acid, but caproic acid can yield three and butyric acid four molecules, weight for weight.

Borchardt and Lange[23] examined the excretion of acetone in the urine and breath and found that glycocoll, alanin, asparagin and glutamic acid lower the excretion of acetone, but that leucin and arginin increase it. Evidently leucin is not a carbohydrate former, while alanin and asparagin are, since they act just like the carbohydrates in preventing the appearance of an acidosis.

Baer and Blum[24] later showed that subcutaneous injections of neutral sodium glutarate into fasting dogs with severe phloridzin diabetes produced a marked diminution and even disappearance of the glycosuria and acidosis, with simultaneous lowering of the nitrogen excretion. The severer the diabetes the more marked the reaction. The injections failed in light cases of glycosuria without acidosis in case the experiments were not performed on glycogen-free animals. It would appear that the glutaric acid prevented the formation of sugar from non-carbohydrate material. The continuation of their experiments which were made with the chemical analogues of glutaric acid, showed that adipic, pimelic acid and suberic acid act similarly to glutaric acid, but that azelaic acid and sebacic acid exert an influence only upon the acidosis. None of these substances attained the strength of glutaric acid, presumably because this is better oxidized than the rest.

An explanation of the nonappearance of acidosis in the pancreatic diabetes of dogs in contrast to its appearance in severe phloridzin diabetes has been offered by Brügsch and Bamberg.[25] It is well known that dogs do not react with an acidosis upon the complete withdrawal of food or when upon a proteid-fat diet. A mild phloridzin diabetes similarly produces no more effect than a pancreatic diabetes, but an acidosis is the rule with severe phloridzin diabetes. A comparison of the dextrose nitrogen (D: N) ratio in these two forms of experimental diabetes helps to explain this peculiarity. In pancreatic diabetes the D: N ratio is 2.8 or 3 to 1, but in severe phloridzin diabetes the D: N ratio is 3.8, or 4 to 1. It is therefore evident that in the latter condition less sugar is present ready for oxidation in the intermediary metabolism. Confirmation of this explanation would be afforded if an acidosis should appear, following the production of a more intense glycosuria in the pancreatic diabetes of dogs with the consumption of this intermediary sugar. This can be accomplished by the use of phloridzin, and in fact the injection of phloridzin into such animals does result in acidosis. Thus one more riddle in the acidosis problem is solved and the whole question further simplified.

The irritative and toxic action of the acetone bodies has long been suspected. Desgrez and Saggio [26] have recently proved this by the intravenous injection of acetone, di-acetic acid and B-oxybutyric acid into guinea pigs. They found that B-oxybutyric acid is the most and acetone the least toxic, while di-acetic acid occupied an intermediary position. This was also the case if small doses of these bodies were given over a long period of time. The urine decreased toward the end of the experiments. These results are of interest in connection with the well-known "showers" of casts, which Külz noted in diabetic coma.

The failure of alkalies in many cases of acid poisoning has not only been discouraging, but has led to much criticism of the acidosis theory. Naunyn's [27] explanation has been that although it was possible artificially to make the blood strongly alkaline, it was not possible to furnish enough alkali to neutralize the acids which were continually being formed in the tissues themselves. As evidence that the body in coma still is in need of alkalies, he calls attention to the large amount of ammonia which continues to be produced despite the alkaline treatment. Confirmation of Naunyn's theory has recently been afforded by Landau.[28] He has shown that it was possible to increase the mineral and organic alkalinity of the plasma by the introduction of sodium bicarbonate, but that this lasts but for a short time, the excess of alkali being rapidly excreted by the kidneys. Notwithstanding the increase in alkalinity of the plasma, the reaction of the blood as a whole may remain perfectly normal, if changes take place in the blood corpuscles at the same time, which work in another direction, namely, the diminution of the per cent of corpuscles to a given volume of blood, which may be brought about by the diluting effect of the alkaline solution.

Landau next produced artificial acidosis in rabbits by inanition, which amounted to 0.65 gm. HCl per kilogram body weight. This acidosis was completely overcome by the introduction of three times the equivalent amount of sodium bicarbonate, perhaps an unnecessarily large amount. Acidosis was then produced in an entirely different way, namely, by injection of oil of phosphorus (phosphoröl), which caused toxic degeneration of tissue and thus an acidosis of severe degree. The introduction of sodium bicarbonate in this experiment, in half again as large a dose as the calculated quantity required, made little impression upon the acidosis which showed in the diminished alkalinity of the blood. Further, the urine was of alkaline reaction, despite the above-mentioned diminished alkalinity of the blood. Thus, apparently, two contradictory facts were presented for explanation, namely, an excess of alkali in the urine and a diminution of alkalinity of the blood. If the urine had remained acid the explanation would be simple,—not enough alkali was introduced,—but as the urine was alkaline the only explanation remaining was that the alkali introduced was too quickly excreted to offset the steady flow of acids from the toxic and degenerated tissues into the blood. In hunger the acid intoxication is of moderate degree, proportionate to the destruction of albumin and fat, which the caloric needs of the body demand; in phosphorus poisoning the toxic degeneration, with consequent liberation of acids, goes on far beyond this point, and temporary neutralization is of little avail, because there is a continual production of acid. These experiments thus explain the failure of the alkaline therapy in the acid intoxication of coma.

The investigation of Henderson and Black,[29] together with other previous investigations [30] concerning phosphates and carbonates, have made clear the nature of the fundamental physicochemical equilibrium of neutrality in blood and protoplasm, the results being in very good accord with the theory of solution and the concentration law.[31] The analysis of this equilibrium explains completely the power of the organism to neutralize enormous quantities of acid (or of alkali) without losing its precise neutrality. Accordingly, we have gained a description of the physiological processes of neutralizing B-oxybutyric acid and di-acetic acid, the essential feature of the process being a diminution in the concentration of sodium and potassium bicarbonates. This fact is in accord with the findings in diabetic coma, and it strengthens the view that this coma is due to the failure of carbonic acid excretion. Other [32] investigators have shown that the process of neutralization in the body possesses nearly the highest possible efficiency, and that the proteins are concerned in it in a distinct, but subordinate, manner.

PHOSPHATIC DIABETES.

Barker and Voegtlin [33] have reviewed the literature of so-called phosphatic diabetes and reported in detail their studies upon such a case. These showed that the patient excreted a urine of high acidity, due to the presence of abnormally large amounts of some unknown organic acids, and along with these in a period of pronounced nervousness, an exceptionally high output of phosphoric acid. Carbohydrate metabolism was normal. Whether these organic acids represent an over-production or appear because of lack of oxidation of intermediate products of metabolism, they are unable to say, but they believe that these acids certainly deplete the body of alkali, and that the acidosis is closely connected with nervous disturbances.

THE PANCREAS AND DIABETES.

An indication of an actual increase in the bulk and functional capabilities of the islands of Langerhans in the pancreas has been observed by MacCallum [34] in two cases of diabetes. He suggests that this may occur in response to an extra pancreatic cause of diabetes mellitus, or that destruction and disappearance of all but a few of the islands of Langerhans may have occurred with subsequent regeneration of islands from the parenchyma. Lazarus [35] has also noted hypertrophy of the islands of Langerhans, but in an experimental way. He made guinea pigs diabetic by the use of phloridzin or adrenalin over a period of months. In addition to the glycosuria there was progressive cachexia and emaciation even to the extent of 30 to 40 per cent body weight. In contrast to this loss of tissue generally, there was a considerable hypertrophy of the pancreas and the suprarenal glands. The pancreatic enlargement was due to an excessive hypertrophy and hyperplasia of the islands of Langerhans. They could occasionally be seen with the naked eye, and their number was increased two to ten fold. Arteriosclerosis was striking, particularly of the abdominal aorta. The changes produced by adrenalin were less marked than those produced by phloridzin. The experiments point toward the functional and anatomical independence of the islands, of the possibility of experimentally causing them to hypertrophy and increase in number, and the probability that they are important factors in the regulation of carbohydrate metabolism. Indeed, phloridzin diabetes appears as the opposite of human diabetes, for in one there is hypoglycemia and hypertrophy of the islands, and in the other hyperglycemia and disappearance of the islands. The suggestion is offered that phloridzin might be of therapeutic value in diabetes.

Rennie and Fraser [36] have administered islands of Langerhans obtained from certain fish to a diabetic patient, but with inconclusive results.

A case of cancer of the pancreas occurring in the course of diabetes mellitus has been reported by Lépine,[37] and Brault and Ameuille [38] publish an account of a massive cancer of the pancreas, which developed diabetes as one of its symptoms. The presence of diabetes is by no means antagonistic to the development of cancer.

A case of pancreatic lithiasis with chronic interstitial pancreatitis followed by diabetes is reported by Atkinson and Hirsch,[39] and Gigon has studied the laws of excretion of sugar in a similar instance. Grund observed a case of cyst of the pancreas apparently following trauma and accompanied by a light form of diabetes. After removal of the cyst there was an improvement in general condition, but six months later the diabetes changed to a severe type. Digestion of fat and albumin remained undisturbed, thus showing again the independence of the digestive and sugar destroying functions of the pancreas.

Futcher [40] has added two cases of hemochromatosis with diabetes to the 33 which he collected in the literature. All but 2 of the cases were in males. The cardinal symptoms have been, first, pigmentation of the viscera and usually of the skin as well, second, hypertrophic cirrhosis of the liver, only very occasionally a cirrhosis of the atrophic type, and diabetes mellitus as the third and terminal event due to the sclerosis of the islands of Langerhans.

Pflüger [41] has again endeavored to throw doubt upon the influence which the internal secretion of the pancreas has upon carbohydrate metabolism. He considers that it is regulated by two factors. The functions of the nerves which run from the medulla oblongata to the liver are to increase the formation of sugar by means of the stimulation of the formation of diastase, while the "anti-diabetic" nerve fibers which have their origin in the small intestine excite the production of "anti-diabetic" ferments. These latter nerves inhibit the formation of sugar. Pflüger says that it has as yet been impossible to retard the diabetes which occurs after the removal of the pancreatic gland by pancreatic extracts; that the experiment of Minkowski, by which a portion of the pancreas was grafted into another part of the abdomen and the remainder of the gland removed without producing diabetes, is inconclusive; that diabetes does not result if that portion of the pancreas is unremoved, which is in connection with the duodenum; that total extirpation of the pancreas in frogs invariably results in glycosuria; that the removal of the duodenum causes a more marked glycosuria than the removal of the pancreas, that section of the mesentery between the duodenum and pancreas produces the same effect, and that transplantation experiments with the pancreas have no influence upon an existing glycosuria.

These revolutionary statements of Pflüger would have far-reaching importance if confirmed, but this is not the case. Ehrmann [42] has reported the removal of the duodenum or the duodenum with a portion of the jejunum in dogs, followed by a gastro-jejunostomy. The pancreatic ducts were either ligated or in common with the ductus choledochus implanted in the gastric mucous membrane. The animals lived as long as a week and diabetes did not appear. Death ensued in consequence of fat necrosis of the pancreas, subperitoneal fat tissue, and in some cases of the peritoneum as well. To these experiments of Ehrmann Pflüger [43] takes exception.

Minkowski [44] has again entered the field and repeated and enlarged upon Pflüger's operation, which he divided into two parts. At the first he removed, for later convenience, the splenic portion of the pancreas, and made a gastro-jejunostomy; from this operation the dog recovered and gained 1,450 gm. in the following month. The second part of the operation was then performed, at which the stomach was divided two centimeters from the pylorus and sutured, the pancreas divided at a distance of two to three centimeters from its head. The duodenum with the head of the pancreas was then removed, and a cholecystoenterostomy performed. Recovery was complete and the dog remained in good health, showing sugar in the urine only for two days after the operation. At the end of four weeks after the operation the dog was still sugar free, even though fifty grams sugar and fifty to one hundred grams rice soup formed a part of the daily diet. The remaining piece of pancreas was then extirpated and at noon the same day 100 ccm. urine were excreted, containing nine per cent sugar.

A similar experiment was performed upon another dog, but in this instance the remaining piece of pancreas was sewed under the skin of the abdomen. This dog, after the second operation, had neither pancreas nor duodenum in the abdomen, yet the pancreas under the skin was sufficient to prevent diabetes.

The results of these two experiments would, therefore, appear to suffice to maintain the prevailing idea of the dependence of diabetes upon the pancreas.

Mohr[45] has demonstrated that the removal of the pancreas exerts a direct action on proteid metabolism. The consumption of oxygen as well as the total heat production is increased. These factors account for the marked emaciation of dogs so operated upon quite as much as the incomplete assimilation of the albumin and fat in their diet. Mohr has also found increased gas metabolism in a boy of eleven, with severe diabetes. The experiments suggest that our classification of diabetes, according to the severity of the glycosuria, may require revision, and Bouchard's *diabète maigre* may have renewed significance. The increase in heat production may furnish a means of differential diagnosis between the severe and mild forms of the disease.

Mohr further observed that one of his dogs without a pancreas failed to excrete sugar, yet the quantity of sugar in the blood was increased threefold. Liefmann and Stern[46] have also noted that in diabetes the sugar in the blood may reach as high a figure as 1.01% in constrast to the normal of 0.086%, which was their average of twenty analyses. In other words, large quantities of sugar may be retained. These facts may lead to the revision of much of the experimental work on diabetes in the last few years; for example, Mohr could not confirm Lüthje's results on the influence of surrounding temperature upon the excretion of sugar.

If one watches the curve of carbonic acid excretion on a pure proteid diet as well as the respiratory quotient, it will be seen that in pancreatic diabetes of dogs as well as in severe human diabetes, there is a deviation from the normal. From a study of this curve the conclusion is manifest that even in the severest form of diabetes the capability still remains of oxidizing sugar, which in this instance surely must be derived from albumin, but, and this is the essential point brought out by Mohr, the combustion of this nitrogen-free complex of the albumin molecule (Rubner's carbohydrate portion) takes place later and unlike that of a healthy individual. The combustion of the carbohydrate molecule is, therefore, perhaps prolonged in diabetes, just as in the case with the nuclein metabolism in gout.

The infectious origin of chronic pancreatitis and diabetes is discussed in an interesting article by Hirschfeld.[47] He believes and cites cases in support of his position that following infectious diseases in individuals, who have a diabetic heredity, an excretion of sugar develops, which has all the characteristics of the glycosuria formerly described by him in association with transitory disease of the pancreas. Simultaneously a swelling of the liver appears, which ultimately disappears, though not always at exactly the same time as the glycosuria. Later, a severe diabetes develops, which can be interpreted as a chronic pancreatic cirrhosis, which has succeeded the acute pancreatitis. The infectious origin of hepatic cirrhosis, the frequency of cirrhotic changes in the pancreas in conjunction with cirrhosis of the liver and the favorable course of alcoholic and syphilitic diabetes are considered.

THE SUPRARENAL GLAND AND DIABETES.

Zuelzer[48] has shown that the glycosuria which is produced by the injection of the juice of the suprarenal gland is also accompanied by hyperglycemia in contrast to the hypoglycemia of phloridzin diabetes. He concludes that the secretion of the suprarenal gland is normally neutralized by the secretion of the pancreas, and that pancreatic diabetes is in reality a negative pancreatic diabetes, but a positive suprarenal diabetes. Preliminary injections of pancreatic juice with subsequent adrenalin injections, subcutaneous injections of pancreatic juice and simultaneous, rectal injections of adrenalin always resulted in non-appearance of glycosuria, which usually results from injections of adrenalin alone.

Injections of one half to three and one-half milligrams adrenalin suffice in various diseases, according to Molon,[49] to produce a glycosuria of two to five hours' duration. Mayer[50] found that the removal of the cortex of the suprarenal gland in twenty-five rabbits prevented the appearance of glycosuria when the classical Claude-Bernard puncture of the medulla oblongata was made.

THE LIVER AND DIABETES.

The liver is considered so important an organ in carbohydrate metabolism that the experiments of De Filippi[51] are of considerable interest. He first determined the limits of tolerance of dogs for various carbohydrates and then compared these results with those obtained using dogs whose portal blood was transferred by means of an Eck anastomosis directly into the inferior vena cava, thus excluding the liver. The latter animals showed no loss of power of assimilation for starch, but the point of tolerance for soluble carbohydrates was lowered; yet the larger the quantity of soluble carbohydrates the more these were retained, and the same result was obtained if they were mixed with other foods. The exclusion of the liver from the circulation is thus provocative of quantitative, but not specific, changes in metabolism. Levulose is an exception, since the dogs with the Eck anastomosis showed especial lack of tolerance for it. Degenerative processes in the liver, with partial diminution of circulation, should, therefore, be of little influence upon the tolerance of the organism for carbohydrates, and alimentary glycosuria is, therefore, a change in general metabolism, rather than a sign of hepatic insufficiency. De Filippi later determined the amount of glycogen in the liver and muscles of dogs operated upon as above and fed freely with carbohydrates. The liver contained no more glycogen than the liver of a dog in inanition, but the muscles showed as much glycogen as is the case with over-nourished normal animals. It would thus appear that the liver normally withdraws only a portion of the sugar from the portal circulation and that the balance is transformed into glycogen by the remaining tissues and even, perhaps, to some extent by the blood itself. The activity of the liver is, therefore, neither specific nor indispensable for the preservation of a normal metabolism of carbohydrates.

In interesting contrast to these observations are those of Bonanno,[52] who arrived at the same conclusion by a study of the carbohydrate tolerance of a case of amyotrophic lateral sclerosis with muscular atrophy. Sugar did not appear in the urine until four hundred grams of pure glucose were added to the diet.

CATALYSIS AND SUGAR DESTRUCTION.

Schade[53] showed some time ago that it was possible to accelerate the metabolism of sugar by catalysis, and recently he has been able to prove that simple inorganic catalysis can break up sugar into the same products which occur as a result of fermentation. The acids and alkalies employed for this purpose may not be directly useful, but may work indirectly by furnishing a favorable medium, in which the ferment may act. In this way yeast fermentation has already been favorably influenced. In our last review we called attention to the work of Nelson and Terry, who showed that calcium chloride retarded and sodium citrate accelerated the transformation of glycogen into dextrose. Another avenue of investigation for a possible medical treatment of diabetes is thus opened up.

CONJUGAL DIABETES.

In a paper on "Conjugal Diabetes" Senator[54] arrived at the conclusion that the number of such cases is too small to make one believe that the disease can be transmitted from one person to another, not a blood relation. He observed 19 instances among 516 married patients. The paper is of interest because of other observations which have a bearing upon the infectious origin of diabetes.

DIABETES AND PARALYSIS OF THE INTERNAL RECTUS.

Gennari[55] records a case of isolated paralysis of the internal rectus, which disappeared with the rational treatment of the diabetes.

DIABETES IN CHILDREN.

A summary has been made by Brand[56] of the cases of diabetes in children (11 in number), which have occurred in Heubner's clinic.

CHOREA IN DIABETES.

Chorea is often said to be accompanied by glycosuria, but Naunyn[57] was able to find but the one instance carefully recorded by Dumme in 1862 Sugar amounted to 4%, yet disappeared with the chorea in fourteen days. Ramón y Cajal[58] now adds another case. A patient with typical severe diabetes, without acetonuria, suddenly developed a right-sided hemichorea with especial involvement of the facial muscles. With the appearance of the chorea the sugar which had been 6% quickly decreased and in two weeks disappeared, not to return in the following five months, except for an occasional mild glycosuria, when the chorea was of slight degree. At the time of reporting the case there was polyuria of 6 to 7 liters, but no glycosuria.

TRANSITORY DIABETES.

The more careful study of patients at the present day is bringing to light various examples of transient diabetes mellitus. The cases of chorea above described may belong to this group and with those may be classified the cases of glycosuria occurring in disease of the biliary passages and also, perhaps, those cases of cyclic diabetes to which Hirschfeld has ascribed a pancreatic origin. It is at once obvious, however, that transient diabetes has a multiform etiology and is of fai broader origin than we have here indicated.

Moullin[59] reports an instance of this sort in which glycosuria, apparently dependent upon cholecystitis and cholangitis, disappeared after drainage of the bile ducts, and Hochhaus[60] observed a woman who showed without previous symptoms of diabetes 3.3% sugar during a severe attack of gallstones. The urine remained permanently free from sugar after the fifth day. A still more remarkable case is described by the same author. A man of fifty-three, who had had a mild form of diabetes for one year, was suddenly attacked with characteristic symptoms of gallstones, which persisted off and on for two months. At the onset of the attack the sugar disappeared from the urine, not to return, although all dietetic restrictions were removed. Hochhaus believes this case to be the only one of this sort on record.

Barringer and Roper[61] have performed an appropriate and useful service by their study of 20 cases of transient glycosuria, which were discovered by an insurance company between the years of 1895 and 1901. Five years later 20% of these individuals were distinctly diabetic, 15% were suspicious cases, and 10% somewhat suspicious. They consider alimentary glycosuria a valuable aid to prognosis in cases of spontaneous glycosuria and believe that glycosuria *e saccharo* is essentially diabetic in its nature.

THE OPSONIC INDEX AND DIABETES.

The opsonic index was found by Da Costa[62] to be subnormal in 16 cases of diabetes mellitus, ranging between 0.34 and 0.72. In 4 cases of diabetes insipidus the indices ranged between

0.82 and 0.89, and in 2 cases of transient glycosuria it was 0.81 and 0.91. Staphylococcus pyogenes aureus was the bacterium used for the test.

THE BLOOD PRESSURE IN DIABETES.

Very little attention is usually paid to the circulation in diabetes and we are especially glad for this reason to call attention to the observations of Elliott[63] on blood pressure. These confirm the opinion of Janeway that "the disease itself is without influence on the arterial pressure." Whereas the average systolic blood pressure in 10 cases with acid intoxication was 107 mm. mercury, in 15 cases without acid intoxication it reached 140. Elliott urges more study before ascribing this difference to the action of acidosis, and suggests that the lower pressure in cases with acid poisoning might well be due to the asthenic condition which such patients have usually reached.

It would seem probable that the dilatation of the heart which Richter[64] has observed to vary with the amount of sugar in the urine was really a secondary phenomenon and that the improvement of the diabetes, which he observed with treatment of the heart, was coincident with the latter rather than a result of it. We hope, however, that he will furnish experimental evidence to clear up the interesting point which he has raised.

DIABETES AND PREGNANCY.

Eshner[65] has reviewed the literature of "Diabetes in Pregnancy" and reached conclusions which are in accord with commonly accepted views. One case is reported in which the glycosuria disappeared with the inception of pregnancy and reappeared only after delivery at about term of a macerated fetus. Eshner was not able to find a counterpart of this case.

SURGERY AND DIABETES.

Halstead[66] and Thorbecker critically review the subject. A comparison of their articles with those summarized in our last report shows the increased emphasis which is put upon the presence of signs of acid intoxication in prognosis. Thorbecker goes so far as to say that more than 4 gm. of ammonia in the urine, using the ammonia as a measure of acidosis, is a direct contraindication to general anesthesia. Data upon the value of estimations of acidosis in terms of ammonia are yet insufficient. This subject has recently been studied by the reviewers and their results have appeared in these columns.

The indications for operation in gangrene, however, are just the opposite of those indicated above. According to Klemperer[67] it is not necessary to amputate for gangrene in the absence of acidosis. Such cases are to be made sugar free and demarcation awaited. On the other hand, he believes that cases with signs of acid poisoning cannot be operated upon too soon. In this group he also includes cases with marked nephritis and those showing acidosis when put upon a strict diet.

Thorbecker quotes one case in which spinal anesthesia was used, but coma resulted.

TREATMENT.

The general dietetic treatment of diabetes remains the same. Fat should be given in liberal amount and by no means be restricted on account of the presence of the acid bodies (Minkowski[68]); the quantity of albumin should not exceed 125 gm. or 500 gm. of cooked meat, and usually should be at least 20% less; carbohydrates should be diminished until the urine becomes sugar free, unless symptoms of acid poisoning, serious loss of weight or digestive disturbances appear. For recent articles on treatment, consult those by Minkowski (*loc. cit.*), Tyson,[69] Hart,[70] several in the *Practitioner*[71] and the diabetic charts of Smithies[72] and of Joslin and Goodall.[73]

The advantageous results of various dietetic cures are becoming better understood now that the composition of the albumin and carbohydrate molecule is more intimately known. Falta and Gigon[74] have contributed much to this end. They have shown it matters little what kind of carbohydrate is administered except maltose, which is the least assimilable. Levulose and oatmeal, however, require a longer time for excretion than the other carbohydrates. In mild diabetes only the easily decomposable albuminous bodies lead to an increase of excretion of sugar, but in the severe forms all albuminous bodies examined exerted a strong action. Some cases were less tolerant of albumin than of carbohydrate and these were the severest cases of all. Thus in one instance the addition of 70 gm. carbohydrate increased the excretion of sugar by 35 gm., i. e., one half was assimilated, but when 70 gm. of casein (containing 44 gm. sugar-forming material) were substituted, practically none was assimilated. The reviewers have had similar experiences with breads made out of casein, and Filosofof[75] has shown that casein is the most productive of sugar of all the forms of albumin, egg albumen being the least and meat holding an intermediate position. The loss of assimilation for carbohydrates begins first and proceeds slowly, while the loss of assimilation for albumin begins late, but soon advances proportionately faster. In severe cases, with an especial susceptibility to albumin, it is, therefore, proper to restrict it, and thus the glycosuria will more quickly diminish, and by the better oxidation of carbohydrates the accompanying acidosis will be attacked. The oatmeal cure (recently discussed by Herrick)[76] is really a low albumin cure and thus may be helpful. "Hunger" and "vegetable" days act, because of the diminution of carbohydrates and because of lowered metabolism, due to a lowering of heat production. The usefulness of potatoes in the diabetic diet, as again emphasized by Labbé,[77a] is also clear. They contain but one third of the quantity of starch which is present in bread and far less albumin, and partly because of their bulk allow of the introduction of more butter.

Renewed attention has been called to the use of alcohol in the diabetic diet by Benedikt and Török,[77] who found it lowered the formation of acetone, diminished the excretion of sugar and acted as a better protection to body albumin than fat. It is generally agreed that its use is therapeutically indicated particularly in the severe cases, but that the equivalent of 30 to 45 gm. alcohol should not be exceeded over considerable periods of time.

In our last review we referred to the therapeutic use of secretin in diabetes. It has since been employed by Dakin and Ransom,[78] Charles,[79] Foster,[80] Bosanquet,[81] and in each instance without favorable results.

DIABETES INSIPIDUS.

The cause of the polyuria in typical diabetes insipidus lies in the increased concentration of the blood and the functional incapacity of the kidney to secrete a urine with so large a proportion of solids as normal urine. This may be due to a dilatation of the renal vessels unaccompanied by a general rise in arterial pressure. Schmidt [82] would modify the course of the disease by producing artificial hyperemia of other vascular areas, e.g., catharsis and sweating, and Spaether [83] explains the favorable action of strychnine upon the disease as due to a stimulation of the renal vasomotor nerves.

The studies of Seiler [84] confirm the previous work of Tallquist and show that the ingestion of large quantities of nitrogenous food is not followed by a rise in the specific gravity of the urine, as is the case with normal individuals, but instead an increased quantity of urine with low specific gravity is excreted. Uremia does not result in diabetes insipidus despite the temporary increased concentration of the blood, because the kidneys are functionally capable of removing the excess. It is, therefore, obvious that as low a proteid and salt diet as is consistent with health is indicated in this disease, because thereby the work of the kidneys will be reduced to a minimum. That this is the case has been shown by Winckelmann [85] who, however, found that the variation of the nitrogenous portion of the diet as compared with the sodium chloride was of little consequence.

Because he could not show essential abnormalities in the functions of the kidney as tested by methylene blue and phloridzin, Nicolas [86] is inclined to the belief that the excessive secretion of chlorine is due not to abnormalities of the kidney, but rather to a lack of capability of all the tissues to retain sodium chloride.

Fickelnburg [87] has shown that lesions of definite portions of the rabbit's brain will result in a primary polyuria with secondary thirst. In these cases the capability of the kidneys for the concentration of the urine need not have suffered. His experiments furnish evidence that diabetes insipidus is not always of the same character or due to the same cause.

Occasionally patients with diabetes mellitus who have become sugar free continue to secrete large quantities of urine. This may be due to hypertrophy of the prostate, but in some cases there may be some common central cause. Teschemacher [88] has observed 3 cases of diabetes mellitus which changed over into diabetes insipidus. One of these, after a period of glycosuria lasting a year, became for the next thirteen years a case of diabetes insipidus. Glycosuria then returned, but only to again disappear, after a period of eight months.

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Reports of Societies.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

APRIL 8, 1908.

THIS meeting was devoted to a symposium on Life Insurance and Medical Practitioners.

DR. CHARLES M. SELTZER read a paper entitled,

THE VARIOUS FORMS OF LIFE INSURANCE AND THEIR COMPARATIVE VALUE TO THE PHYSICIAN.

DR. SELTZER said that in taking insurance one pays for what he gets. No matter what representation is made as to the terms of the various forms of policy, the financial basis is fundamentally the same. Apart from the convenience offered, the value of all the various policies is the same. If the holder does not get at the maturity of his policy what he thought he would get, it is chiefly because he did not study the policy carefully at the time he took it out. Some years ago the policy usually was of the participating variety, that is, the insured share in the profit and loss of the business and as a result often did not get as much as was predicted by the agent. Lately, according to the law in some states, the companies must give a guaranteed policy; they must give facts as to what a policy will be worth at the end of a term of years. This particularly applies to New York state.

The purposes for which insurance is taken out are protection of family, business ventures, mortgages. It is a moral obligation of the physician to carry insurance, so that his family may be provided for in case of his death. It is also often the means of saving a personal estate by furnishing cash to pay immediate demands.

As to the form of insurance for the physician, the speaker said that for a man under forty-five years of age, the limited payment life policy, the payments, for example, to extend over twenty years, is the most dessirable; above forty-five, unless one has large means and wishes to pay for only ten or fifteen years, the best form is the ordinary life policy. The endowment policy costs more but gives no more protection; it may, however, be regarded as a form of investment. It must be borne in mind that the old Tontine, or deferred dividend, policies, are very disappointing at maturity, because the predictions made at the time of their issuance were based on the high rates of interest then prevailing, as compared with more recent years. In New York such policies are now prohibited by law.

Two other forms of policy are, first, one which provides for the payment to the beneficiary of a certain sum annually after death of the insured and, second, one which pays to the insured a certain sum annually during his lifetime.

The speaker said that the substandard insurance has turned out as it had previously been figured by its originator, Dr. Oscar H. Rogers, of the New York Life.

It provides that one who is below par in health may take out a policy for a certain sum and pay a premium on that sum, but, in case of death he is paid only a certain percentage of the face of the policy; this percentage increasing each year the insured lives after taking out the policy, until, if he lives over thirteen years, he receives at death the face of the policy. In New York, since the recent legislation this plan is no longer followed, but an extra premium is charged these substandard risks.

Another important feature of recent insurance is the more liberal disability clause. This provides that during a period of total disability no premiums need be paid by the insured, but the policy still remains in force and loses none of its value.

Dr. J. Burnett Gibb, of the American Society of Actuaries, by invitation, read a paper, entitled

THE BEARING OF THE RECENTLY ENACTED NEW YORK LAW ON THE FEE FOR MEDICAL EXAMINATION OF INSURANCE APPLICANTS.

Mr. Gibb said that the New York law is the only one which affects the medical fee. The law provides that no company shall expend in that state for commissions on first year's premiums, for other agency expenses, including advances to agents, and for medical examinations an amount exceeding in the aggregate the total loadings upon the first year's premiums and the present values of the estimated mortality gains for the first five years of the insurance as ascertained by the select and ultimate method. The cost of the medical fee cuts deepest in the small policy and in the lower premium forms. For instance, on a Ten-Year Term policy issued at the age of twenty-one, for $1,000, the annual premium is $10.22, and, if a medical fee of $5 is paid, with an inspection fee of $1, it would leave only $4.22 to pay for carrying the risk one year as well as the agent's commission and other expenses. This would be doing business at a loss.

In considering what a proper fee is, the medical examiner should remember that the companies always meet their obligations, so there are no bad debts in connection with these examinations. The protection of life insurance is not needed by any one more than the man of small means; so the medical profession, by uniting in favor of a higher scale of compensation, must shoulder the responsibility of depriving the companies of the opportunity of extending the benefits of insurance to the class to whom it does the most good.

Dr. J. Norman Henry read a paper entitled,

THE FIVE-DOLLAR MINIMUM FEE FOR MEDICAL EXAMINATION OF A LIFE INSURANCE APPLICANT.

Dr. Henry said the justification of a five-dollar fee for medical examination seems almost like a work of supererogation. There are two general classes of insurance, the Industrial and the Ordinary. The examination of applicants for the former is not nearly so exacting as in the latter and the fee varies from 25 cents to $3. The larger companies issuing ordinary insurance usually have two classes of medical examiners, — one spending regular hours at the office of the company and paid a salary and the other composed of physicians in active practice who are paid so much for each examination. Gradually the companies have found that in order to have good examiners they must pay a reasonable fee, hence many have fixed a minimum fee of $5. In several instances county medical societies adopted resolutions demanding a fee of $5. The speaker thought that this fee might have been obtained by less drastic action smacking less of the methods of the labor union. The fee for professional work is purely arbitrary and as $5 in the country is relatively larger than the same sum in the city, if this plan were followed, the city physicians might feel justified in uniting on a $7 or $10 fee. A fee of $5, no matter what the amount of the policy, would be most satisfactory to the physician and in one instance, at least, it has proven so to the company. The examiner should not be influenced in any way by the size of the policy. Medical examination of an applicant requires much skill and work and should be well compensated. The work of examining is best done by physicians in active practice, as they are best qualified to judge of the severity and consequences of abnormalities encountered.

Dr. Ernest W. Kelsey listed the following companies on the

HONOR ROLL OF LIFE INSURANCE COMPANIES PAYING THE FIVE-DOLLAR MINIMUM FEE FOR MEDICAL EXAMINATIONS.

Southern States Life Insurance Company, of Atlanta, Ga.; W. S. Kendrick, of Atlanta, Ga., announces $5 rate, Jour., March 23, 1907; The Union Central Life Insurance Company, of Cincinnati, Ohio; The Equitable Life Assurance Society, of New York City; The Fidelity Mutual Life Insurance Company, of Philadelphia, Jour., Aug. 24, 1907; Etna Life, of Hartford, Conn., Jour., Sept. 28, 1907, p. 1135; American National Life, of Galveston, Tex.; Citizens' Life, of Louisville, Ky.; Capital Life Insurance Company, of Denver, Colo.; Colorado National Life Insurance Company, of Denver, Colo.; Ft. Worth Life Insurance Company, of Ft. Worth, Tex.; Guarantee Life Insurance Company, of Houston, Tex.; Pacific Mutual Life Insurance Company, of San Francisco, Cal.; Southwestern Life Insurance Company, of Dallas, Tex.; State Mutual Life Insurance Company, of Rome, Ga.; Manhattan Life Insurance Company, of New York City; Massachusetts Mutual Insurance Company, of Springfield, Mass.; Mutual Benefit Insurance Company, of Newark, N. J.; Mutual Life Insurance Company, of New York City; National Life Insurance Co., Montpelier, Vt.; Northwestern Mutual Life Insurance Company, Milwaukee, Wis.; Reliance Life Insurance Company, Pittsburg, Pa.; Connecticut Mutual Life Insurance Company, Hartford, Conn.; Provident Life and Trust Company, Philadelphia; Commonwealth Life Insurance Company, Louisville, Ky.; Boston Mutual Life Insurance Company, Boston, Mass.; New England Mutual Life Insurance Company, Los Angeles, Cal.; State Mutual Life Assurance Company, Worcester, Mass., Jour., Nov. 16, 1907; John Hancock Mutual Life Insurance Company, of Boston, Mass., Jour., Dec. 28, 1907; The Wm. Penn Mutual Life Insurance Company, of Philadelphia; Scranton Mutual Life Insurance Company, of Scranton, Pa.; Abraham Lincoln Mutual Life Insurance Company, of Philadelphia.

DISCUSSION.

Dr. J. Allison Scott said he wished his remarks to be taken as from one in general practice of medicine and not connected with any insurance company. He had, however, formerly been connected with an insurance company and, therefore, had some knowledge of the business side of insurance, which those working outside of the home office could not have. Often the medical director of a company may want to do one thing, but the business officers desire to do the opposite and often the latter prevail. It is very common for an undesirable risk to be refused by the medical department and accepted by the president and vice-president. This reverse is also true. This may be due to some outside information which the business officers have received about the habits or history or occupation of the applicant. He doubted very much if the medical officers wish to keep the examiners' fee down, but believes they are overruled by the business officers. It would be very indiscreet to try to establish fees by legislation, for the physician cannot undertake to fix by law his fees for practice. There are always men who will work for small fees, but, as a rule, the companies do not desire such men. The important factor in life insurance for the medical man is that by carrying a policy on his life he is compelled to save money. The speaker believed that the insurance companies would in the next ten years take cognizance of the fact that doctors are not good insurance risks. The mode of life of the physician renders him an easy mark for various forms of disease, so that it is likely insurance companies will put doctors in a special category. As to substandard risks, it is true that there are men now going about in perfect health, who ten or fifteen years ago were rejected in compliance with the cast-iron rules, in reference to health, because they had a mitral murmur, or a trace of albumin. There are also pulmonary cases which are rejected. All these cases can be accepted with restrictions.

Dr. William Howard King said that he has been dealing with substandard risks for ten or twelve years. Selection begins with the agent, who has the applicant make out a trial application, which brings out the chief points. When this is received by the medical director he investigates the doubtful points and if possible makes the applicant a tentative offer through the agent. If this is satisfactory, the applicant submits to medical examination. The examiner is posted in reference to the questionable points and makes special investigation in regard to them. There are various forms of insurance issued to the substandard risks. If the applicant is very little below standard, the extra hazard may be compensated for by limiting him to an endowment policy or limited payment, because at the end of the premium-paying period, the liability of the company ceases. Another method is to advance the age of the insured. For example, the man who is forty might be required to pay the premium of the age fifty. In investigating the matter of substandard risks it was found, for instance, that those with intermittent pulse attained an average mortality very much better than the normal. The speaker said that the experience with mitral murmur cases for the past twelve years has been distinctly good. All heart cases that have had symptoms are eliminated, if possible.

Dr. T. Hewson Bradford thought there was a wide field for substandard insurance. In his experience a large number of applicants who have been turned down because of disability have lived for years in apparent good health. He recently saw a man of eighty who had been rejected twenty years before because he was under weight and drank a good deal of whiskey. The man informed him that he is still under weight and still drinks a good deal of whiskey. If in case of mitral murmur there is good compensation, the speaker saw no reason why an applicant should not be accepted. The rating of the substandards should be done in the actuarial department.

Mr. Frank, actuary of the Fidelity Mutual Life Insurance Company, said he thought it well for the insurance officers to hear these discussions, because it informed them as to the point of view of the physician. The only difference that exists seems to be due to lack of conference and discussion. If there was more discussion between the two parties concerned there would likely be full agreement. The insurance companies appreciate the value of the medical examiners. The only point of difference seems to be in reference to the fee. The spirit of this medical society in inviting the insurance representatives to discuss the matter is one of fairness and shows a desire to meet the subject in the proper way. If this matter could be considered by a joint commission of doctors and insurance officers the differences could doubtless be adjusted.

Dr. C. M. Seltzer, in closing, said that the importance of substandard risks can be seen when one considers that it is very hard to find a person over forty-five who is flawless. Many of these conditions are transitory and should be dealt with cautiously. It has become a question whether it is really necessary to have a medical examination for policies of $1,000 or under. The fact that a certain fee is relatively greater in the country than in the city was pointed to by the speaker as a justification for a sliding scale of fees for the examiner. The average policy in the country is smaller than in the city, ranging from $1,000 to occasionally $5,000, while in the city the average policy ranges from $6,000 upwards. Therefore, according to the sliding scale, the city examiner would get more than the country examiner, which is an equitable condition.

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Book Review.

Obstetrics. A Textbook for the Use of Students and Practitioners. By J. Whitridge Williams, Professor of Obstetrics, Johns Hopkins Medical School; Obstetrician-in-Chief to the Johns Hopkins Hospital; Gynecologist to the Union Protestant Infirmary, Baltimore, Md. Second enlarged and revised edition. Pp. 950, with 16 plates and 666 illustrations in the text. New York and London: D. Appleton & Co. 1908.

The most striking feature of the new edition of this justly popular textbook is the entirely rewritten chapter on the Toxemias of Pregnancy. So fully does the author discuss this most important subject (especially the value of the ammonia ration to the total nitrogen, as a means of diagnosis) that one might easily imagine he were reading a monograph, just written. Few have done more to attempt to blaze a trail into the wilderness of our knowledge of the subject, than Williams, so that we naturally expect this chapter to be especially good.

The other wholly rewritten chapter is the one on the Development of the Ovum. This subject is very fully treated and is illustrated by numerous drawings and plates.

Sections have been added upon the Metabolism of Normal Pregnancy, Vaginal Cesarian Section, Pubiotomy and Contractions of the Pelvic Outlet.

The book-work is pleasing to the eye, the illustrations as good as they are frequent and for the most part very helpful. Figs. 367 and 368 are misleading, if one assumes the pelvic application to the fully rotated head at the outlet, according to the text, but they admirably represent the cephalic application to an unrotated O.D.A., or O.R.A., according to the nomenclature of the book.

The treatment is uniformly safe. While the author is thoroughly progressive in his consideration of operative indications, he does not ignore physiological labor as a function that still exists. New and insufficiently tried methods, such as scopolamin anesthesia, are very properly cautioned against. Either to students or practitioners this book may be heartily recommended.

THE BOSTON

Medical and Surgical Journal.

THURSDAY, MAY 21, 1908

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AIR SEWAGE.

BY this apt, though gruesome term, Ransome has characterized the condition of an atmosphere which has, in its unrenewed state, become saturated with the combined exhalations of many people. The evils of congested populations are now fully recognized; among these perhaps the worst is overcrowding; and of overcrowding the most baneful feature is the lading of rebreathed air with animal poisons. Nor is impure air to be found only in enclosures — dwellings, public buildings and the like; that which must be breathed outdoors is also oftentimes unclean. The sweeping of American streets is apt to be most inefficient and infrequent; the dust is never sufficiently laid by sprinkling. Of these things there is abundant scientific evidence. For instance, there is the series of gelatin plates, which Dr. Woodbury, a former Street Cleaning Commissioner of New York City, had exposed in various districts. Those exposed in the dirtiest streets became saturated with molds, fungi, bacteria and every conceivable sort of impurity; whilst those exposed in the cleanlier parts of the city were almost entirely free from impurity. And D. D. Jackson, B.S., who prepared the excellent report on pollution for the Merchants' Association of New York, found in a specimen of street dust "plaster, iron rust, stone dust, cement from building operations, dirt from excavations or from loosely constructed carts, ashes, house sweepings and dried garbage blown from barrels and cans, chimney soot and cinder from industrial plants, excrement from horses, dogs and other animals, dried sputum of the tuberculous and those having bronchitis, naso-pharyngeal catarrh or pneumonia in its first stages."[1] Jackson computed, moreover, that a wind blowing eighteen miles an hour will contain five times as many bacteria as when it is blowing nine miles an hour; here one may find, in great measure, the reason why respiratory diseases prevail during the windy months. The therapeusis of fresh air is after all a very old one, at least as old as Celsus, who counselled some eighteen centuries ago: "Soon as a man finds himself spitting and hacking on rising in the morning, he should immediately take possession of a cow, and go up high into the mountains and live on the fruit of that cow." Fresh air, however cold, has been almost invariably salutary. Arctic explorers have been amazingly free from respiratory diseases — until their return to the cities of civilization. Not only well-defined diseases, but also vague states of ill health, are certainly due to poisonous exhalations from human lungs. These exhalations (the statement is very unpleasant, but true and necessary to make) are excreta, notwithsanding their intangible character. Some constituents of expired air are powerful poisons to the nervous system. Dr. John Hartley, surgeon to the Middlesex Hospital, in England, considers that many infections which we attribute to hurry and brain fag are really due to contaminated air; nor does he find the problem of ventilation to lie so much in letting a little air in, as in rushing waste products out.

The absolute essential in phthisiotherapy is now fresh air. The typhoid mortality has also been found to be reduced to a minimum when the patients are treated in tents, or wherever they may without stint breathe the fresh air. We now get astonishing results in pneumonia cases treated on hospital roofs, with no other shelter than is necessary to keep the rain and the snow from the patient. Dr. C. C. Easterbrook, a Scotch alienist, is keeping his cases of acute insanity in the open air for a month, their chief nourishment being milk; they are then allowed to lie about and to do light work — but not to remain indoors. His results seem excellent.

Millions are expended on patent medicines; odd it is, therefore, that fresh air — the cheapest and best of all restoratives, the most precious of all elixirs — should be of all curative agencies so little regarded. Possibly we are ourselves somewhat to blame for this. We do reprehend unventilated houses and duly extol fresh air; but after the proverbial manner of our kind, our practice is not always consistent. A member of the staff of the London *Medical Times* observed that the windows in houses of all but an absurdly small number of the physicians on Harley Street were tightly closed; and this inquisitive gentleman, having inquired concerning them, the most conclusive answer he got was that during examinations patients had to remove some part of their clothing. Yet this does not seem altogether convincing.

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[1] The Sources of the Contamination of the Air in New York City, L. I. Med. Jour., Jan., 1908.

Hartley has well commended the term "air sewage," considering that "a thoroughly good opprobrious epithet resembles a good wall poster in its power of arresting and enchaining the attention of the many." Of such are also "No spit — no consumption," "Dust, dirt, disease," and the like. On the whole, the fresh air propaganda does not as yet seem to be completely fought out.

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PROVISION FOR THE INSANE.

We are glad to call attention to a special report of the State Board of Insanity to the Massachusetts General Court on "The Best Method of Providing for the Insane," appearing as Senate Document No. 358. The Massachusetts State Board of Insanity was some time ago directed to investigate and report to the General Court by May of this year on questions underlying the provision for the insane in this state and to make such recommendations as were deemed necessary or expedient. In carrying out this investigation special reference has been paid, first, to the care and treatment of mental cases; secondly, to the early treatment of mental disease; and thirdly, to the treatment of acute and curable cases of insanity. It should be remembered that for a number of years the State Board of Insanity has been developing an enlightened system of care of the insane, and this report is therefore to be regarded rather as an outgrowth of former work than as an original presentation of the subject. It has, for example, long been recognized that there is a demand for better provision for the first care and observation of mental cases through the erection of small special hospitals and through the development of laboratory investigation and research. Although other matters, apparently of more practical character, have demanded the attention of the board, this fundamental object has been kept steadily in view.

Among the recommendations made in this valuable report attention is drawn to many facts which our space permits us merely to mention, and in doing so to urge upon our readers a reading of the entire document. In order that patients may be within easy visiting distance of their friends and relatives, it is desirable that institutions be located in the neighborhood of populous centers. The state should be divided into institution districts between which under certain conditions an exchange of patients might take place, but their autonomy in no way jeopardized thereby. The size of an institution should not be arbitrary, but should be proportionate to the character of the patients, the amount of study they require and the possibility of efficient administration. The colony idea may be applied to the harmless, chronic patients, constituting about 40% of the whole number of the insane. The custodial plan naturally applies to those who are dangerous and untrustworthy and who therefore demand close watchfulness. The number of these patients is estimated at 50%. The remaining 10% demand different care and treatment and it is for them that the so-called psychopathic hospital is designed. We quote the statement regarding this type of care:

> "It seeks the most enlightened treatment of mental disease; broadest knowledge of insanity by scientific research into its nature, causes and results; amplest opportunity for clinical study and instruction in mental diseases, to the end that the general practitioner of medicine may become competent to treat incipient mental disease in the most curative stage, or prevent its development by advice which he alone is privileged to give; public provision for the voluntary mental patient without stigma of insanity; out-patient service for the poor who need instruction and counsel in mental hygiene, prevention of mental disease and after-care of dismissed patients and for the early discovery of dangerous tendencies of the mentally deranged in the community in season to safeguard against violence."

It is evident, as the report goes on to say, that a tendency to better classification of the insane in order that there may be a wider separation between essentially different classes has become universal and is necessary to further progress. Finally the board considers it the paramount duty of the state to meet at once the reasonable demands of the population about Boston by erecting hospitals in the following order:

(1) A psychopathic hospital for 120 beds in the city.

(2) A voluntary and convalescent branch in the suburbs.

(3) A custodial and infirmary center within a ten-cent trolley ride.

(4) A farm colony within a twenty-five-cent trolley ride.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, May 20, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 64, scarlatina 69, typhoid fever 44, measles 273, smallpox 0, tuberculosis 52.

The death-rate of the reported deaths for the week ending May 20, 1908, was 21.91.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, May 15, 1908, was 270 against 229 the corresponding week of last year, showing a increase of 41 deaths and making the death-rate for the week 23.02. Of this number 142 were males and 128 were females; 263 were white and 7 colored; 165 were born in the United States, 97 in foreign countries and 8 unknown; 52 were of American parentage, 167 of foreign parentage and 51 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 54 cases and 6 deaths; scarlatina, 65 cases and 4 deaths; typhoid fever, 36 cases and 8 deaths; measles, 304 cases and 6 deaths; tuberculosis, 53 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 47, whooping cough 0, heart disease 33, bronchitis 5, and marasmus 7. There were 19 deaths from violent causes. The number of children who died under one year was 43; the number under five years 75. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 116.

AMERICAN LARYNGOLOGICAL ASSOCIATION. — The thirtieth annual congress of the American Laryngological Association was held in Montreal, Canada, May 11, 12 and 13, 1908. Dr. Algernon Coolidge, Jr., was elected president for the coming year. The next annual meeting will be held in Boston.

NEW FROST HOSPITAL. — In the recent Chelsea, Mass., fire, the Frost Hospital, situated in that city on Bellingham Hill, was burned. The trustees have decided to rebuild the hospital on the basis of $35,000 received from the insurance. The new structure will be built on the site of the former hospital. It will be two stories in height and start with a capacity of fifty beds.

REPORT OF THE BOSTON LYING-IN HOSPITAL. — The seventy-fifth annual report of this excellent institution shows the continued work which is being done in an important charity. The record in 1907 is shown by the following figures: 765 mothers were cared for; 768 children were born; the daily average number of patients (mothers) was 34.5, with an average length of stay in the hospital of between sixteen and seventeen days. Sixteen patients died. This work was accomplished at an average cost for each patient of $14.48. An important part of the work of this hospital is that conducted by the out-patient department. The total number of visits made in this department was 30,885. Two thousand and sixty-seven mothers were attended in confinement and 2,089 children born. The Instructive District Nursing Association has furnished three nurses for work in the out-patient department, who with two additional nurses of the training school of the hospital have cared for the patients as their services were required.

MASSACHUSETTS HOSPITAL FOR EPILEPTICS. — Quiet but steady progress is reported from this institution for the year ending Nov. 30, 1907. Dr. Everett Flood, the superintendent, makes the following statement:

> "I am glad to report that the past year has been one without serious accident. When we consider the conditions under which we work, the variety of disordered temperaments we have to deal with and the necessary association of irritable persons, this becomes a matter of congratulation. The advisability of bringing together persons who react individually on one another has been a subject of much comment. On the whole, the theme has been well worked out and I am positively of the opinion that the discipline acquired by these persons is useful to them. It not only makes them easier to deal with when they return home, but actually has a curative effect, from the fact that they acquire reasonable self-control by the enforced exercise of this trait."

NEW YORK.

PAPER ON FOOD AND DRUG ADULTERATIONS. — At a meeting of the Society of Medical Jurisprudence held May 11, President Thomas Darlington, of the Health Department, read a paper on "Food and Drug Adulterations; their Medical and Legal Significance."

INSANITY AS A DEFENSE FOR CRIME. — At a meeting of the Section on Neurology and Psychiatry, of the New York Academy of Medicine, held May 11, Dr. C. Floyd Haviland, of the Manhattan State Hospital for the Insane, read a paper on paranoia and epileptic mania, and in connection with it presented three patients from the institution to whose staff he belongs to illustrate some of the points referred to. At the same meeting Assistant District Attorney Arthur Train read a paper on insanity as a defense for crime, in which he advocated the establishment of a permanent medical commission to pass upon the condition of the prisoner whenever the defense offered was insanity.

Verdict for Unauthorized Use of Photograph. — The unscrupulous methods pursued by certain patent medicine concerns received rather a severe rebuke recently, when a young woman obtained a verdict of $6,000 damages in the United States Circuit Court against one of these companies which had obtained her photograph under false pretenses and exploited it with a forged testimonial in its public advertisements. The plaintiff, who had been a saleswoman in a large department store, testified that, in consequence, her fellow employees had ridiculed her to such an extent that her life became unbearable and she was obliged to give up her position; all the points of her contention were proved to the satisfaction of the jury.

Unusual Method of Suicide. — An extraordinary method of committing suicide was adopted by a tinsmith of Middletown, N. Y., who died on May 13. On Dec. 24 last, he was found unconscious on the floor of his shop, and an examination showed that he had poured melted lead into his right ear, which was now completely filled with the solid metal. This was drilled out of the cavity, but while it was ascertained that a considerable quantity of the lead had made its way into the mastoid cells, it was deemed too hazardous to attempt an operation there. It was hardly thought that the patient would live twenty-four hours, but he recovered for the time being. His case was watched with great interest and after a little more than four and a half months he finally succumbed to blood poisoning.

The Red Cross Society. — A special meeting of the New York State branch of the American Red Cross Society was held on April 28, at the Waldorf-Astoria. Col. William Cary Sanger, the president of the branch, presided and the principal speaker was Secretary Taft. Short addresses were made also by Lieutenant-Governor Chanler, Gen. Horace Porter, and Cleveland H. Dodge, representing the New York Chamber of Commerce, and a letter of encouragement from President Roosevelt was read. It was announced at the meeting that $5,000 had been appropriated by the managers of the Sage Foundation Fund for the purpose of devising methods for the co-operation of the Red Cross Society with other organizations in times of emergency.

Hospital Saturday and Sunday Collection. — The distribution of the annual collection of the Hospital Saturday and Sunday Association was made on April 23. This year it amounted, after deducting expenses, to $82,244, as against $98,610 in 1907, the largest collection in the history of the association. Of the total sum, $7,452 was for specially designated hospitals, and the balance, of nearly $71,000, was distributed among the forty-one institutions represented in the association; the apportionment to each being according to the number of days of free service rendered. As usual, the Montefiore Home and Hospital for Chronic Invalids and the Mount Sinai Hospital received the two largest amounts, which this year were respectively $7,100 and $6,947. The third largest sum went to St. Luke's Hospital.

Street Railway Accidents. — With a view to devising means to reduce the number of accidents in the city, the Public Service Commission, at its meeting on April 28, adopted a resolution, presented by Commissioner Maltbie, requiring every street railway corporation in the metropolitan district to file complete reports by May 10 of the number and types of cars operated and the character of their equipment as to fenders, guards, brakes, etc. Mr. Maltbie stated that in the six months ended Feb. 1, 1908, the street railways of Greater New York killed 299 persons and seriously injured 944. The total number of accidents due to collisions of street cars was 1,196 and the number of persons and vehicles struck by cars was 7,059. If this rate of accidents were continued for an entire year, about 600 persons would be killed and 2,000 seriously injured.

Mortality Report.— The weekly reports of the Health Department show that the mortality in the city during the month of April represented an annual death-rate of 18.31, as against 18.63 in March and 19.13 in April, 1907. The corrected death-rate, excluding non-residents and infants under one week old, was 17.27. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from typhoid fever increased from 6 in March to 7 in April; the weekly average from measles, from 31 to 42.5; from scarlet fever, from 44.25 to 59.25; from acute bronchitis, from 17.75 to 24.5; from broncho-pneumonia, from 124.5 to 129.25; from diarrheal diseases, from 48.25 to 49.25; from diarrheals under five years of age, from 44 to 45.25; and from cancer, from 57.5 to 62. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from diphtheria and croup decreased from 53.5 to 49.25; from influenza, from 15.5 to 8; from epidemic cerebrospinal meningitis, from 10.25 to 8.25; from pulmonary tuberculosis, from 189.75 to 187.75; from pneumonia, from 143.5 to 118.5; from apoplexy, congestion and softening of the brain, from 59 to 48.75; from organic heart diseases, from 151.25 to 144.25; from Bright's disease and acute nephritis, from 114.5 to 112.25; and from cirrhosis of the liver, from 20.75 to 19. During the winter there was a marked prevalence of measles and scarlet fever, which increased in the spring months.

In the latter part of March and throughout April the average number of cases of these diseases reported each week was respectively about 1,800 and 1,000. Of late, scarlet fever has been especially prevalent in the Borough of the Bronx, though it has not as a rule been of malignant type and the mortality from it has consequently been comparatively low.

OSTEOPATHY WINS A POINT. — The osteopaths of the State have won the first skirmish in their fight to be recognized as medical practitioners. On May 5, Charles F. Bandel, an osteopath, made application to Supreme Court Justice Dickey, in Brooklyn, for a writ of mandamus directing the City Health Department to accept for record a certificate of death signed by him. His counsel argued that as the osteopaths had complied with the regulations of the board of regents of the State University, they were entitled to the same privileges as members of any other school of medicine recognized by the regents, and that Bandel had duly received a certificate from the board of regents and filed a proper certificate in the county clerk's office. The motion was opposed by the corporation counsel and by a representative of the Medical Society of the County of New York. Assistant Corporation Counsel Sterling stated that an examination of the language of the present statute did not reveal recognition of osteopathy as a school of medicine, a clear distinction being drawn between the "practice of osteopathy" and the "practice of medicine." The counsel for the County Medical Society, Mr. Vandeveer, contended that the law under discussion was really intended to exclude osteopaths entirely from the practice of medicine. Justice Dickey reserved decision in the case until May 11, when he granted the writ of mandamus compelling the Board of Health to register Bandel as a physician and accept death certificates from him. His opinion is certainly an extraordinary one. In the course of it he says: "By chapter 344 of the laws of 1905, osteopathy is recognized and its practice regulated, with provision for the admission to practice of those qualified. In my opinion the lawmakers intended to, and do, make osteopaths practitioners of medicine and also make them physicians. It is clear to my mind that osteopaths are physicians and practitioners of medicine, except for the restrictions put upon them by chapter 344 of the laws of 1905, which prohibits them from administering drugs and performing surgery with the use of instruments."

"LACHESIS." —During the past week many of the newspapers have devoted considerable space to glowing accounts by reporters of the arrival of a specimen of the lancehead viper at the Zoölogical Park in the Bronx, where, under the supervision of a homeopathic pharmacist and certain homeopathic physicians, it was made to give up some of its venom (to be attenuated by trituration with milk sugar and employed medicinally as "lachesis") very much after the manner of grasshoppers in the hands of children: "Spit tobacco and I'll let you go." The New York *Times* having shown up editorially this whole "fake" business in its true light, Dr. Walter S. Mills, a homeopath, came out in an elaborate defence of lachesis and its wonderful virtues. Dr. Robert T. Morris, the well known surgeon, and Dr. Wm. H. Park, director of the Health Department research laboratories, have now written replies to this. Dr. Morris takes up each of the contentions of the defence in turn and proceeds to demolish it in a highly effective as well as amusing way. It is possible to quote here only a small portion of his letter. Dr. Mills speaks first of the rarity of the lancehead viper, stating that only six specimens have been in the Zoölogical Park during nine years; to which Dr. Morris replies: "I doubt if more than six brown rats have been exhibited at the Zoo during the same number of years. Lancehead vipers and brown rats are both easily obtained, however. Many people, from Martinique to Buenos Ayres, would be glad to sign a contract to furnish a certain number of yards of lanceheads annually and there would be much enthusiasm among the natives if the export market for the snake looked promising." In reply to a statement of Dr. Mills that the action of "lachesis" differs from that of other snake poisons in many details, he points out that snake poisons are albuminous fluids, which are all alike in being digested in the stomach, without producing more effect than would be caused by white of egg. It is only when forced into the vascular system directly that they produce a peculiar response. "The essential point in lachesis administration," says Dr. Morris, "is to have it obtained from a snake eighty years previously or from one brought to this country by a drug firm and handled in a marvelous manner by Mr. Ditmars and the reporters." Both Dr. Park and Dr. Morris show that the action of antivenomous serum injected into the circulation is totally unlike that of attenuated snake poison taken into the stomach. Dr. Mills having claimed that the production and use of antitoxins is according to the law _similia similibus curantur_ and that in antitoxins there is some of the original poison in a greatly diluted state, Dr. Park asserts that both of these opinions are incorrect. He then describes the production and action of antitoxins so far as these are understood, and states that after immunization there is no trace of toxin remaining in the blood. Diphtheria, scarlet fever and erysipelas are only a few of the diseases in which "lachesis," according to Dr. Mills, is a most wonderful remedy.

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Current Literature.

MEDICAL RECORD.

APRIL 4, 1908.

1. *Bull, C. S. _The Deep Intra-ocular Lesions of Infantile Inherited Syphilis and Tardy Inherited Syphilis from the Standpoint of General Pathology, Prognosis and Treatment._
2. Vineberg, H. N. _The Treatment of Intraperitoneal Hemorrhage from Rupture or Abortion of Tubal Pregnancy._
3. Dickinson, G. K. _Acute Lobar Pneumonia. A Study in Inflammation._
4. Dardel, J. _Notes on Chronic Rheumatism and Its Treatment._
5. Fiedman, G. A. _Obstruction of the Duodenum by Gall-stones; Pre-operative Localization; Operation; Recovery._
6. Witherbee, W. D. _Treatment of Epithelioma and Carcinoma of the Mucous Membrane._

1. The author makes an appeal for the early and more careful examination of the eyes of infants and young children when syphilis is suspected or known to exist in the parents or family, for his experience has convinced him that the cases of intra-uterine disease of the deeper tissues of the eye are far more common than is usually supposed. Congenital iritis, cyclitis, choroiditis, cataract, exudation in the vitreous, and more rarely retinitis, optic neuritis and atrophy of the optic nerve have been observed in infants within a few hours after birth. He believes iritis and choroiditis are more frequently met with in young infants than keratitis as an evidence of inherited syphilis. He gives a report of five cases in accord with this belief. In tardy inherited syphilis the author believes that stigmata are more common in the eye than anywhere else. If the cornea, iris and pupil appear normal, the ophthalmoscope may reveal stigmata of the first importance as signs of inherited syphilis. These stigmata in the fundus oculi may appear either as gross lesions in the choroid, retina, or optic nerve, which are immediately regarded as pathognomonic of inherited syphilis, or merely as slight rudimentary signs of former lesions. The stigmata are bilateral and of about the same extent in both eyes. Certain functional troubles are very common, as congenital defective vision, amblyopia due to partial atrophy of the optic nerve, and hemeralopia, or night-blindness. Nystagmus may be present and the apparent myopia due to changes in refractive power of the cornea, lens or vitreous. The diagnosis may be very difficult, and a searching investigation not only of the patient, but of the family, is necessary.

[W. B. R.]

APRIL 11, 1908.

1. Stark, H. S. _Diabetes and the Food Factor._
2. Levin, I. _Spontaneous Gangrene of the Foot Due to Endarteritis Obliterans._
3. Bandler, S. W. _The Relation of Appendicitis to Gynecological Pelvic Disease._
4. Dutton, W. F. _Blood Pressure in the Practice of Medicine._
5. Jarrett, E. _Health of Our High School Children._
6. Weiss, J. _The Solution of the Lodge and Society Problem of the East Side._
7. Page, C. I. _A Case of Cut Throat._

ANNALS OF SURGERY.

MAY, 1908.

1. *Cushing, H. _Subtemporal Decompressive Operations for the Intracranial Complications Associated with Bursting Fractures of the Skull._
2. *Wood, A. C. _Osteoplastic Resection of the Skull._
3. *Blackwood, N. J. _Atlo-Occipital Dislocation._
4. *Buchanan, J. J. _Fracture through the Anatomical Neck of the Humerus with Dislocation of the Head._
5. *Mason, J. M. _The Treatment of Dislocation of the Shoulder Joint Complicated by Fracture of the Upper Extremity of the Humerus._
6. *Whitman, R. _A Treatment of Epiphyseal Displacements and Fractures of the Upper Extremity of the Humerus._
7. *Vale, F. P. _Traumatic Subluxation of the Humerus._
8. Bartlett, W., and Thompson, R. L. _Occluding Pulmonary Embolism._
9. *Scudder, C. L., and Richardson, O. _Primary Carcinoma of the Hepatic Ducts._
10. Meyer, W. _The Operative Treatment of Intractable Vomiting Not Due to Pyloric Obstruction. Neurosis of the Stomach._
11. *Elsberg, C. A. _The Value of Enterostomy and Conservative Operative Methods in the Surgical Treatment of Acute Intestinal Obstruction._
12. Allis, O. H. _The Non-Absorbable Suture and Ligature._
13. Deaver, J. B. _Report of Saturday Surgical Clinics for Students held at the German Hospital of Philadelphia, 1906 and 1907._

1. Cushing recommends routine exploration of basal cranial fractures when followed by signs of compression, and reports a series of such cases in which he did subtemporal decompression, with a recovery of 87%. Through an obliquely vertical incision above the ear, he splits the temporal muscle, removes a circle of bone 4½ cm. in diameter, and opens the dura. The advantages of this method of operation are: The thinness of the skull at this point, the avoidance of brain hernia, and the ready exposure of the temporal and frontal lobes, of the middle meningeal artery and of the mid-cranial fossa.

2. Wood discusses the methods of osteoplastic resection of the skull and describes his own modification of Stellwagon's instrument for performing the operation.

3. Blackwood reports "a case of fracture of the atlas and axis and forward dislocation of the occiput on the spinal column. Life was maintained by artificial respiration for thirty-four hours and forty minutes, during which

time laminectomy was performed on the third cervical vertebra," without benefit. Autopsy showed complete crush of the cord.

4. Fracture-dislocation of the humerus at the shoulder joint is not uncommon, but it is rare for the fracture to be through the anatomical neck. Buchanan summarizes the thirty-four undoubted cases hitherto recorded in the literature, and adds another of his own observation. In every case the injury was caused by a fall, and he believes the mechanism of its production to be a lever-like action of the dislocated humerus prying off its head against the sharp inferior margin of the glenoid as a wedge and fulcrum. Reduction of the dislocated head by external taxis is rarely possible; reduction through open incision should next be attempted, and, failing this, excision of the head. which gives good functional result.

5. Mason collects and analyzes 63 cases of shoulder dislocation with fracture at the neck (both anatomical and surgical) of the humerus, and 21 cases with fracture of the greater tuberosity reported since 1894. He emphasizes the importance of prompt operative intervention before changes have occurred in the traumatized tissues about the joint, and recommends arthrotomy with reduction of the dislocated head and wiring of the fragments.

6. Whitman describes a method of treating separation of the upper epiphysis and fracture of the upper extremity of the humerus by means of a plaster spica "designed to assure definite adjustment and fixation of the fragments" by holding the arm in a position of extension, abduction and elevation similar to that obtained by the splint used in the treatment of subdeltoid bursitis.

7. Subluxation, or partial forward dislocation of the head of the humerus, though very rare, seems to be a definite surgical entity. It is usually accompanied by atrophy and other changes in the muscles and ligaments surrounding the shoulder joint, and sometimes by dislocation of the long head of the biceps out of its groove. Vale reports a case and collects a few others from the literature.

9. Scudder and Richardson report a primary adenocarcinoma of the hepatic ducts, symptomatized by emaciation and painless jaundice. The gall bladder at operation was not enlarged and contained no stones. Autopsy showed no metastases in any tissues of the body.

11. Elsberg strongly advocates two-stage operation on all cases of acute intestinal obstruction in which the general condition is not excellent. He believes that simple enterostomy by the Kader method, followed, after the patient has recovered from the initial shock and toxemia, by operation for relief of the obstruction and closure of the fistula, is a much safer and more rational procedure than immediate complete operation. [R. M. G.]

Surgery, Gynecology and Obstetrics.

May, 1908.

1. *Mayo, W. J. *Hemorrhage from the Stomach and Duodenum.*
2. *Upcott, H. *False Diverticula of the Appendix.*
3. Norris, C. C., and Mitchell, C. B. *Primary Ovarian Pregnancy, with Report of a Case.*
4. *Moynihan, B. G. A. *The Surgical Treatment of Cancer of the Sigmoid Flexure and Rectum, with Especial Reference to the Principles to be Observed.*
5. Healy, W. *Hydrops Articulorum Intermittens.*
6. Davis, E. P. *Syncitioma or Chorio-epithelioma of the Placenta.*
7. Senn, N. *The Dawn of Modern Military Surgery.*
8. Gibbon, J. H. *Ureteral Calculi, with a Further Report of the Combined Intra- and Extra-Peritoneal Uretero-Lithotomy.*
9. *Reynolds, E. *The Cesarian Section from the Standpoint of a Personal Experience.*
10. *Simpson, G. F. B. *Prolapse of the Female Urethra.*
11. *Reed, C. B. *A Study of the Conditions that Require the Removal of the Child from the Breast.*
12. *Kolischer, G. *Successful Treatment of Chronic Gonorrheal Endometritis.*
13. Marden, J. K. *Case Report of Plastic Repair in Old Gunshot Wound of the Abdomen.*
14. Bartlett, W. A. *Simplified Technic for Supravaginal Hysterectomy.*
15. *Brown, G. S. *An Improved Hodgen Splint for the Treatment of Fractures of the Thigh or Other Painful Affections of the Lower Extremity.*
16. Ferguson, A. H. *Simple Hysterectomy in Simple Cases.*

1. Mayo calls attention to the rarity of fatal hematemesis. In the surgical treatment of gastric hemorrhage from chronic ulcer, he believes in supplementing gastro-jejunostomy with excision of the ulcer, if possible; if not, at least with ligation of the main blood vessels leading to it. This is to prevent both further bleeding and later neoplastic development.

2. Not only is the vermiform appendix itself a true diverticulum of the cecum, but it may have other false diverticula, or herniæ of the mucous membrane into the muscular layers, such as have been found also in the small and in the large intestine. Upcott believes that these acquired pockets, being favorable sites for the lodgement of bacteria, may easily become foci of infection, and thus determine the point of perforation in appendicitis.

4. Moynihan believes it almost always possible, in the radical operation for cancer of the sigmoid and rectum, to remove involved tissue with a wide margin and still do an end-to-end anastomosis, avoiding the discomfort of a colostomy. This he secures by free immobilization of the descending colon, not even hesitating to tie the inferior mesenteric artery, since he finds the blood supply is amply maintained through the anastomoses of the left colic with the middle colic and with the sigmoid and superior mesenteric arteries.

9. From his experience and a review of the literature for the past ten years, Reynolds is convinced that Cesarian section late in labor has too high a maternal mortality (12%) to warrant its performance in the interests of the child alone. He also believes that the maternal mortality (4%) of Cesarian section during the first stage is enough greater than that of high forceps or version to make the latter preferable, though they do not offer as good a prospect for the fetus. Primary elective section, with a maternal mortality of 1%, in properly selected cases, is the legitimate form of this operation when undertaken for mechanical obstacle. The author details the principles of such selection and presents a very sane, conservative, valuable statement of the true place of Cesarian section in obstetric surgery.

10. Prolapse of the female urethra may be of two varieties: either a hyperplastic protrusion of the mucosa at the meatus or a true sagging and eversion of the whole canal. Simpson reports a case of the former type which he believed due to straining at stool.

11. Reed presents an ingenious and elaborate review of various conditions which may necessitate premature weaning, but adds nothing to our present knowledge of infant feeding. There is a profuse bibliography.

12. Kolischer reports favorable results from the use of 3% albargin, applied on a cotton swab to the interior of the uterus in the treatment of chronic gonorrheal endometritis.

15. Brown describes a modification of the Hodgen suspension splint, explains the method of its application and reports excellent results from its use in the treatment of all forms of fracture of the femur. He believes it superior to Buck's or any other apparatus for this purpose.

[R. M. G.]

British Medical Journal.

Feb. 29, 1908.

1. *White, W. H. *Clinical Lecture on Multiple Serositis, Illustrated by a Case in which the Abdomen was Tapped Seventy Times.*
2. *Smith, E. *A Plea for a Neglected Remedy.*
3. Westcott, W. W. *Address on Sudden and Unexpected Deaths.*
4. Renton, J. M. *An Unusual Case of Suicide by Suffocation.*
5. Rolleston, H. D. *Case of Remarkable Striæ Atrophicæ Due to Cachexia.*
6. Jones, R. *On the Production of Pseudo-Arthrosis of the Hip without Disarticulation of the Head.*
7. Thòrnton, B. *Scarlatina Associated with Pyrexia in Apparently Healthy Contact Cases.*

8. CASTELLANI, A. *Note on the Treatment of Experimental Trypanosomiasis.*
9. KILVINGTON, B. *An Unusual Deformity of the Foot.*
10. KLOTZ, O. *Note on Dr. Milligan's Paper, "The Treatment of Chronic Suppuration of the Middle Ear without Resort to Radical Mastoid Operation."*
11. ORME, W. B. *Fatal Case of Infectious Jaundice in the Federated Malay States.*
12. WATSON, M. *Experiments towards the Prevention of Malaria in the Federated Malay States.*

1. White, in a clinical lecture on multiple serositis, describes in detail the case of a woman whose abdomen was tapped seventy times. She had secreted more than 2,000 pints of fluid into the peritoneal cavity. From this he goes on to speak of the subject of chronic peritonitis not due to tuberculosis or malignant disease, and of chronic perihepatitis. No case should be regarded as an example of multiple serositis unless after careful examination neither tubercle nor a new growth can be discovered. He describes that condition known to the Germans as *Zuckergussleber.* The disease apparently may occur at any age, and is equally common in men and women. There is often a history of previous acute infectious disease, which strongly suggests that the serositis is bacterial. Out of 14 cases, in 7 the pericardium and peritoneum and both pleuræ were all affected. Perihepatitis is always and perisplenitis is nearly always present. It usually begins in the peritoneum, although there is a small group of cases in which the pericardium is first affected. The kidneys are usually the subject of interstitial changes. The exudate is distinctly of an inflammatory type. Treatment, except to remove the fluid as often as necessary, is of little or no avail.

2. Smith makes a plea for a greater use of antimony than is now in vogue. He believes that for the early stage of bronchial pneumonia in children it is of great value, as well as in stridulous laryngitis. He describes the history of the use of this drug and its doses and preparations.

[J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 11.

MARCH 12, 1908.

1. *SIEGERT, F. *The Treatment of Rachitis.*
2. ROSENHEIM, T. *Castor Oil in the Treatment of Acute Appendicitis.*
3. *SIEGEL, W. *Chilling as a Cause of Sickness.*
4. ZWEIG, A. *The Treatment of Metasyphilitic Affections with Tiodin and Atoxyl.*
5. BRUCK, C., AND STERN, M. *The Wassermann-Neisser Reaction in Syphilis.*
6. *BÖHM, M. *The Etiology of Idiopathic Scoliosis in the Adolescent.*
7. HIRSH, H. H. *The Treatment of Stumps.*

1. Siegert claims overfeeding, especially with fats, will produce rachitis in children if kept up for a few weeks. The slightest sign of excessive sweating of the head, rapid ammoniacal fermentation of a very abundant urine and constipation should banish fats from the diet. After the second year the child should be fed not more than a cup of milk a day, eggs only in preparing other food, vegetables and fruit in abundance without much sugar, whole wheat bread and more jam than butter, with abundance of light and air, warmth and sunshine. He thinks too much milk is bad for the healthy child and positively injurious to the rachitic. He calls eggs an expensive and unreliable food, peculiarly rich in bacteria and superfluous to children under three. He also advises little if any meat. Instead of dressing the child in woolen, he should have the lightest of underclothing worn loosely, with hard bed and flat pillow. Calomel purges are useful in cases of convulsions and spasm of the glottis. The combination of phosphorus and cod liver oil is invaluable in the prophylaxis of convulsions. Milk, cabbage, cauliflower, spinach and oranges contain such large quantities of lime that the administration of calcium in drug form is unnecessary.

3. Siegel has experimented on dogs, proving that the presence of bacteria plus the action of cold does not always cause disease. On the other hand cold without bacteria is able to produce parenchymatous nephritis under certain conditions. The dogs in his experiments invariably developed a bilateral nephritis, even when only one foot had been immersed in ice water. In most of his experiments the hind legs of the animal were covered with ice water from the knee downwards, at a temperature of 39° F. He explains this by the fact that chilling of the feet induces constriction of the renal vessels by reflex action, and if this reflex anemia persists for a considerable time it causes disturbances in the circulation and in the nutrition of the kidney cells, followed by degenerative changes with inflammation as the final outcome. The chief result of these experiments is the proof that an acute kidney affection can be produced by chilling alone without the presence of bacteria.

6. This excellent article is almost identical with one by the same author in the BOSTON MEDICAL AND SURGICAL JOURNAL, Nov. 22, 1906, to which the reader is referred.

[L. G. M.]

No. 12. MARCH 19, 1908.

1. HILDEBRANDT, W. *Where Urobilin is Formed.*
2. *WORBS. *Headache and its Treatment by Massage.*
3. FEILCHENFELD, L. *Aggravation of Tuberculosis by Trauma.*
4. FRANGENHEIM, P. *Ossifying Myositis in the Brachialis Anticus after Luxation of the Elbow Joint.*
5. HANNES, W. *Principles for the Treatment of Inflammatory Diseases of the Adnexa.*
6. *THOMÄ, F. *Acute Postoperative Dilatation of the Stomach and its Relation to Arterio-mesenteric Occlusion of the Duodenum.*
7. BRUCK, C., AND STERN, M. *The Wassermann-Neisser Reaction in Syphilis.*
8. NOLL, H. *The Prophylaxis of Eczematous Ocular Diseases.*
9. SELTER, P. *Disturbances in Proteid Metabolism in Infants.*
10. *LOEWENBERG, M. *A New Method for Blood Counting.*

2. Worbs employs massage in the treatment of headache after the method advocated by Cornelius. This consists in massaging the points where moderate pressure is experienced as pain. These "pain points" are due to compression of nerve endings by connective tissue proliferation, and are usually situated along the borders of the trapezius, the sterno-cleido-mastoid, especially at its origin and insertion, the temporal, the orbital and the occipito-frontal muscles. Systematic massage of these points breaks up the minute adhesions and frees the nerve. He uses a single finger, with perpendicular, rotary movements. The disadvantages of this treatment are the pain it causes, the local reaction sometimes produced and the time consumed before a result is reached. The massage is given for fifteen minutes at a time and often some weeks are needed for a cure.

6. Thomä describes a case of postoperative dilatation of the stomach produced by occlusion of the duodenum at its junction with the jejunum, owing to compression exerted by the root of the mesentery. The symptoms were uncontrollable vomiting, mostly of bile, without admixture of fecal matter. The epigastrium was distended and constipation complete. The simple but effective treatment is washing out the stomach and giving no food by mouth. If further measures are necessary, the patient should be placed in the ventral position. H. Albrecht, in a recent study of the same condition, describes the duodenal occlusion as the primary affection and the dilatation as secondary. In another case, while performing a ventral fixation of the uterus, Thomä found the stomach considerably dilated and the intestines crowded far down into the pelvis. Compression of the duodenum was not present. The author believes that injections of physostigmine, careful feeding and the avoidance of the dorsal decubitus prevented the occurrence of postoperative acute dilatation in this instance.

10. Loewenberg describes a scheme for counting the white blood corpuscles without other apparatus than a microscope. He makes a dilution of 1 to 400, by mixing 10 cmm. of blood with 4 ccm. of a 3% salt solution. Taking a measured drop of this dilution, he places it on a slide and covers it with a round cover glass of a known radius, and counts the corpuscles in a number of microscopic fields

and takes the average. Since two circles are proportional to each other according to the squares of their radii, the total number of corpuscles under the cover glass can be easily computed. For instance, the radius of his microscopic field is 0.5 mm. and of his cover glass 10 mm. The cover glass field thus represents 2,500 microscopic fields. Therefore to calculate the number of corpuscles in a cubic millimeter multiply the number of corpuscles counted in a microscopic field by 2,500 and again by 400, the dilution, and divide by the amount of diluted blood used.

[L. G. M.]

Münchener Medizinische Wochenschrift. No. 10.

March 10, 1908.

1. *Dietleu, H., and Moritz, F. *The Effect of Bicycling on the Size of the Heart.*
2. Schelble. *Fat Absorption in Infants.*
3. Much, H. *Opsonin Studies.*
4. *Schneider, R. *The Bactericidal and Hemolytic Action of Leucocytes and Blood Plates, etc.*
5. Lode, A., and Ballner, F. *The Technic of Deviation of the Complement.*
6. Schick, B. *A Skin Reaction in Diphtheria after Inoculation with Diphtheria Toxin.*
7. Proppiny. *The Importance of the Difference between Rectal and Axillary Temperatures, especially in Peritonitis.*
8. Eggenberger and Wileus. *Colored Photographs made after Lumière's Method.*
9. Ruppert. *Pleural Exudate Containing Cholesterin.*
10. Capaldi, A. *Sarcoma Appearing on an Amputation Stump after Twenty Years.*
11. Autenrieth. *Rupture of the Mesentery after Contusions of the Belly.*
12. Strübe. *A New Medicine Glass.*
13. Görl. *Fulguration in Cancer.*

1. The authors examined the hearts of ten of the contestants in the long distance race of the Deutscher Radfahrerbund, both before and after the race. They employed the usual methods and also the orthodiagraph. They found that in none of their cases was a dilatation present, but in each case a greater or lesser amount of contraction (i. e., lessening of the heart shadow) was easily demonstrable. The probable reasons for this decrease in the size of the heart are that the various muscles are in such great activity as to need and to contain more blood; also that, little by little, as the pulse rate gets above the normal, the volume of each heart contraction sinks and a lesser amount of blood is thrown out by the heart. Also the lessening of the total amount of blood due to sweating will allow of contraction. Their results agree with others performed in the same manner and on contestants in different forms of athletic sports.

4. Schneider has studied the bactericidal action of the leucocytes and of extracts of lymph glands and of inflammatory edemas. He finds that the leucocytes contain a certain element which is actively bactericidal and which is excreted by them after irritation. Further, that this "leucine" is not identical with the alexin or opsonin of the circulating blood. Also he finds that the bactericidal qualities of inflammatory edema fluid are due to extracellular leucine and that the serum from the lymph vessels is of the alexin type in its action. The author also believes that the hemolysis induced by extracts of lymph gland depends on a different element than the hemolytic ferment of blood. [R. D.]

Berliner Klinische Wochenschrift. No. 10.

March 9, 1908.

1. Orth, J. *The Cause of Death.*
2. Fleischmann. *The Theory and Practice of Serum Diagnosis of Syphilis.*
3. Sachs, H., and Allmann, K. *The Action of Sodium Oleate in Wassermann's Syphilis Reaction.*
4. Stieda, A. *Bilateral Dislocation of the First Metatarsal Bone.*
5. Böcker, W. *Variations in the Bony Structures of the Human Foot.*
6. *Lewandowski, A. *Hyperemia in the Treatment of Internal Diseases.*

6. Lewandowski believes that hyperemia is a valuable therapeutic aid in a large number of internal diseases, i. e., affections of the heart, lungs, gastro-intestinal tract, certain nervous diseases and diseases of metabolism. He recommends active hyperemia induced by hot air applied locally, or by hot water. The action of the treatment is to still pain, to increase resorption and improve nutrition.

[R. D.]

Die Therapie der Gegenwart. Heft 1.

January, 1908.

1. His, W. *The New Year.*
2. *Klemperer, G. *Phosphaturia, its Prophylaxis and Cause.*
3. Kionka, H. *The Dangers of Scopolamin.*
4. Lexer, E. *The Treatment of Skin Cancer.*
5. Döderlein. *New Tendencies in Obstetrics.*
6. Greeff, R. *Prophylaxis and Therapy of Ophthalmia of the New Born.*

2. The knowledge of and the therapy for oxalate and uric acid stones have been long the property of the profession at large. Much more uncertain has been our knowledge of phosphate and carbonate stones in the genito-urinary tract. These latter can only occur in urine with alkaline reaction, the cause of which is ammoniacal fermentation of the urine due to bacterial infection. Where infection exists the prevention of stones must be primarily by the prevention and cure of the existing focus whence the bacteria enter the urine. Another type of phosphaturia is the aseptic form, in which the urine is turbid from precipitated phosphates when passed, without ammoniacal fermentation. This form the author subdivides into (1) that due to change in the reaction of the urine and (2) that due to an excess of phosphates in the urine. The first may be caused by intake of alkali, as mineral waters, soda bicarbonate, etc., and may be called "phosphaturia medicamentosa," or by a large percentage of vegetable or alkali-holding foods in the diet; this the author calls "alimentary phosphaturia"; a third form is the "pathologic gastrogenous phosphaturia," due to a lessened or absent absorption of the gastric hydochloric acid. The latter is common in cases of gastric dilatation and atony, with hyper- or hypo-acidity and is often connected with a general nervous condition. For successful treatment the general condition must be combated and the gastric condition treated, especially by small meals and never allowing the stomach to be over-loaded. The prophylaxis of the other two forms is, of course, obvious. In the second class of phosphaturia, that due to an actual excess of phosphate in the urine, the problem is a more difficult one. Klemperer believes it to be due to an abnormal selective action for phosphates of the renal epithelium. Theoretically the treatment of this condition is to give a diet poor in carbonates, but this is impossible as at least 3 gm. CaO *per diem* is necessary to the organism. It has been known for a long time that renal epithelium poisoned by mercury or oxalic acid shows a tendency to combine with calcium and also that calcium output in such cases is at a minimum. The author, therefore, in certain cases of phosphaturia due to increased amount of calcium and phosphates in the urine, gave daily 3 gm. oxalic acid neutralized with 3 gm. sodium bicarbonate, or 1.5 mgm. of corrosive sublimate, with the effect that a normal amount of phosphates and carbonates was excreted. The drugs were thought to lower the previously increased selective activity of the renal epithelium. He has found no untoward effects in any of his cases. [R. D.]

Revue de Chirurgie.

April, 1908.

1. *Chevassu, M. *Branchial Cysts with Pharyngo-Salivary Structure, Particularly Presternal Cysts.*
2. *Le Damany, P., Castex, E., and Véron, F. *The Rational Treatment of Congenital Dislocations of the Hip.*
3. *Gallois, E., and Bosquette, J. *Study of the Internal Architecture of Bones, Particularly of the Upper Extremity of the Femur. Its Rôle in the Repair of the Skeleton, Fractures and Deformities.* (Continued article.)
4. Uteau, R. *Treatment of Anuria.* (Concluded.)

1. Chevassu describes a group of congenital, presternal, cystic tumors, containing glandular tissue of the salivary type and associated with a more or less obliterated duct leading to or towards the pharynx. He believes these are not connected in origin with the middle lobe of the thyroid, but represent a persistence of the *vesicula precervicalis*, derived from the *sinus precervicalis*, into which open the lower two embryonic gill-clefts. These cysts, drawn into the median line by the downward growth of the *sinus precervicalis*, gradually enlarge from retained secretion and may become infected, suppurate and discharge through permanent fistulæ.

2. The writers summarize, but add little to our present knowledge of the treatment of congenital dislocation of the hip, as worked out by Lorenz, Bradford and other orthopedists. Le Damany emphasizes particularly the importance of x-ray as an anatomic check on apparently satisfactory functional results. There are abundant and instructive illustrative clinical data.

3. In an elaborate study of the internal structure of bones, the authors take as a type the upper extremity of the femur, first describing the systems of bony arches formed by its cancellous trabeculæ. These observations they then extend to other bones, showing that their architecture conforms to the same physical and mechanical laws originally laid down by Wolff, Meyer and Culmann, and that the function of a bone determines and maintains its form. Similarly, they believe and undertake to prove by examples, that when disease or trauma changes the static conditions of a bone, the form is modified and adapted to the new function by a readjustment of the trabecular arches to meet the altered focus of traction and pressure. [R. M. G.]

Miſcellany.

ICE POLLUTION OF HUDSON RIVER, N. Y., ICE HOUSES AND FIELDS.

This number of the *Bulletin of the New York Department of Health* contains a detailed report of an investigation conducted during the past winter by the Sanitary Engineering Division of the Department of the Hudson River ice houses and fields and the sources of ice pollution from Troy to Catskill and in the vicinity of Kingston, as well as along the lower Mohawk, from Schenectady to Cohoes. The following are the conclusions arrived at: The facts presented, though physical in their nature, furnish valuable information as to the sanitary conditions under which this industry is carried on in the locality under investigation and as to the possibility and probability of any real danger to the health of those depending upon these sources for their ice supply. Although at this time confirmatory data of a chemical and biological nature is not available, owing to the fact that the ice now being harvested has only recently been formed, the Department feels that any action to be taken should not be delayed. In view of the relative proximity of some of the houses and fields to local sources of pollution, confirmatory evidence of this nature is not necessary; while, even in the event of negative results, many cases of probable contamination are so flagrant that such negative evidence would not preclude the possibility of danger. Certain of the fields are so located with reference to sewage outlets as to render the ice cut therefrom subject to contamination and a menace to health, and the cutting of ice from these should be prohibited. There seems to be no adequate reason for taking any other view of the matter, notwithstanding the more or less destructive effect of storage and cold upon germ life; for this is not complete, and the cost to the owners should not be permitted to stand in the way of the removal of ice plants to localities which would be reasonably safe from pollution. The Department, however, is without specific authority over the control of the ice industry. As a remedy for such a situation as that revealed by this investigation, there was prepared and presented to the legislature of 1907 an ice bill so framed as to give to the Department certain powers to regulate the cutting, harvesting and storage of the ice supplies of the state; but it failed of enactment. Under the circumstances the Department has had to be content with addressing a letter to each of the proprietors of over forty ice houses, stating that it emphatically disapproves of the cutting and harvesting of ice from the fields from which their supply is derived, and suggesting that other localities be selected, where the ice will not be subject to contamination from sewage. A bill similar to the one mentioned was introduced in the legislature this year; but it appears to have met with the same fate.

TRADE-UNIONISM AMONG DOCTORS AND NURSES.

The New York *Evening Post* indulges in the following editorial *jeu d'esprit:*

"From the frequency with which hospital doctors and nurses have lately been going out on strike, we are led to conclude that the principles of trade-unionism are making rapid headway among an important section of what the Socialists are fond of describing as the intellectual proletariat. Up to the present, the causes for the manifestation of the class struggle in medical ranks have been rather trivial — the bad quality of the food supplied to internes, an insufficient number of towels, self-assertion on the part of the head nurse, prohibitions on smoking and this or that. But that is the way all strike and boycott movements begin. The leaders seize upon some trifling wrong or dissatisfaction and make it the occasion for an outbreak of conflict in the course of which the higher principles of trade-unionism come to be applied. Factory workmen in Russia, for instance, have been driven to strike by intolerable wages and housing conditions. Once out, they have learned to demand an eight-hour day, recognition of the Union and a share in the management of the concern. In the same manner we expect that the young doctors who now strike because of cigarettes prohibited or beef underdone, will soon come to demand that the temperature of fever patients shall rise only in accordance with a fixed scale, that no alarming relapses necessitating sudden attention shall be permitted after 8 p.m., and that wounds in healing shall under no circumstances be permitted to form scabs."

Correspondence.

LETTER FROM PARIS.

[*From our Special Correspondent.*]

On Metallic Ferments. The Therapeutic Use of Electro-suspensions of Metals in a State of Infinite Subdivision.

Paris, April 21, 1908.

Mr. Editor: Albert Robin, professor of clinical therapeutics at the Faculty here, has been following up a new line of research with great tenacity, since 1901, undiscouraged by sarcasm and incredulity; and he has finally published a small volume on the subject (" Les Ferments Métalliques," Rueff, editor; Paris, 1907, pp. 252), embodying his ideas and theories and setting forth the clinical results he has obtained. Whether one always agrees with Robin or not, it is impossible not to pay tribute of admiration to one of the very few men who has not let himself be swept away by the universal current of therapeutic nihilism that characterizes French medicine, but who at least *tries* to turn materia medica to the profit of his patients. There is more truth than most of his French confrères would probably allow in a remark I saw somewhere in Robin's writings: " *Le scepticisme thérapeutique élevé à la hauteur d'un dogme, ne va jamais sans une réelle ignorance!*" Furthermore, it is always a pleasure to read anything Robin produces. For facility, precision and clearness I consider him easily the first medical writer in France; and when these qualities are applied to a subject of striking originality, the literary pabulum of a book from his pen is not to be despised.

When two electrodes of a given metal, gold, silver, platinum or palladium, are plunged into a small quantity of pure H_2O and an electric arc is made to pass between them a certain amount of the electrodes is pulverized at each discharge and a species of solution of the metal employed is obtained The current must be relatively weak and each spark gives rise to a faint metallic cloud, which quickly disappears in the liquid. Gold produces a violet solution, silver brown, and platinum and palladium more or less black. The liquid cannot be charged with the metal beyond a certain degree, which is recognized by the fact that the cloud no longer disappears, the grains held in suspension become centers of attraction, the solution breaks up and the metal precipitates. When such a solution has been properly prepared it should be filtered through thin paper.

These solutions destined for therapeutic purposes should be used at an early date and without any further manipulation of any sort; which means, then, that everything employed during their manufacture must be aseptic beforehand. Attempts have been made to sterilize them, to render them isotonic by the addition of NaCl, and to give them stability by combining a certain proportion of an organic substance with the solution; but it has been found that to treat such a liquid by heat destroys its properties just as though it were a visible ferment, while the addition of NaCl, gum, gelatin or glycerin reduces its bio-chemical qualities very greatly. This fact should be carefully remembered, as most of the solutions prepared by manufacturing chemists and put on the market are modified in the sense of having been made *isotonic*, *stable* and *sterile*.

Solutions prepared according to Robin's ideas and known as pure Bredig solutions, from the name of the author who first called attention to them, contain about 3 cgm. of metal to the liter. Examined under an ordinary microscope no particles can be detected; but with the ultra-microscope, that is to say, where the light consists in rays diffused by a total reflection prism, which throws on the drop of liquid under examination a beam coming from some powerful source such as a small model arc-lamp, it is possible to make out against a black background a quantity of luminous specks, barely perceptible, which are light diffused by the infinitesimal metallic particles suspended in the liquid, measuring possibly .01 of a micron, the dimension of molecules. The appearance of a Bredig solution thus examined is not unlike the sky on a clear and moonless night; and furthermore, each particle is observed to possess a species of Brownian motion.

When such a solution is followed day by day under the ultra-microscope, it is seen that the particles gradually increase in size, probably by agglutination, become heavy and fall to the bottom when they have reached a certain volume, where they form a deposit. This process is accompained by gradual loss of the Brownian motion. These phenomena are correlative with the vitality and therapeutic activity of the " metallic ferment," as Robin terms solutions thus prepared; when the Brownian motion has disappeared, the number of particles has greatly decreased, their volume is larger and their diastasic effect no longer takes place.

An important fact in this connection is that solutions prepared with these different metals all seem to act about alike, whichever be used as a base.

It is with these suspensions of metals reduced to infinitesimal particles that Robin has been experimenting for six years now, and from which he claims to get such remarkable and constant results in certain disorders. The question does not seem to have attracted attention in America and for this reason I have thought it might be of interest to go into the subject in some detail. They are used subcutaneously once a day in doses of ten cubic centimeters and are painless. Robin has found in the course of minute experiments, which are given in full in his book, but which could hardly be reproduced in this letter, that the effect of such an injection is similar to that of organic soluble ferments, whence the name he has devised of " metallic ferments "; and, in passing, it may be remarked that the efficacy of such solutions may throw some light on the utility and action of the minute quantities of the different metals found in the body and in the waters of certain mineral spas whose action has never yet been satisfactorily explained. In a certain sense we seem, in the use of Bredig solutions, to be in reality approaching something not unlike to homeopathy.

The results that can be shown chemically to follow the use of these injections are stimulation of the phenomena of oxido-reducing hydration of albuminoid matter correlative with the greater number of vital processes, without the intervention of the oxygen which the red corpuscles take from the air inspired. They stimulate the reactions of organic defence against intoxication and its products, by transforming the latter and making them soluble and harmless. They are, then, one of the means of assisting the *vis medicatrix naturae*, possibly even of producing this effort on the part of curative nature. This is shown by the increase in uric acid and urea that always occurs, by the formation of a large amount of indoxyl products and by the possible though always temporary appearance of albumin in the urine.

The results obtained from injections of metallic ferments being these, Robin was at once struck by the fact that they correspond almost exactly to the chemical phenomena of what is known as the *crisis* in an attack of pneumonia, and he then at once asked himself whether it might not be possible, by means of their use to hasten in pneumonia the occurrence of the crisis, or even to turn the balance in favor of a salutary solution in cases that appeared to be going unfavorably. It is in pneumonia, then, that his earlier attempts were made, where his statistics are the most important and his results the most striking and favorable.

Incidentally Robin calls attention to two interesting points whereby it is possible, during the course of an attack of pneumonia, to form an idea as to the probable outcome of the case.

A. — When during an attack and whatever may be the apparent seriousness of the case, the addition of nitric acid to the patient's urine gives rise to the production of a clot of nitrate of urea, in the majority of cases defervescence is imminent and will take place in the next one or two days.

B. — Robin has given the name of " coefficient of nitrogenous utilization " to the ratio between the nitrogen of a patient's urea and the total amount of nitrogen eliminated during a fixed period, this ratio, or coefficient, is normally about 85%. Now he has found that in unfavorable cases it descends to between 68% and 73%. In cases destined to recover, figures such as 72% to 75% are rare, the usual limits being 77% to 82%.

Robin's figures for pneumonia treated by his method are 95 cases, with 82 recoveries and 13 deaths, 13.68%, which he claims to be the best statistics ever published, in consideration of the circumstances — hospital patients, frequently alcoholic and treated at an advanced stage of the disease; of his 95 cases 47 were very severe forms. If by the side of these figures we place the general statistics of the Paris hospitals for pneumonia during the more or less corresponding period between 1899 and 1903, 14,624 cases, with 4,348 deaths, 29.6%, we find a diminution of more than 50%.

In view of the great nosological importance of this disease in America, as well as of its rapidly increasing frequency, it may not be out of place to give briefly an outline of Robin's treatment of uncomplicated cases.

When the patient was in perfect health when seized with the attack and is of robust constitution, if the face is congested, the pulse full and strong, the temperature high and the dyspnea marked, venesection is performed, 300 to 400 gm. with a view to facilitating respiratory interchange.

Liquid diet, particularly milk, of which between one and two liters should be given per twenty-four hours.

Stimulants, 100 gm. of rum per twenty-four hours, or its equivalent in brandy, whisky or champagne.

Six grains of quinine morning and evening, during the entire acute phase.

The day after venesection (or the first day, if venesection is done) four calomel powders, 0.10 each, at intervals of one hour.

The day after the calomel, a hypodermic injection of a metallic ferment, 10 ccm. (gold, silver, platinum and palladium), to be renewed each twenty-four hours and placed near the focus of the disease, leaving space for the blister to be referred to below. In very serious cases 5 ccm. of the ferment can be given intravenously.

The evening of each day following that on which an injection is made, 6 gm. of pyramidon, ten minutes before the dose of quinine.

Finally, twenty-four hours after the first or second injection, but in any event not before the fourth day of the disease, a blister of 10×10 cm. with camphor, applied for eight hours to the seat of the disorder, to be followed by an ordinary poultice.

This, then, was the disease to which Robin first applied the method and in which he has the longest experience. But he has extended the treatment in a variety of directions, bronchopneumonia, acute inflammatory rheumatism, acute non-tubercular meningitis, various forms of angina, scarlatina, etc., with perhaps specially encouraging results in acute rheumatism and in its cardiac and pleural complications.

But you may remember that, on a former occasion, I spoke of the extraordinary vogue that the hypodermic method of administering remedies has taken in France during the last few years; so that it is not surprising that Robin's new idea was taken up by other physicians, though perhaps from a different point of view. Robin, who is an accomplished chemist, has always made the detailed examination of urine play a large part in his diagnosis and treatment and to the various methods of therapeusis he has introduced, has always based them on such analyses, and until you have seen one of the analyses he has made for his patients by the chemists who work under his directions, you will never realize the minute elaboration to which an analysis can be pushed! In this way he generally knows what he is doing and applies his methods rationally; whereas, as was seen during the glycerophosphate craze, the majority of practitioners simply take up his injections without the analyses, apply them to everybody without discrimination and are then surprised at the uncertain results obtained, very much like making signals without a code to go by.

The profession at large has employed the metallic ferments rather as antiseptic preparations and has used the sliver suspension to a considerable extent in all sorts of infectious disorders, the solution being referred to in literature either as "electrargol," or as "electric small-grained colloid metals." They have even been used surgically, the silver ferment being again the favorite on account of the well known powerful antiseptic action of the salt of that metal.

They have thus been used in grippe, pneumonia, rheumatism, puerperal fever, tuberculosis, gonorrhea, erysipelas, angina, etc., to mention only the medical side of the question. The results obtained have been most satisfactory to the authors who have written on the subject; and yet this camp claims that the preparations should be sterilized, rendered stable and made isotonic. What Robin thinks on this point has been mentioned above, which is but one additional instance of how difficult, in fact impossible, it is to get at the truth in any matter of therapeutics! Robin, as was seen, states categorically that to sterilize a Bredig solution is to deprive it of all efficacy whatsoever.

Such solutions, or suspensions, of mercurial ferments have also been tried in syphilis. They should be intramuscular and are quite painless, different in this from the ordinary injections of preparations of mercury, which are frequently violently painful. The suspension contains 0.50 cgm. of Hg per liter and is given in doses of 3 ccm. at a time.

From a surgical point of view, probably the most interesting application yet published has been the treatment of mammary abscess by the silver ferment. The authors claim that such abscesses can be cured *without scars* by being emptied through a big trocar, which is then left in place and the cavity washed out through it with electrargol, a small amount being allowed to remain in the pocket after each dressing. This will certainly be a gratification to many women, who will thus be left with a tiny, imperceptible mark, in place of the retracted hole so common in such cases.

Another interesting surgical application is the use of these preparations in vesical disorders, acute and chronic. Every one knows the frequency of cystitis in women and the unsatisfactory results of treatments other than local instillations of salts of silver. These, however, are very painful. If now the metallic ferments prove to cause little or no suffering, a great step in advance will unquestionably have been made in this important detail of general practice.

I trust that I have not been too prolix on this subject. But as it is new and most certainly filled with promise, it seemed to me advisable to bring it strongly before your notice. As it is I have only skimmed over Robin's pages with the lightest possible touch and shall close by recommending you to at least read his most interesting and instructive work.

"Spectator."

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CLINICAL WEEK AT BOSTON UNIVERSITY.

80 East Concord Street,
Boston, May 12, 1908.

Mr. Editor: In response to many requests from physicians throughout New England, the Faculty of the Medical School of Boston University has decided to arrange for a short course of general clinical instruction. This course will be held during "Commencement Week," June 1 to 6, 1908. It will begin daily at 9 a.m. and continue till 4 p.m., the entire time being fully occupied by clinics, clinical lectures, lectures and demonstrations.

More than thirty different professors and lecturers will participate, each dealing with the particular subject in his own line that he considers of most general value.

General medicine, surgery, gynecology and the various specialties will all be represented, as well as other miscellaneous subjects. The course will be so arranged that each attendant can be present at every exercise and can thus obtain a survey of a large field in a comparatively short time.

Sessions will be held at the Medical School buildings, at the Out-Patient Department of the Hospital, and in the amphitheater and the clinical lecture-room of the main building of the hospital.

Free use will be made of the large amount of clinical material available in these closely connected institutions, as well as that from other sources.

The course will be open without fee to graduates of any reputable medical college. The number admitted will be limited, tickets being issued in the order of application. Further information and tickets admitting to all sessions may be obtained from the registrar.

Very truly yours,
Frank C. Richardson, M.D.

RECORD OF MORTALITY

For the Week ending Saturday, May 9, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	1
Chicago	531	151	Waltham	6	1
Philadelphia	—	—	Pittsfield	9	0
St. Louis	—	—	Gloucester	4	2
Baltimore	181	49	Brookline	1	—
Cleveland	—	—	North Adams	7	—
Buffalo	—	—	Chicopee	4	2
Pittsburg	—	—	Northampton	8	1
Cincinnati	—	—	Medford	5	3
Milwaukee	—	—	Beverly	3	1
Washington	—	—	Leominster	5	3
Providence	71	29	Hyde Park	2	0
Boston	232	68	Melrose	2	2
Worcester	45	9	Newburyport	—	—
Fall River	40	18	Woburn	7	2
Cambridge	23	8	Westfield	4	2
Lowell	36	18	Marlboro	2	0
Lynn	22	3	Revere	4	2
New Bedford	22	9	Attleboro	2	0
Springfield	20	3	Peabody	—	—
Lawrence	28	13	Adams	7	4
Somerville	16	3	Clinton	3	1
Brockton	13	4	Gardner	4	2
Holyoke	20	9	Milford	2	—
Malden	9	4	Watertown	4	0
Chelsea	10	3	Plymouth	—	—
Newton	10	1	Weymouth	3	0
Salem	22	11	Framingham	2	1
Haverhill	14	1	Southbridge	—	—
Fitchburg	12	5	Wakefield	—	—
Everett	8	2	Webster	—	—
Taunton	12	3	Arlington	1	1

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 16, 1908.

J. B. Dennis, surgeon. Detached from the "South Dakota" and ordered to the "Virginia."

C. H. T. Lowndes, surgeon. Detached from the "Virginia" and ordered to the "South Dakota."

SOCIETY NOTICES.

Alumni Reunions at Chicago.—There will be an informal dinner at the Great Northern Hotel, Chicago, on Tuesday, June 2, 1908, at 6 p. m. Tuesday night has been reserved by the American Medical Association as Alumni Reunion night. It is requested that all Harvard men who expect to be present at the Fifty-ninth Annual Session of the American Medical Association shall notify the undersigned at once. Do it now! (Each cover two dollars.) The general alumni headquarters will be in the Auditorium Hotel, where a register of Harvard men will be placed and where any information and assistance possible will be furnished.

Dr. Henry F. Lewis,
42 Madison St., Room 1404,
Chicago.

Essex North District Medical Society. — At the annual meeting, May 6, 1908, it was voted as follows: That, 1. The Essex North District Branch of the Massachusetts Medical Society recommends to its Fellows that when called to make an examination, with other physicians, of a case where testimony in court is likely to follow they make this examination upon the basis of a professional consultation. 2. That the fact of this vote be communicated to the other district societies in Massachusetts. 3. That a copy of same be published in the Boston Medical and Surgical Journal, and the *Journal of the American Medical Association.*

C. E. Durant, *President.*
J. Forrest Burnham, *Secretary.*
Lawrence, Mass.

Francis Wayland Anthony,
Randolph Campbell Hurd,
George W. Dow,
Committee on Expert Testimony.

Society for the Study of Inebriety, Alcohol and Other Narcotics.—The thirty-eighth annual meeting of the Society for the Study of Inebriety, Alcohol and Other Narcotics will be held in the parlors of the Auditorium Hotel, Chicago, Ill., June 2, 3, and 4. The sessions will be held in the forenoon only from 9 to 12. The special work of this society is the scientific study of the various problems relating to alcohol and inebriety. This society is composed of members of the American Medical Association and the meeting is arranged to occur at the same time and place. Over twenty papers are to be read and discussed at this meeting. The recent unusual prominence of the alcoholic problem will make this meeting of intense interest. A temperance lunch will be served at 1 o'clock Wednesday, June 3, at the Auditorium Hotel, which will be the occasion for an informal gathering and discussion by the leading men of the profession. This is the second lunch or voluntary meeting. The one at Atlantic City last year attracted unusual attention, and is to be repeated this year.

T. D. Crothers, M.D. *Secretary,*
Hartford, Conn.

RECENT DEATH.

Dr. Edward Hadley Tweedy, of Buffalo, N. Y., died on May 13, in the forty-fourth year of his age. He was graduated from the medical department of the University of Buffalo in 1888, and at the time of his death was clinical assistant at the Buffalo Eye and Ear Infirmary.

BOOKS AND PAMPHLETS RECEIVED.

Report of the Commission of 1906 to Investigate the Condition of the Blind in the State of New York. Albany. 1907.

Clinical Treatises on the Symptomatology and Diagnosis of Disorders of Respiration and Circulation. By Prof. Edmund von Neusser, M.D. Authorized English Translation. By Andrew MacFarlane, M.D. Part II. New York: E. B. Treat & Co. 1908.

The Recognition and Management of Acute Mastoiditis by the General Practitioner. By Laertus Connor, A.B., M.D. Reprint.

The International Medical Annual. A Year-Book of Treatment and Practitioner's Index. Twenty-sixth year. New York: E. B. Treat & Co. 1908.

Concerning Lafcadio Hearn. By George M. Gould, M.D. With a bibliography by Laura Stedman. Philadelphia: George W. Jacobs & Co. 1908.

Transactions of the Obstetrical Society of London. Vol. XLIX. For the year 1907. Part III, for June and July. London. 1907.

The Practical Medicine Series. Under the general editorial charge of Gustavus P. Head, M.D. Vols. I. and II. Series 1908. Illustrated. Chicago: The Year-Book Publishers. 1908.

U. S. Department of Agriculture, Forest Service. Circular 140. What Forestry has Done. By Treadwell Cleveland, Jr.

Hygienic Laboratory. Bulletin No. 143. The Standardization of Tetanus Antitoxin. By M. J. Rosenau and John F. Anderson. Washington. 1908.

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Original Articles.

THE HOSPITAL IN RELATION TO THE COMMUNITY.*

BY ABNER POST, M.D., BOSTON.

Many events during the last few years have revealed a feeling in the community that a hospital does its whole duty when it shelters, feeds and administers medicine to the individual patient. To show that the scope of hospital work at the present day is very much wider, that the community at large is concerned directly in its administration, is the object of this hour's talk.

The relation of the hospital to the community has been treated for the medical profession by wiser pens than mine, but I do not know that any one has addressed a lay audience on exactly this subject. What I have to say to-day is intended chiefly for the non-medical portion of my hearers.

Permit me to say that for over thirty years I have been connected with hospitals and dispensaries and may, unintentionally, be guilty of referring too often to matters of my own experience.

For our purpose the name "hospital" shall be considered to include only those institutions which are supported wholly or in part by public taxation, private endowment or subscriptions. Many of the institutions receive a limited number of patients who pay for their care but they are not the patients who give the character to the place, and are usually received as a matter of necessity rather than choice, though Johns Hopkins stipulated in his letter to his trustees that the hospital for which he provided should furnish care for the rich as well as for the poor.

The private hospitals, conducted primarily as a source of profit rather than from motives of charity, are not included, though the highest of motives are displayed in them. Neither are the hospitals for the insane, though much that follows might apply to them.

The number of charitable hospitals in Massachusetts in 1904 was 93. Of these, 13 were maintained by public funds, 68 by private means, endowments or subscriptions, and 12 are ranked as ecclesiastical.

The number of patients in hospitals in Massachusetts on Dec. 31, 1904, was 4,450. The whole number admitted to hospitals during the year 1904 was 73,485. The entire cost of maintenance for 1904 was $2,702,646.

The number of nurses employed was 1,647.

The number of resident medical officers was 206.

The number of visiting medical officers was 1,154.

The number of patients per 100,000 admitted in 1904 was 2,420, or one in 11¼ inhabitants.

Hospitals are recognized by all as a refuge for the sick, but how much more they are is not so universally appreciated. They relieve the poor from the care of their relatives at times when the presence in the house of a sick person would paralyze the whole household. Sometimes, it is to be feared, the hospital relieves the family of responsibilities which it ought not to delegate and tends to to pauperize rather than to cultivate the habit of self-help.

Hospitals shield the community from the spread of contagious diseases, —smallpox, scarlet fever, diphtheria, leprosy; and later hospitals for the care of tuberculous patients are already showing their value not only in curing individual patients but in controlling the spread of the disease and in educating the public in regard to it.

There is a long chapter yet to be written on the economics of hospitals. They do something towards relieving the poor, and even the moderately well-to-do, of a part of the burden which they ought to bear; but they tempt certain individuals to deceit as regards their right to relief; as at present conducted, they deprive young physicians of the support which ought to come to them from patients able to pay small fees.

They enable large employers of labor to pay smaller wages because the community, through its hospitals, takes the burden of the working man's illness.

But such problems are too intricate to be solved at present. Whatever the objections to hospitals, hospitals we must have. It may be necessary to take care that their accommodations do not become excessive, but we cannot do entirely without them.

It is estimated by a recent writer that one hospital bed should be provided for every one hundred inhabitants in a community.

The care of the sick is the first and obvious purpose of a hospital; the protection of the community ranks second; but a hospital is further an institution of learning. The recent hospitals for tuberculosis illustrate the many functions which a hospital may perform. They care for and cure many cases of consumption. By removing tuberculous patients from the community, they protect the community from danger of infection and, although they have existed in our own state but comparatively few years, they have already materially reduced the amount of tuberculosis. But to my mind the most noteworthy achievement of these hospitals lies in the education they have diffused. The patients who spend any considerable time with them return home to disseminate the knowledge they have gained of the disease and to inculcate the hygienic habits by which the disease is to be combated. The hospital influence, through its graduates, is one of the most potent factors in the present crusade. It seems almost as if that scourge of New England, tuberculosis, would prove a blessing in the end by compelling the community to recognize the needs of the physical man.

Hospitals serve for the education of nurses and medical students and for the increase of knowledge of the physicians who administer them, and still further for the accumulation of facts which serve to increase the sum of medical learning — and whatever increases our knowledge of disease is for the benefit of the community.

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* Delivered at the Harvard Medical School, Sunday afternoon, March 15, 1908, as one of the series of popular lectures.

Let us consider first the value of such an educational institution to the community, and later inquire how such an educational institution really fulfills the primary duty of a hospital.

The training of nurses has become an important function of the hospital and the influence exerted by the hospital through its graduate nurses is constantly increasing. Any one who thinks that the influence of the trained nurse is limited to the individual patient for whom she cares has a very inadequate appreciation of her calling. Many an invalid who has never seen a trained nurse is cared for the better because of the general improvement in the care of the sick which nurses have taught.

Her work among the poor is growing greater every year and the influence of the hospital is thus extended over a wider area. If the tendency to avoid the proper responsibility for the sick by their own relatives is somewhat fostered by hospitals, the district nurse (the product of the hospital) is doing much by her teaching to counteract that tendency. She goes into the houses of the poor and by precept, and especially by example, teaches the home-treatment of the sick and with it self-reliance and self-help.

The school nurse is a recent addition to the civilizing products of the hospital. Trained in the hospital to a familiarity with disease, she becomes a social worker among our school children for the benefit of us all. She recognizes various diseases which the teacher could not know, accompanies the children to the nearest hospital or the dispensary, if they are dispensary cases, and then to their homes and sees that the case is understood and cared for there. In the Americanization of our foreign-born children this has grown to be an extremely efficient method, and the hospital where she was educated may properly claim a share in the credit which the school nurse so richly deserves.

In the instruction of medical students, hospitals are indispensable. They are the laboratories where disease is demonstrated. Without them the teaching of medicine must go back to the earlier methods of this country, when many physicians had a medical student, perhaps several, who rode with them, prepared their drugs and possibly took care of their horses and absorbed what medical knowledge they could. Such an education under a good instructor had certain advantages; under a poor instructor, it was bad. Under the best circumstances it was crude and limited and greatly inferior to present methods.

The connection between hospital and medical school is a very close one — hospitals have given birth to medical schools and medical schools have instituted hospitals. The existence of a school without a hospital at the present day is like the study of chemistry without a laboratory. The improvement in medical education in this country is closely allied with hospital growth.

The hospital is also especially a place of post-graduate instruction for the practicing physician, not only in professional methods, but in social ethics. He there comes closer in touch with brother physicians, with mutual benefit. The jealousies among physicians of a town where a hospital is established become less marked or even vanish because of their common interest and association in the hospital work. Different factions among citizens find mutual interest in charitable work, and in the end the help given to the poor and needy blesses those who give as much as those who take.

The graduates of any hospital love to revisit their old haunts and gain new inspiration from a sight of the hospital wards. Years after they have left the hospital they can recall the particulars of many a patient's illness and even tell the exact location of the bed where he lay. There are to-day associations of the alumni House Officers of the Massachusetts General and the Boston City hospitals, which hold annual reunions, and one part of their program is a visit to their old hospital, where they seek for new ideas and often bring them.

Demonstrations are made of unusual cases and of new methods, and probably no alumnus of a hospital returns to his home after such a visit without carrying with him some increment to his knowledge and an inspiration to good work.

"The moment that a hospital is established (in one of our towns or villages), with its medical and surgical staff, that moment a new era has dawned upon the community in which the hospital is established. More careful methods are introduced, greater cleanliness is observed, hygienic conditions are bettered, laboratory methods are inevitably introduced in time. Even if the old-timers who graduated years before our modern laboratory methods were adopted do not care for them or cannot use them, the young fellows who come fresh from our medical schools and serve as residents, and even the nurses graduated from our training schools, finally shame the older ones into better ways and greater exactness, not only in the hospital, but in their private work as well." (Keen.)

For the purposes of accurate diagnosis and treatment by modern methods, a hospital must nowadays be supplied with a pathological laboratory. The problems of disease presented by living patients are the most difficult in the whole range of natural science, and the scientific study of many of these problems can be conducted only by trained investigators. These investigators bear a certain resemblance to the chemists and other scientists who are retained by many of our great manufactories. These investigators in medicine may be grouped under the name of pathologists.

The function of the pathologist is not fully understood by the general public. His function is much broader than the mere examination of the dead body or morbid products. It is through his work or by his help that the greatest advances are made at the present time.

The object of an autopsy does not seem to be commonly recognized.

In the first place, an autopsy or post-mortem examination is entirely different from a dissection.

The latter means the examination of a dead body to ascertain its construction, the normal appearance and relations of the body in health; an autopsy is the study of the dead body as it departs from the healthy standard. A person who is unfamiliar with dissection cannot make an intelligent autopsy.

The law provides for dissections, but not for autopsies, except at the hands of the medical examiner, who may make such post-mortem examinations as he deems necessary to determine the cause of death when there is doubt or suspicion. But the doctor who may have labored day after day and night after night to ward off death may not seek the reason of his failure, even in our hospitals, except by special permission of the friends.

Autopsies are just as necessary as dissections. Education in regard to disease, without autopsies, is impossible. It may be that at some time hospitals will be given the right to post-mortem examinations under certain restrictions. The influence on the practice of the physician of the autopsy needs but a mention to be appreciated. The physician listens, and feels, and considers pulse and temperature and blood-count and the chemistry of the excretions and arrives at what conclusions he may and asks his medical colleagues to verify his work and does all this in the presence of medical students, who are quick to discover errors in observation or deduction. The observations and perhaps the conclusions drawn therefrom are written in the case book at the time of observation, together with the treatment and the apparent result. The patient dies and an autopsy follows. When properly observed in a hospital, where the whole time of the staff is given to the hospital work, the medical staff gather with the pathologist about the body, accompanied by the students who have known the patient during life. The medical clerk reads the protocol, or record of observations made during life, and the examination proceeds. What more searching critic could a conscientious teacher wish? That dead body, but a short time ago a fellow being asking for sympathy and aid, is transformed into a relentless judge. Step by step the pathologist lays bare the details of disease hitherto hidden and dictates to his clerk the account which must forever stand by the side of that previous record made during life.

It may be said that the need is not alone for single autopsies, but for a series of them, that comparison and tabulation may bring out truths not evident from a single examination.

Autopsies are carefully recorded and the records are available for future comparisons. Occasionally there arises a man who is able to utilize them. These records have been of great value in our own community. The records of autopsies at the Massachusetts General Hospital, carefully made and faithfully recording lesions of which the importance was not understood at the time of the record, when studied in these latter years, have served to establish the existence of the disease of appendicitis and to identify the characteristic symptoms by which its presence may be known. Had there been no hospitals and hospital records our knowledge of this subject must have been postponed for years.

Autopsies on patients dying with diphtheria have also established the character of the complications which serve to render treatment ineffectual. A person whose active usefulness in the world is closed by death may teach from his dead body lessons which shall live after him for all time. An autopsy is not the gratification of a morbid curiosity on the part of the physician, but it is rather the last service that a mortal man can render to his fellow men.

Enough has been said, I believe, to show that hospitals at present conducted are, from the educational point of view, distinctly of advantage to the community. To quote once more from Dr. Keen: "I venture to say that no town of 20,000 people can afford to be without its hospital for the sake of its own citizens, utterly irrespective of the good it does to the poor who are treated in its wards. It must be established in the interest of the *well-to-do citizens* and their families, so that they may secure better equipped doctors for themselves as well as for the patients in their hospitals. Self-interest, therefore, will compel every community to establish its hospital, even if charitable motives had no influence."

But the primary object of the general hospitals in our community is the care of the sick and injured. In what way does all this teaching of nurses and of medical students tend to react upon the individual patient? If the welfare of the patient is lost sight of, the hospital fails of its primary object.

In order to properly answer such a question, let us consider the details of hospital management and go again over the ground, regarding it from the standpoint of the patient.

Hospitals are first under the control of a board of governors or trustees. Among these boards will be found some of our most reliable citizens. It is an honorable office. They serve without pay, and graft or unworthy action is practically unknown. Such trustees give without stint their best mercantile, financial or legal knowledge, which in the market would cost vast sums.

It is very interesting to notice that in the search for truth by the Finance Committee, who have so faithfully searched the different departments of our city government, our City Hospital has shown an entire absence of graft or error in its accounts.

The hospital is directly administered by a superintendent, who is appointed by and is directly responsible to the trustees. The superintendents of its larger hospitals are usually physicians with occasionally a sister from one of the nursing sisterhoods, and in the smaller hospitals the superintendent is a nurse, a graduate of one of the larger city institutions. There is a national Association of Hospital Superintendents, which meets once a year for the promotion of this branch of medicine.

The physicians and surgeons of the general hospitals are unpaid so far as money goes. Their work is freely given. They are appointed by the Board of Managers, usually on the nomination of the Medical Board, so that the appointees have the approval of their medical brethren as well as of the non-professional governors. It may well be that the earliest hospital physicians were actuated by the purest charity, but it was soon evident that the experience of a hospital service was a liberal education and the places became desirable to the most ambitious and the most eager for learning. A hospital staff is sure to comprise men who love their profession for its own sake — men whom their medical brethren delight to honor. They are of necessity high-minded men, honest in their dealings. The very arrangement by which their deeds are constantly subject to publicity makes them so.

But as the profession has grown more exacting and hospitals have grown larger, relations have changed somewhat. The number of patients who need to enter a hospital for various reasons and are able to pay has grown so great that it has led to the growth of private hospitals, as is mentioned in another place.

Certain portions of the work, like that of the pathologist, are so exacting that they are now paid.

A hospital which is constantly receiving accidents, like the relief station in Haymarket Square, must have a proper corps of surgeons always in the building, and as their time is wholly given to their hospital work they must be paid.

Our municipal hospitals are no longer simply charitable institutions. They are a necessary part of the city work and it may be that the city will some time prefer to pay and retain the full services of its corps of physicians, though I, for one, hope that such a practice may be long delayed.

These physicians and surgeons visit the wards daily for a certain period of months each year, and are known as visiting physicians and surgeons. At least, such limited service has been the custom until within the last few years and the custom still prevails to a large extent. But a better arrangement is rapidly coming into vogue in this country, as it has been the custom in other countries for a long time. A single physician has the charge of certain wards for the whole year, thus constituting what is known as a continuous service, and other members of the staff hold a subordinate position as assistants, relieving him of much of the work and acting in his absence — thus securing continuity and consistency in the character of the work.

Attached to each service are a small number of young men, recent graduates, who live in the hospital, and who are known as house officers, or as house physicians and house surgeons. They are chosen usually by examination and hold their positions for a limited time, one or two years, exercising increasing responsibility as they grow older in service. The strife for these positions is very keen. Living in the hospital, they come in very close connection with the patients. Their care and faithfulness contribute largely to the comfort of the patient. They comprise the young men most ambitious of excelling in their profession.

Something of their character may be learned from the fact that since the foundation of the Boston City Hospital in 1864, eight young men have died while serving in the hospital, presumably of disease contracted in the line of duty. Within my knowledge one house officer has committed suicide because of a supposed mistake on his part.

In the Memorial Hospital at Worcester, the house officers are young women graduates of medical schools.

To all these must be added the Board of Lady Visitors, so influential in many hospitals in smoothing and perfecting the details of masculine management.

It is impossible that systematic neglect or cruelty could exist under such management, with such publicity.

So far as we have considered the nurses in their relation to the world outside the hospital, there can be no doubt of their value to the community, but there are those who assert that the system of taking untrained women into the work of a hospital is not for the best good of the patients. Exactly what they wish is difficult to understand. Let us look for a moment at the older service supplanted by the training school. It is common to consider Dickens's drunken and irresponsible Sairy Gamp as a type of the hospital nurse. But I can never forget some of the nurses of the Massachusetts General Hospital during my interneship — upright, God-fearing and devoted; somewhat stern, perhaps, as became the distributors of the Lord's mercy, they served for long years and laid down the burden only when years of disease made it necessary. Their defects were those of the years in which they lived and not the result of alcoholic indulgence.

The assistants were ephemeral and not always as efficient as might be desired.

The education of these nurses and assistants was left chiefly to chance and their own resources. It came from their experience in the wards, but the service consisted, necessarily, of a head nurse of experience, with assistants trained under her — and each ward was largely a rule unto itself. The night service was extremely deficient. The women lived at their own homes and came at 8 o'clock every night and, I think, brought their midnight lunch. Some of them approached the Sairy Gamp type very closely.

The introduction of the training school has materially raised the average of intelligence and education among the nurses. The old night nurses are banished. Stability in service is assured by a permanent superintendent and head nurses in each ward. Nurses are first received as probationers for two or three months before they are permanently enrolled in the school. Those who find the work uncongenial or are physically or otherwise unsuited to it drop out during that trial period.

As a rule they are conscientious and devoted. Their sympathy does not always express itself in words, but rather in actions. It is certainly the best method yet devised for the care of the sick in hospitals.

I cannot at this moment recall a single word of a nurse addressed to a patient which I would have unsaid, and one must realize the fact that the Lord's poor comprise many individuals who need rather to be classed as poor devils and who are aggravating in the extreme.

A word must be said of the male attendants. There are to be found among them upright and intelligent men. Sometimes a young man desirous eventually of studying medicine finds employment in a hospital, but the vocation of nursing does not appeal to men as to women, and the supply is not always equal to the demand. Perhaps they are a little less patient than the female nurses. Sometimes insufficient material reduces their numbers and they are overworked with consequent results, but as a rule they are hard-working and faithful. It is not very easy to name an employment which presents more provocations or irritations and I have often wondered at their patience.

The great question of all is the effect upon the patients of the presence in the wards of medical students. Do they interfere with the care and treatment of the patient?

It must not for a moment be imagined that students are turned loose in a hospital ward. They are always under the control of a professor, or his deputy, the house officer, whose first duty it is to cure the patient.

One of the clinical teachers at Johns Hopkins says that students are, if anything, over-cautious in their anxiety to refrain from any possible injurious disturbance of the patients and that they carefully observe any directions which may be given them regarding patients.

In an address on the "Duties and Responsibilities of Trustees," Dr. Keen says, in speaking of the influence of clinical teaching in the hospital:

"Moreover, trustees may overlook one important advantage of a teaching hospital. Who will be least slovenly and careless in his duties, — he who prescribes in the solitude of the sick chamber and operates with two or three assistants only, or he whose every movement is eagerly watched by hundreds of eyes alert to detect every false step, the omission of an important clinical laboratory investigation, . . . the failure to detect any important physical sign or symptom? Who will be most certain to keep up with the progress of medical science, — he who works alone with no one to discover his ignorance, or he who is surrounded by a lot of bright young fellows who have read the last *Lancet* or the newest *Annals of Surgery*, and can trip him up if he is not abreast of the times? I always feel at the Jefferson Hospital as if I were on the run with a pack of lively dogs at my heels. I cannot afford to have the youngest familiar with operations, means of investigation or newer methods of treatment of which I am ignorant. I must perforce study, read, catalogue and remember, or give place to others who will. Students are the best whip and spur I know."

There is no teacher who will not subscribe to these words of Dr. Keen.

So far, I have spoken only of the duties of hospitals towards the community and patients. There is something to be said on the duty of the community, and especially of patients, towards the hospital. Our hospitals are crowded, especially in their out-patient work, beyond their capacity for the best work. The proper method of determining who is and who is not a proper patient is a very delicate one, to which a great deal of thought has been given in this country and in England. Well-to-do persons who frequent hospitals for the sake of free medical service, do a wrong to their poorer brethren, which, perhaps, they do not appreciate, by absorbing time to which they are not rightfully entitled and of which the supply is limited.

There is also a curious tendency to waste, or destroy drugs and apparatus. The Boston Dispensary used to give away its drugs, but so recklessly were they wasted that the Dispensary was on the verge of bankruptcy and a charge of ten cents was imposed with a reversal of the financial condition. Apparatus is no longer given unless the receiver has some financial stake in it, and even crutches are temporarily loaned on a deposit and no longer in the holy name of charity alone.

The abuse of charity by the careless puts a burden upon all.

A word must be said of the conduct of patients themselves in the presence of medical students. It is the custom of most teachers to tell their patients when they want to utilize them for purposes of instruction and ask their co-operation. It is very rare that one refuses. In fact it may be said that very many are proud of the distinction bestowed upon them; but there is a class who rejoice to feel that their suffering is not in vain when it can be utilized in teaching those who shall care for others who in the future may have afflictions like their own, and perhaps in teaching those who shall themselves be teachers in the future, so that their suffering shall be for the good of mankind for generations to come.

Such patient and helpful sufferers draw out all the best in doctors and nurses about them and they find the hospital a blessed place, for it is very true that the hospital is to the patient very largely what he or she makes it.

The earliest bedside teaching which was efficient seems to have been that of Boerhaave, about the close of the sixteenth century. He had a service of twelve beds at Leyden and his teaching was so valuable that he attracted students from all over Europe, and there can be little doubt that we still profit from that teaching. I cannot help thinking that there may have been individuals in that clinic who realized to the full that their part of the world's work was to yield their infirmities for the instruction of the many.

The hospitals of fifty or even twenty-five years ago would not be tolerated at the present time.

They represent the scientific and the humanitarian spirit of the age and of the community. A community which is given to graft and selfishness and pure utilitarianism must expect to see its hospitals show the same characteristics. A hospital which is refused autopsies and scientific instruments cannot give continued good service. It must fall behind the standard of more enlightened communities.

But if our hospitals are not perfect they are, from the standpoint of the patient, the best in the world. Not that every hospital on this side of the broad Atlantic is better than every one of the same class in the old world, but that the sympathy, the feeling for the unfortunate, the spirit of self-sacrifice on the part of those who administer them is nowhere surpassed.

A perfect hospital cannot exist in this mortal world. It would require omniscience on the part of those who plan and erect them to foresee the changes that must come; omniscience on the part of those who administer them, and also forbearance and willingness to bear one another's burdens on the part of patients.

A CASE OF INTRA-VESICAL CYST OF THE URETER: DILATATION OF URETER WITH VERY SLIGHT DILATATION OF THE RENAL PELVIS AND CONTAINING TWENTY-EIGHT MOVABLE CALCULI; BACTERIURIA; ALKALINURIA; PHOSPHATURIA.*

BY E. A. CODMAN, M.D., BOSTON,
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CYSTIC dilatation of the ureter has been occasionally reported, but the condition is a rare one. The following quotation is from Von Bergman's Surgery, vol. v, p. 227:

"In some cases, both in men and in women, an extra ureter, or a single ureter, may pass through the muscular wall of the bladder with a normal or dilated lumen and end in the mucous membrane either blindly or with a very fine opening. This may be due to epithelial adhesions. The portion of the ureter situated in the bladder wall often undergoes cystic dilatation under such circumstances. Such a cyst may be the size of a nut or very much larger. It may press upon the normal opening of the normal ureter of the same side and obstruct it, or, if it is large enough, it can also obstruct that of the opposite side. In this manner various degrees of unilateral or bilateral uronephrosis may result, as well as interference with the proper emptying of the bladder. This may lead to the development of calculi, cystitis, pyelitis, pyelonephritis, and death from uremia.

"If the cyst is large enough to reach the orifice of the urethra, or if it is situated in the urethra, it may greatly interfere with the passage of urine. The patient will then suffer not only from vesical tenesmus and irritation of the bladder, but also from a constant dripping of urine, or interruption of the stream, or complete retention. It is a curious fact that these symptoms have usually reached a higher degree in the female than in the male, and in consequence the females who have been affected have died in infancy or girlhood, while many of the males have lived to adult life."

In the case here reported there was but one opening seen at any time. I have seen one other case in the adult female, which was successfully operated on by Dr. F. B. Harrington.

The case I am about to report is of great interest not only on account of the remarkable pathology and almost completely successful treatment, but also as an illustration of the value of a combination of several modern methods of diagnosis. Although a record case in point of number of ureteral stones there were none of the classical symptoms of stone in the ureter.

The logical development of the diagnosis follows:

Chief symptom — a turbid urine. The microscope showed that this was due to finely divided pus and bacteria. The three-glass test showed that the pus came from the bladder or kidneys. The diagnostic cystoscope showed that there were no stones or other lesion in the bladder itself except a cyst at the site of the left ureteral orifice. The x-ray not only showed that calculi were present in the left ureteral region, but it also showed that at different times these calculi lay in different relative positions. Thus the dilatation of the ureter was determined. The photocystoscope (thanks to Dr. O'Neil) recorded the appearance of the intravesical cyst.

By an operation combining the technic of suprapubic cystotomy and pyelonephrotomy, the stones and cyst were removed. Again, a year after operation the x-ray shows that no new stones have formed and the cystocope shows that the cyst has not returned and that the ureteral opening is practically normal, both in appearance and function. Finally, I have recently with the catheterizing cystoscope catheterized the left ureter and determined that it is now but slightly dilated and also obtained information which shows that in spite of all that we have done there are still new fields to conquer, for we find a very mild degree of bacteriuria, phosphaturia and alkalinuria still present! Although the exhibition of urotropin holds these in check, I am afraid we must resort to the *fin-de-siècle* vaccine treatment to cure the bacteriuria.

I first saw this patient in September, 1904. He was a slight, rather poorly-nourished young man of Hebrew extraction and born in Moscow, Russia. He was twenty-four years old, and had lived in this country since the age of ten. During his childhood he was fairly well, though never rugged. He had scarlet fever in childhood. At one time, at about five years of age, he is said to have passed "worms." Until sixteen years of age he had nocturnal enuresis and even up to the time I saw him there was a tendency to incontinence, so that he had more than ordinary difficulty in controlling a full bladder. In 1900 he began to notice frequency and scalding. In 1902 he had a specific urethritis of very mild degree and was treated for it by injections for about three weeks, when the discharge ceased. Shortly before I saw him sounds were passed a few times on the supposition that his symptoms might be due to stricture. At no time had there been symptoms of acute cystitis, although the pre-existing frequency was perhaps aggravated by the sounds.

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* Read at the meeting of the Suffolk District Medical Society in conjunction with the Boston Medical Library, Feb. 5, 1908.

When first seen by me in September, 1904, he complained of only three things: frequency, scalding and sudden interruptions of the stream, with tenesmus. These symptoms had come on gradually and were first definitely noticed in 1900, although the patient thinks they existed even before this.

All the symptoms were mild in degree and could be tolerated well enough, except for their persistency. His physician considered them partly neurotic. His urine was but slightly turbid and opalescent. I regret that I have no positive record of the analysis, but I remember that the sediment consisted of finely divided pus and bacteria. I supposed the condition to be due to a mild chronic cystitis due to instrumentation, and prescribed urotropin.

The symptoms were somewhat improved by the drug and were tolerated for two years more without material change. He received no other treatment. In July, 1906, he again consulted me for the same symptoms. There was no change in any respect, — the urine was slightly turbid with pus and bacteria; there was slight frequency, scalding and tenesmus. Occasionally the checking of the stream resembled the checking caused by a free stone. There was no blood. There was no albumin. There had been no attacks in the slightest degree resembling ureteral colic or renal stone. There was no sign or symptom pointing to the kidneys, but the three-glass test showed the third as turbid as the first. Rectal examination was negative.

Since the presence of pus in the urine was persistent, it seemed to me that cystoscopy was indicated (and by the way, I consider this a pretty safe rule when the urethra is ruled out by the three-glass test). After cocainizing the urethra I introduced a Kollman cystoscope without difficulty. The bladder mucosa was normal, except for the slightest possible evidence of chronic cystitis.

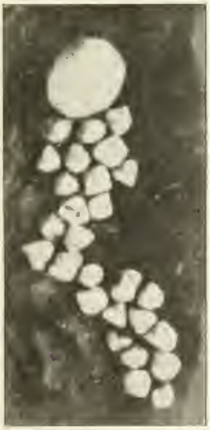

Fig. 1. Photograph of stones after removal. Natural size.

The right ureteral orifice was normal in appearance and function. In the region of the left ureteral orifice was a clearly-defined translucent cyst of remarkable beauty. It was apparently pedunculated and about the size of a cherry. (At the time I could not locate the left ureteral orifice, but at the operation it was seen to functionate on the mesial surface of the cyst.) On the following day some very beautiful x-rays taken by Mr. Dodd showed a cluster of stones on the left side of the pelvis and a few more in the region of the kidney. As may be seen in the illustration (Fig. 1), one of these stones appeared quite large in contrast to the others which were all of nearly equal size. Curiously enough, in one of the pictures the large stone appeared at the bottom of the group and in the other at the top of the group. (Fig. 2.) This fact justified the diagnosis that I was dealing with a greatly dilated ureter, the lower end of which formed a cystic projection into the bladder and which above the vesical wall was large enough to allow the numerous calculi, which it contained to easily change their relative positions.

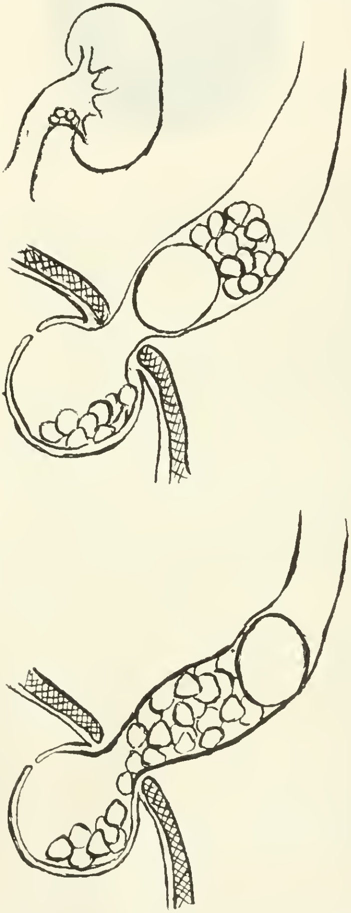

Fig. 2. Diagrams showing the reason why in some radiographs the small stones appeared below the large one and vice versa. Small ones could pass to kidney.

Operation was performed at 38 Commonwealth Avenue, on Aug. 1, 1906. Before the patient was anesthetized, a cystoscope was again introduced and Drs. Chute, Davis and O'Neil were kind enough to see the case with me and agreed in the diagnosis. To Dr. O Neil's skill I am indebted for this cystoscopic photograph of the cyst. (Fig. 3.)

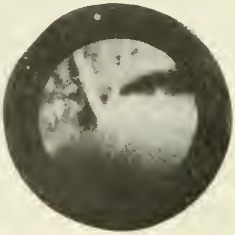

Fig. 3. Cysto-photograph by Dr. O'Neil. Upper portion of cyst occupies lower third of field. Trabeculæ are shown in upper two thirds.

There was some difference of opinion as to the best method of removing the stones. I finally decided on suprapubic cystotomy combined with pyelonephrotomy. Suprapubic cystotomy was done in the usual manner and the intravesical cystic end of the ureter exposed. The ureteral jet was seen to spring from its inner surface. The orifice was minute, but a probe was passed into it without great trouble. The cyst was practically pedunculated, although the pedicle was as large as an ordinary pencil and of no length. The cyst itself apparently consisted simply of normal mucous membrane and was very thin-walled. It was clipped away with scissors to near the bladder wall, where its neck passed through the muscular layers. This neck was about the caliber of a lead pencil, but was readily dilated to admit the little finger. No stones were found in the intravesical portion but I was obliged to reach up with curved gallstone forceps in order to extract the 27 stones shown in the illustration. I have no doubt that this high position of the stones was due to the Trendelenberg position of the patient and that when he was upright the small stones could easily have dropped down into the intravesical portion. The large one, however, could not have got through the muscular wall without assistance. This might account for the fact that one of the x-rays shows the large one above the little ones, while another shows it amongst them. (I have recently operated on a case of gallstones in which I found practically the same condition. Possibly the presence of one large round stone, together with many small faceted ones in such cases, may indicate the existence of a constriction through which the small ones may at times escape the grinding of the big one.) With the hope that the redundant portion would shrivel and form a new ureteral orifice, no attempt was made to suture the remains of the cyst wall. The suprapubic opening was closed by purse-string suture around a drainage tube.

Since the x-ray showed evidence of several small calculi in the pelvis of the kidney, the patient was then turned on his side and I exposed the kidney in the usual manner through an incision in the loin. The kidney was pushed forward and the ureter and renal pelvis were exposed. The ureter was greatly dilated, but the pelvis of the kidney very slightly increased in size. It was just large enough for me to insert the end of my finger into it after incising the ureter. To my surprise no stones could be found at all, although I had a most satisfactory chance to feel for them with one finger in the pelvis and the other outside. I concluded that they must have passed on down the dilated ureter with the flood when the cyst was opened, and have been among those removed at the lower end. This must have been the case since later x-rays showed no evidence of stones in this region. It was interesting to me to note that the renal pelvis was not dilated in proportion to the ureter itself. *This would indicate that stricture of the lower end of the ureter does not necessarily cause hydronephrosis.*[1]

The opening in the ureter was not sutured, but the muscles and skin of the loin were closed, except for a small drain leading to the incision in the ureter.

The convalescence was in every respect normal, even unusually rapid, for the patient left the hospital with the wounds healed at the end of three weeks. A few days after the operation he passed, per urethra, another small calculus, which I must have missed at the operation. Three weeks later he returned to his law office and has been at work since. However, he has not been *perfectly* well. A very faint turbidity of the urine, which the microscope shows to be due to bacteria, still exists. There is practically no pus, but almost always a light and sometimes (especially in the morning urine) a heavy sediment of phosphates which clears up with acid. The reaction is persistently alkaline or neutral. X-rays taken on Dec. 27, 1907, show that no new stones have formed. Symptomatically there is still at times slight scalding and frequency, but not enough to give trouble, if small doses of urotropin are taken. When this drug is omitted, however, frequency, turbidity and scalding increase somewhat. At times he has passed per urethra small white granular masses of phosphatic material. It occurred to me that he might collect this material by carrying about with him an ordinary tea strainer and passing the stream through it when he went to the urinal. Specimens of phosphate gravel were obtained in this way. (Possibly this method of obtaining them may be in general use — at any rate, it is clean, convenient and effective.) I suppose that these little particles of phosphatic material might come under the term "gravel," but in my experience they are very characteristic of the disorder from which this patient is suffering, which may be called phosphaturia, bacteriuria or alkalinuria and which is a fairly distinct clinical entity. Surgical phosphaturia would be a good name for it. I have three other patients who present almost the identical signs. Whether the metabolic condition produces the excess of alkaline phosphates or whether the presence of bacteria produces alkaline changes in the urine soon after its secretion is the important question. I am of the opinion that the bacteria are responsible and that the change is accomplished in the urine in the renal pelvis practically as fast as it is secreted.

The following report of a cystoscopic examination, which I made on this case on Jan. 12 of this year gives a fair idea of the condition to which I allude:

The urine withdrawn from the bladder by catheter was neutral in reaction. The bladder mucous membrance was normal throughout, except that on the base behind the interureteric bar were about a dozen white granules of phosphatic deposit of minute size. These were not movable, but were lightly attached to the mucous membrane, so that they were not dislodged by washing. The mucous membrane to which they were adherent appeared normal. Both ureteric orifices appeared normal in function and emitted clear jets at intervals of ten to fifteen seconds. The right was normal in appearance; the left was normal in appearance, except for a redundant fold of mucous membrane, which partially covered it. A sterile ureteral catheter was readily passed into the left ureter and a specimen for examination collected in a sterile test tube. The flow of urine was at first steady and rapid, but when the catheter was passed in several inches it became intermittent as in a normal ureter. This urine was faintly alkaline, contrasting with the bladder urine, which was if anything faintly acid. Therefore, presumably the urine from the right or normal kidney was acid. The right ureter was not catheterized for fear of infection.

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[1] Another case of stricture of the ureter which I operated on in the fall of 1906 showed the same point. There was an intra-mural stricture at the bladder end. Laparotomy showed an enormously dilated ureter, which resembled a coil of small intestine, but the pelvis of the kidney was only slightly enlarged.

The following is an excellent detailed report of the bacteriological examination by Dr. Roger Lee:

> Three specimens, two received in sterile tubes, which are precisely alike. The third is a non-sterile specimen, voided by the patient. The sterile specimens were both obtained by catheterization of the left ureter.
>
> *Sterile specimens.* — Macroscopically only a few fine shreds. Albumin, very slightest possible trace. Reaction is very faintly alkaline. Microscopically, there are a very few triple phosphate crystals, a very rare pus cell, blood cell and a few renal and caudate (from the pelvis of the kidney) cells, a very little mucus. No tubercle bacilli, a very few colon-like bacilli.
>
> *Bladder specimen.* — Neutral; specific gravity, 1,014; albumin, very slightest possible trace. Macroscopically, on standing, a flocculent gray white precipitate of $\frac{1}{4}$ in. in the bottom of the glass. On heating, and the addition of acetic acid, this precipitate largely disappears, and is assumed to be phosphates. Microscopically, there is a large amount of amorphous phosphates and triple phosphates, considerable mucus in fine shreds, rather numerous pus cells, not clumped; a few blood cells; a few bladder (squamous and large round) cells, and an occasional renal cell. No casts, no fat, no tubercle bacilli; but very many colon-like bacilli.
>
> Cultures were made from all three specimens on blood serum and hydrocele agar. From the bladder specimen, very many colonies of colon-like bacilli; no cocci. From the sterile specimens there were fairly numerous colonies of colon-like bacilli. No cocci; no gonococci. Further cultures were made, which showed that this organism, while belonging to the colon group on account of its morphology, gas production in glucose agar and motility, however, is not a typical member of that group, as it does not produce indol, nor does it coagulate milk, and moreover, *it does not make milk acid.*
>
> A guinea pig was inoculated with a portion of the sterile specimens.

It will be seen from the above that this patient's condition at present lacks very little of being normal. I think that many cases after removal of phosphatic calculi would be considered well if their symptoms and physical signs were no worse than this, but the fact still remains that there is a tendency toward phosphatic deposit and that bacteria, though few in number, can be demonstrated in the urine from the left kidney.

The condition is not severe enough to demand operative procedures like drainage of the kidney pelvis in the loin or even frequent lavage of the pelvis of the kidney through the ureteral catheter. The probability of absolute cure from such treatment is not good enough to justify the chance of further impairment.

Dr. Lee is going to help me to investigate this case and the three other similar cases I alluded to from which I have also obtained bacteria from the renal pelvis by ureteral catheter. Bacilli of the colon group are present in them all. In all the cases the inflammatory symptoms are almost *nil* and all have alkalinuria, bacteriuria and phosphaturia. I believe that we shall find that these bacteria are really merely saprophytes living on the urine as fast as it is secreted and producing the alkaline chemical changes which in turn lead to the formation of calculi or at least chronic cystitis.

The calculi in this case were examined by Dr. Boos. They are composed of calcium oxalate and calcium phosphate. The "gravel" has the same composition.

Massachusetts General Hospital.

CLINICAL MEETING OF THE BOARD HELD MAY 8, 1908.

I. A CASE OF EXTENSIVE TRAUMATIC STRICTURE OF THE URETHRA. REPAIR BY OPERATION.

II. PERSISTENT HEMATURIA DUE TO VARICOSE VEINS OF PAPILLA OF KIDNEY.

III. A CASE SHOWING CERTAIN OBJECTIONS TO EXPLORATORY HYSTEROTOMY.

BY HUGH CABOT, M.D.

Case I. P. R., age twenty. Admitted April 9, 1907. One hour before admission struck by a railroad train. Examination shows fracture of the pelvis, with rupture of the urethra. Soft catheter fails to enter bladder. Gum elastic catheter drew 18 oz. of clear urine. Next day catheter could not be passed.

Perineal section done by Dr. Brewster. Anterior urethra found torn across by a fracture of the ascending ramus of the pubes. Sharp fragment of bone in wound. Posterior end of urethra could not be found. Bladder could be felt as a bulging tumor in the wound, and was punctured with knife. Tube inserted. A month later passing urine freely by urethra, without leakage. Soft bougie passed up to 27 French.

Entered hospital Oct. 7, 1907, for retention of urine. Bladder distended up to 2 in. below umbilicus. This was aspirated with a needle and 18 oz. drawn. The next day an instrument passed into the urethra stopped just behind the peno-scrotal angle, apparently striking against the front of the pubes. On account of the probable difficulty in identifying the posterior portion of the urethra, it was decided to open the bladder above the pubes, and explore from above. This showed that the prostatic urethra ended blindly behind the depressed fragment of the pubic bone, and that the opening made at the previous operation was below and behind the posterior border of the prostate. Bladder drained with tubes.

Oct. 16. Attempt was made to repair the urethra through the perineum. The urethra was exposed through a curved incision, similar to that used in perineal prostatectomy. Rectum found bulging forward and adherent to the lower margin and behind the pubic arch, with only a narrow passage upon the right side, where the false urethra must have gone. Rectum freed and prostate found lying behind the bone. With the finger in the bladder, the prostate could be pushed down so as to present below the pubic arch. The blind end of the anterior urethra was then found displaced upward in front of the bone. This was freed, opened, and the space between the two ends found to be about two inches. The whole scrotal portion of the urethra was then freed from its attachments, so that it could be displaced backward and made to meet the remnant of the membranous urethra. A suture was then done without serious difficulty. Convalescence uneventful.

Nov. 17. Bougie to 27 French passed easily. Sound would not pass on account of the displacement of the urethra to the right, where it passed around the bony fragment.

Patient seen on April 1, 1908. Takes the 20 French bougie without difficulty.

Case II. Mr. A. B. S., fifty years. Entered Massachusetts General Hospital, Sept. 27, 1907, in the service of Dr. Maurice H. Richardson, to whose courtesy I am indebted for reporting the case.

Thirty years ago strained his back lifting, and immediately afterwards passed what was thought to be bloody urine. From time to time since, often at considerable intervals, has passed blood without any subjective symptoms, and has given the matter little thought.

Seven months ago hematuria returned and urine has since been bloody about one third of the time. Five weeks ago had a sudden sharp pain in the left side, about the level of the iliac crest. The pain lasted three hours, was colicky in character, tending to shoot upward and inward and was accompanied by vomiting. No pain on micturition. Frequency two to four times a day, and three or four times at night. This is a slight increase in nocturnal frequency over previous years. This attack led his physician, Dr. E. T. Drake, of Franklin, N. H., to regard the case as one of stone in the ureter.

Physical examination: Fairly developed anemic somewhat cachectic man. Skin a lemon tint. Superficial and deep reflexus normal. Tongue and throat negative. Chest negative. Heart sounds regular, somewhat distant; no murmur; no enlargement of heart. Abdominal examination negative. Left inguinal glands slightly enlarged. Rectal examination shows prostate normal. External genitals normal.

Sept. 27. Blood: Hemoglobin, 70%. Leucocytes 5,000. Differential count: Neutrophiles, 60%; lymphocytes, 38%; eosinophiles, 2%. One normal blast found.

Sept. 27. Urine. Color, bloody. Reaction, acid. Albumin, slight trace. Sugar, absent.

Sediment: Largely fresh and degenerated blood corpuscles, leucocytes, and a little free fat. From this time until Oct. 5, urine remained practically the same.

Cystoscopic examination showed a normal bladder. Blood in considerable amounts coming from left ureter, orifice of which was normal.

Condition of patient was such as to clearly require relief, as his anemia showed no improvement, and tended to increase. X-ray examination negative.

Operation accordingly done Oct. 5, by Dr. M. H. Richardson. The kidney was exposed through an oblique incision on the left side, running from tip of the twelfth rib downward and forward. An apparently normal kidney was delivered without difficulty. Palpation of the kidney and upper portion of the ureter failed to show anything abnormal. The patient's condition was such that a nephrotomy with its attendant possibilities of bleeding seemed to Dr. Richardson unwise, in which opinion I entirely concurred. The choice, therefore, appeared to lie between decapsulation and nephrectomy. The latter operation was decided upon and done without difficulty. Patient stood operation well. Upon the following day patient was passing a good amount of urine, though it was still markedly blood stained.

Oct. 7. Two days after operation the urine was clear and remained so up to time of discharge from the hospital two weeks later.

April 25, 1908. Reports by letter that he has been entirely well since operation and steadily at work.

April 28, 1908. Twenty-four-hour amount of urine twenty-seven oz. Free from albumin.

The kidney was submitted to Dr. William F. Whitney, who has recently reported his observation to the Obstetrical Society as follows:

"I examined it at once and in general it appeared as a somewhat pale but otherwise normal kidney. On closer inspection it was noticed that the tips of one or two of the papillæ, at one end of it, were reddened and a little spongy. These were cut out at once carefully and hardened in Zenker's fluid, embedded in paraffin, sectioned, mounted and stained with eosin and methylene blue."

"The microscopic examination showed the small venules at the tip of the papilla dilated irregularly to twice or three times their normal size, and covered on their free surface with the finest possible film of connective tissue and a single layer of epithelial cells. Here and there they projected as varicose knuckles above the surface. The conditions, in fact, were such that the slightest violence must have caused a rupture with subsequent escape of blood. In one specimen a rent was found in one of these thin-walled channels, but it cannot be stated positively that it may have not been an artefact."

"The lumen of the vessels, in many places, was filled with a finely granular detritus and occasional blood corpuscles, but no well-marked thrombi were seen. That the hemorrhage must have taken place here, however, is borne out by the fact that the straight tubules of this region contained blood corpuscles which were not found higher than the base of the pyramid."

"The anatomical conditions above described are certainly adequate to cause frequent and severe hemorrhage. For we have only to call to mind what an insignificant lesion will produce a very severe epistaxis to realize what might happen after the rupture of one of these small varicose vessels."

"It is interesting to find what an abundant vascular plexus there is at the apex of the normal papilla and by what thin tissue the vessels are separated from the external surface. The size of the normal vessels, however, is very much less than in this case, so that their covering is actually and relatively very much thicker. It is only to be wondered at that hemorrhage is not much more frequent from this source, and it possibly may be, and may account for blood found in the urine in some cases of congestion of the kidney."

TREATMENT.

For most cases of this condition it would seem that nephrectomy was an unduly radical operation, though in the present instance it was amply justified. Decapsulation and nephrotomy are likely to be valueless because they fail to attack the essential lesion, and if they give any benefit it is because the general congestion is diminished.

Mr. Fenwick has had some success with the somewhat blind destruction of the papilla, through a short incision in the cortex, but the method is somewhat less accurate than the condition requires for satisfactory treatment.

Since in practically all of these cases it is possible to deliver the kidney so that the pelvis is readily accessible, it is at least possible with a free incision into the pelvis; in short, an exploratory pyelotomy would enable the lesion to be dealt with under direct vision. If the spongy tissue can actually be seen, it would not be difficult to destroy the superficial vessels with a properly constructed electro-cautery.

There is, I believe, every reason to expect that future investigation will show this condition to be a not uncommon cause of hematuria, and one which can be dealt with without sacrificing the kidney.

Case III. At a recent clinical meeting Dr. Harrington described his experience with exploratory hysterotomy for difficult cases of uterine bleeding. It is claimed for this operation that the curetting of the uterine mucous membrane is much more complete and satisfactory and that the increased severity of the operation is justified by the results. I have not myself believed that failures of curetting by the ordinary route to relieve symptoms were due to the inefficiency of the method, but rather to the fact that the underlying condition was one which could not be efficiently treated by curetting by any route.

The following case is submitted as tending to support that view:

Mrs. I. R., fifty-seven, married. Previous history unimportant, except for the presence of a chronic though well compensated heart lesion. Has menstruated regularly and normally up to three years ago. During the last three years the flow has been regular but increased in amount. During the last six months the interval has been shortened to two weeks and the flow sufficiently excessive to cause distinct anemia. Examination, January, 1908, shows an old tear of the perineum, with moderate rectocele. Uterus somewhat enlarged, hard, smooth, freely movable. No ulceration about cervix. Three weeks later patient was curetted under ether, the curette removing an excessive amount of typically hypoplastic endometrium.

The curetting was not done with excessive care. The size and hardness of the uterus made it seem likely that curetting would not be effective, and it was therefore removed by the vaginal route. Examination of the specimen showed that the mucous membrane had been so completely removed by the curette that it was difficult to find a specimen for examination. The condition of the uterus was one of general fibrous change, and the bleeding would not, I think, have been checked by curetting. I have had three other opportunities of examining a uterus which had just been curetted, and have always found that the work was efficiently done. In this case exploratory hysterotomy would have given no better information, unless followed by a supravaginal hysterectomy, would not have been efficient, and then only with an increased risk.

CASES FROM THE "SUBURBAN TUBERCULOSIS CLASS."

BY JOHN B. HAWES, 2D.

The cases which I have to show to-night are fairly typical of the class of patients which are being handled in the so-called "Tuberculosis Classes," of which Dr. Floyd and I are in charge. These classes were started in January, 1906, as the result of an effort to give more adequate attention to certain very pathetic cases of consumption, which were sent in to the hospital from the various outlying towns and cities around Boston, which were apparently unable to care for their own tuberculous patients. In addition to taking care of these patients, one of our foremost aims has been to stir up these suburbs to form anti-tuberculosis associations, clinics, etc., so that they can handle their own cases of consumption.

After the opening of the Boston Consumptives' Hospital Dispensary on Burroughs Place last year, of which Dr. Locke and Dr. Floyd are in charge, we turned over all the cases from Boston proper to this institution; furthermore, as a result of the interest which has been aroused in the outside towns, we are now able to refer back to them the majority of the cases of consumption which come to the out-patient department of this hospital for diagnosis and treatment. In this way our tuberculosis work is of a self-eliminating nature. It has resulted in a very great reduction, not in the total number of our patients, but in the number of patients with tuberculosis of the lungs.

As the number of this class of patients has decreased, however, the number of patients who have been sent to us from the other department of the hospital, male and female surgical, genito-urinary department, skin department, the eye and ear infirmary, with surgical or some other form of non-pulmonary tuberculosis, has steadily increased. These patients have been sent to us for two things: first, for treatment with tuberculin, next for care and instruction in regard to their method of living, including fresh air, food and proper hygiene. The result is that our two classes, which meet on Tuesday and Thursday mornings in the out-patient department, have at present a very large percentage of non-pulmonary cases, at least 75%. These patients are all getting tuberculin for therapeutic purposes, and instruction as to the proper methods of living.

We have given tuberculin for the past two years under the constant advice and instruction of Dr. Edward L. Trudeau. We entirely agree with him in regard to its value in that we think it does a certain amount of good, but exactly how much we are unable to say. We firmly believe that the great element of success in treating these cases of non-pulmonary or surgical tuberculosis, as well as those of consumption of the lungs, is that they are taught how to live in their own homes under proper conditions. These cases, which I am going to show, I believe are examples not necessarily of what tuberculin can do, but of what proper methods of living can accomplish. The tuberculin which these patients have received may have been of some help, but I believe that this factor is a very small one compared with the other, and it is that which I wish to emphasize to-night.

Case I. Tuberculosis of the sternum, ribs and scapula. M. F., married, thirty-five years old, first came to the out-patient department July 3, 1907, with a history of abscess on her chest of four years' duration. At this time there were two discharging sinuses from tuberculous disease of the sternum, ribs and scapula. She was operated on in the hospital and returned to the out-patient department July 15, where the wound was dressed every other day until Sept. 14, when she was referred to our tuberculosis class. She was immediately given instruction and taught how to carry on an open-air, hygienic treatment at home. She was also given tuberculin, starting with 1-10,000 of a mgm. Her weight was then 124 lb. At the present time her weight is 136 lb., a gain of 12 lb., the sinuses have entirely healed and she is in very excellent physical condition. She is now getting tuberculin in 1 mgm. doses.

Case II. Tuberculosis of the kidney, nephrectomy, beginning tuberculosis of the remaining kidney. L. G., twenty-three years old, single, came to the out-patient department Aug. 3, 1905, with a typical history of renal tuberculosis. Urine inoculated in a guinea pig confirmed this diagnosis. She was operated on in the hospital by Dr. Conant, Aug. 18, 1907, and her right kidney was removed. Since that time she has shown signs of a return of the disease in the remaining kidney. She was referred to us by Dr. Greenough Oct. 31, 1907, for treatment. She then weighed 108 lb. She now weighs 118 lb., a gain of 10 lb., and is apparently in perfectly good shape.

Case III. Tuberculosis of the eye. This patient, L. D., was referred to us March 7, 1907, by Dr. George Derby, of the Eye and Ear Infirmary, with a diagnosis of tubercular sclero-keratitis, a chronic condition of the eye, which seemed to be leading to complete blindness. There was a positive tuberculin reaction. She was found to have a slight but definite involvement of the right apex as well. She was put on tuberculin and instructed how to live at home. A teacher in the Newton High School volunteered her services to act as visitor in this case, called on her frequently in her home and saw that she followed up the treatment. When she joined us she weighed 134 lb.; Dec. 12, 1907, when she ceased coming to us regularly, she weighed 166 lb., a gain of 32 lb., and the disease in her eye, as well as in her lungs, was entirely arrested. She comes in to report to us occasionally at present.

Case IV. Extensive pulmonary tuberculosis in conjunction with cardiac displacement. General health excellent. H. B., a boy of thirteen, came to the out-patient department May 22, 1907. His mother died of tuberculosis ten years ago; he dated his illness from a cough of two months' duration. He was at once referred to us by Dr. Townsend, of the Children's Department, with a diagnosis of pulmonary tuberculosis. His weight was then 72½ lb. He has faithfully kept a record of his temperature, and is following and has followed out the treatment at home well. Though he does not go to school, he is able to play and is from his point of view in very excellent health. The only thing which he notices besides a slight cough is that he gets out of breath somewhat easily. He now weighs 83 lb., a gain of 10 lb. The remarkable feature of this case is the extent of the pulmonary involvement, his entire left lung being practically out of commission, with râles and other signs of an apparently active process, top and bottom, front and back. His general condition is excellent. He has not been given tuberculin.

Again, before closing, I should like to emphasize the fact that we believe that it is fresh air and proper living which has caused the improvement in these cases, and that although we are firmly of the opinion that tuberculin does good, or else we would not give it, we believe that it plays a subordinate part in the majority of cases.

TRAUMATIC SUBDURAL FRONTO—BASAL HEMORRHAGE WITHOUT DEFINITE LOCALIZING SYMPTOMS; OPERATION; RECOVERY.

BY W. E. PAUL, M.D., AND G. W. W. BREWSTER, M.D.

The limited, accessible, traumatic, intracranial hemorrhages, especially if uncomplicated by skull fracture, or by any considerable laceration of the brain tissue and not infected, offer a most hopeful field for curing grave disease and saving life by cerebral surgery.

The complex bony and vascular anatomy of the skull and its contents, when subjected to the infinite variety of traumata possible at the present time, makes it not unlikely that at any moment the unusual case may present itself and the closest study and widest experience will be demanded to solve the problems presented. Moreover, it can be said that, like many tumors of the brain, the hemorrhagic cases may be exceedingly difficult to localize accurately.

One group of cases seems to stand out with sufficiently positive characteristics to demand more attention than has hitherto been accorded it, namely, the subdural, cerebral, hemorrhagic cases with a hemorrhage limited to the basal frontal region and confined to that region; that is, the blood does not escape to the general subdural space over the brain, but is by some means so limited that additional room for the accumulating blood is obtained only by an indenting compression against the overlying basal surface of the frontal lobes of the brain. It is notable to what a degree the slowly increasing pressure of hemorrhage can indent the yielding brain tissue without cerebral disintegration. The normal brain in a measure seems to possess the characteristic of a superficial pathological edema in moulding itself over a compressing mass. We wish to report one case of this type and refer to a second.

J. L., laborer, twenty-one years of age, fell 15 ft. from a staging on March 30, striking his head against some obstruction, so that the impact was against the left occiput; other parts of the body were bruised slightly. After the fall the man was unconscious and Dr. G. H. Francis advised that he be sent immediately to the Massachusetts General Hospital; Dr. Francis noted that the left pupil was slightly larger than the right and both reacted feebly to light. An hour after admission to the hospital J. L. regained consciousness.

General headache was then complained of and it increased in severity, being located principally over the frontal region. He vomited several times, the last attack of vomiting occurring about thirty-six hours after the injury. Seventy-two hours after the accident bright light was disagreeable and the hand was held constantly over the eyes and the frontal region.

Accompanying the progressively severe headache, the pulse, which was 90 by the first record, grew slower in rate till at the end of three days it was 52 to 48, and at times intermittent and irregular. No record of the blood pressure was made, but to the finger the tension was low at the time the pulse was slowest. The temperature dropped with the pulse and was 96.8° the day of operation.

The mind seemed clear; questions were answered and directions were obeyed, though the patient was listless and apathetic.

No hemorrhage from the ears, the nose or under the conjunctivæ had occurred.

The serious trend of the symptoms was recognized and a neurological opinion was requested; examination made about seventy-two hours after the injury revealed the following data:

The face was flushed; the pupils reacted to light and the left pupil was slightly larger than the right. There was no impairment of the cranial nerves of either side, nor was either arm or leg weakened. The knee jerks were present and showed nothing notable. All the superficial reflexes, abdominal and cremasteric, were lively on both sides. There was moderate priapism. The left plantar stimulus caused all toes to flex toward the sole promptly; on the right, the response was much less marked, but no Babinski reflex existed. The stereognostic sense was preserved. The wrist jerk was more marked on the right than on the left.

In spite of the absence of localization symptoms the general condition pointed to a slowly progressive hemorrhage, which had been going on since the trauma; and it was felt that without relief by surgical means, a fatal issue was likely. The difficulty of locating the side and site of the lesion was realized, but the data available were analyzed on the basis of a case followed in Dr. Mixter's service a year ago.

That case was of a man of forty-five, who received a blow from a fist over the left malar bone. Headache followed the blow, severe, increasing, more marked in the frontal region, but was unattended with phenomena pointing to a focal brain lesion in the time immediately following the blow. At the end of ten days, however, the man became partially unconscious and was admitted to the hospital, coming under Dr. Mixter's care. Some weakness of the right arm and right side of the face led Dr. Walton and Dr. Paul to locate the supposed middle meningeal hemorrhage on the left side. While the trephine opening in the left temporal region demonstrated a tense dura, there was no extradural hemorrhage, and incision of the dura failed to reveal any hemorrhage. Tapping the left ventricle gave vent to some clear fluid only. The plan to trephine the opposite side was abandoned, owing to the unfavorable condition of the patient, who died about thirty-six hours later.

The autopsy by Dr. McGrath revealed a large mass of old blood clot subdurally under the right frontal lobe; the exact vascular source of the hemorrhage could not be determined. Also there were ecchymoses over the right parietal region.

Dr. McGrath called attention to the water-bed character of the left-sided brain compression in such a case in contrast to the direct pressure of the opposite half of the brain against the unyielding bony skull. Thus Dr. McGrath explained the paretic symptoms as arising from disturbed function on the side of the brain opposite the real lesion.

The case of J. L. clinically seemed strikingly like the earlier case and the only symptoms from the examination of Dr. Brewster's case that were possibly significant for localization were the increased wrist jerk and the weaker plantar response on the right. While these pointed to left brain disturbance they were viewed as of secondary origin from a primary pressure in the right anterior fossa.

Moreover, the force of a contrecoup would exert itself in the case of a blow on the left occiput in the region of the right frontal lobe. Dr. Walton agreed that a subdural hemorrhagic oozing was in progress, but thought it likely there existed also a fracture of the frontal bone and that the frontal lobes of the brain were somewhat lacerated by the trauma. He thought the condition justified operation. Accordingly, Dr. Brewster decided to trephine in the temporal region and the operation was performed seventy-three hours after the injury.

Description of the operation by Dr. Brewster.

With ether anesthesia a curved incision on the right side about 5 in. in length was made parallel to the temporal ridge through the shaved and surgically cleansed scalp beginning at a point 1 in. anterior to the hair line and extending to a point posterior to the top of the auricle. The incision was carried through the temporal muscle and the freely bleeding points clamped. After the flap was turned down and the periosteum scraped down careful examination of the bone showed that no fracture existed. A trephine opening was made through the skull 1¾ in. above the middle of the zygoma. This was enlarged with rongeur forceps to about the size of a silver half dollar. The anterior branch of the middle meningeal artery was brought into view; there was no extradural hemorrhage though the dura was tense. The dura was opened and the non-pulsating brain presented without any evidence of hemorrhage; the fingers were gently inserted under the frontal lobe and at once there was an escape of free blood with some dark clots. The fingers apparently entered a cavity about the size of a pullet's egg under the frontal lobe. In the escaping blood there were no fragments of brain tissue seen.

In a brief time the brain resumed pulsation and the pulse became more rapid. Gauze wicks were placed under the brain in the middle and anterior fossæ, and the edges of the external wound were brought together with interrupted sutures.

The time consumed by the operation was twenty minutes; at the end the patient was in good condition and the pulse, which previous to the operation was 48 to 50, rose to 90, but later dropped to 60.

After the operation for several days there continued to be a complaint of headache, though less severe; at the end of a week after the wicks were removed, there was little headache and the pulse had risen to 70 to 80. The temperature rose to 100.5° on the fourth day, but was normal on the sixth day. The patient was sitting up on the seventh day and eating heartily.

His mind was clear after the operation and on the second day he was much brighter in his speech.

There developed a collection of fluid under the scalp, about the fifteenth day, attended with headache. By separating the wound, exit was given to a small amount of bloody serum, thereby relieving the headache. Any mention of his leaving the hospital seemed to cause a complaint of headache.

A week after the operation it was notable that there was no difference in the wrist jerks of the two sides and both plantar reflexes were normal and alike.

Although two cases may be insufficient to constitute an assured class of intracranial hemorrhage yet the definiteness of the instances here presented seem to justify calling attention to such a group as the subdural fronto-basal hemorrhages. In the autopsied case the bleeding vessel could not be found; on account of the gradual oozing character which the clinical course of both cases seems to indicate as likely, it is assumed that a small artery was ruptured. Probably this artery or arteriole was a branch of the anterior cerebral, which supplies the base of the frontal lobe. A sinus or vein directly from a sinus would perhaps spread the escaping blood over a much larger territory; and it seems unlikely that veins of the pia would continue to emit blood sufficient to cause such extreme pressure as existed in the fatal case.

One anatomical fact has some bearing in this connection. The cisterns of cerebrospinal fluid form a considerable water-bed for the base of the brain in the posterior and middle fossæ, but the frontal lobes rest more directly on their bony support, so that when thrown violently against the edge of the lesser sphenoidal wing and the bone anteriorly, the chances of injury to these lobes are much greater than for any other region of the under surface of the cerebrum, with the exception of the tips of the temporal lobes.

The difficulties in localizing the site of hemorrhage have been appreciated by many observers and it is regarded as a proper procedure to trephine both sides in case the hemorrhage is not discovered by the first trephine opening. This dilemma is particularly felt in those cases in which the localizing symptoms are very indefinite and appear only after the lapse of considerable time, subsequent to the trauma. Marked symptoms occurring immediately or soon after any injury would probably point accurately to the seat of cerebral damage as well as to the site of origin of symptoms. In contrast to the immediate cases are the delayed ones, in which several days pass before positive signs of intracranial pressure develop. The localizing indications become of uncertain import and individual experience with such cases may well count for more than any fixed rules.

The history of the violence, and just how the violence exerted its effect, should be considered, because the principle of contrecoup is a well established one, and was of great aid in one of the cases described, and might have been in the other had more attention been paid to it. In the absence of other determining factors for localizing the side to trephine, the appeal might well be as to which side received the contrecoup.

Interesting speculations on the causes that act to limit the hemorrhage so decidedly to the frontobasal region will suggest themselves. It is easier to understand how anteriorly, internally and externally crowding by a hemorrhagic outflow might be limited than to conceive the mechanism that acts to prevent extension of the blood posteriorly. This is especially true if the blood retains its fluidity and does not clot promptly. An immediate clotting of the escaping blood would tend to anchor the hemorrhage near its origin. It is by no means maintained that this is the only variety of subdural hemorrhage, because many cases are described in textbooks and literature of distinctly other types. Most of such instances are, however, associated with fracture, or spread generally through the subdural space of the base, or are in the pia, in which the blood escaping from a vein probably dissects out a lens-like space for itself. Attention is directed by the cases here cited to the occurrence of traumatic subdural hemorrhage confined under the frontal lobe that may be of a large enough amount to cause symptoms of extreme intracranial pressure and be fatal. If localized and evacuated life may be saved.

In these cases the effects of the contrecoup should receive careful consideration in the absence of definite symptoms that point to the seat of the hemorrhage.

DISCUSSION.

Dr. G. L. Walton: This is the branch of cerebral surgery offering the best opportunity for successful result, and every aid to diagnosis as to the seat of the hemorrhage is a desideratum. The symptoms of its presence are fairly clear. We have become familiar, generally through autopsy, with the fact that the hemorrhage may be on the same side with the paralysis or other signs, but the question is, how to know this beforehand. The suggestion of the readers seems to offer quite a clew. In this case it would really be more logical to assume transmission of force from the occipital to the frontal region, causing hemorrhage, and that the pressure of the hemorrhage in its turn produced the signs by pressing the opposite side of the brain against the skull, than to assume that the force of the occipital blow was expended upon the parietal region of the same side. But I think this view has not been suggested before.

With regard to the retention of blood in the anterior fossa, the orbital plate of the frontal bone is not flat, but is made up of rather deep hollows and high ridges, and the edge of the sphenoidal wing is sometimes quite sharply tilted upward, so that it is conceivable that this conformation alone would favor such retention.

SARCOMA AND CARCINOMA IN THE SAME PATIENT.

BY F. C. KIDNER, M.D.

In October, 1905, Wm. P. B. entered the out-patient department with the following history:

Six years ago he had several lower left teeth extracted. Since then he has had a series of "gum boils." Six weeks ago he began to notice a rapidly growing tumor at the site of the second left lower molar tooth.

Examination showed a mass about the size of a chestnut, but no glandular involvement. A piece removed, by means of Mixter punch, was reported by Dr. Whitney to be a spindle-cell sarcoma. The patient was referred to the house and Dr. Harrington laid open the cheek and thoroughly curetted the growth from the jaw, and through a second incision dissected out a few small sub-mental glands. Again Dr. Whitney reported the growth as spindle-cell sarcoma, and the glands non-malignant.

On Aug. 23, 1907, the patient returned, saying that the wounds of the previous operation had healed one month after leaving the hospital and that he had been perfectly well since till one month before. At that time he began to notice pain in the left side of his face.

Examination showed, at the site of the previous operation, a sinus admitting the tip of the little finger and leading down into the jaw. Whether or not this sinus was discharging is not stated. Around the sinus was an indurated area, thought to be inflammatory, and beneath the jaw a hard gland, thought to be a recurrence of the sarcoma.

Dr. Williams dissected out the gland, which on microscopic examination was reported as probable epithelioma. Later the patient again returned and a bit of tissue from the indurated jaw area was found to be epithelioma. Dr. Harrington removed the jaw and dissected the neck, tying the external carotid.

Seven days later the patient died, apparently from sepsis, after having had a slight attack of hemiplegia. Autopsy showed that the cancer had been completely removed and that the patient died of septic thrombosis of the carotid.

This case is interesting as one in which two entirely different tumors occurred at exactly the same place. It seems to be a very brilliant example of a cancer caused directly by irritation.

Had the interval between the two growths been less long, the case would have fitted extremely well with Baird's theory that all tumors are of common embryonic origin, and that the type of cell is determined wholly by environment.

A CASE OF RHINOPLASTY.

BY CHANNING C. SIMMONS, M.D.

The patient is a man aged thirty-four years, who has had a pigmented, warty growth on his nose since birth. It caused no symptoms, but, if anything, had been more prominent during recent years.

Examination: Occupying all the nose and extending slightly above the eyebrows was a soft, papillary, warty growth of a dark brown color. This hung down

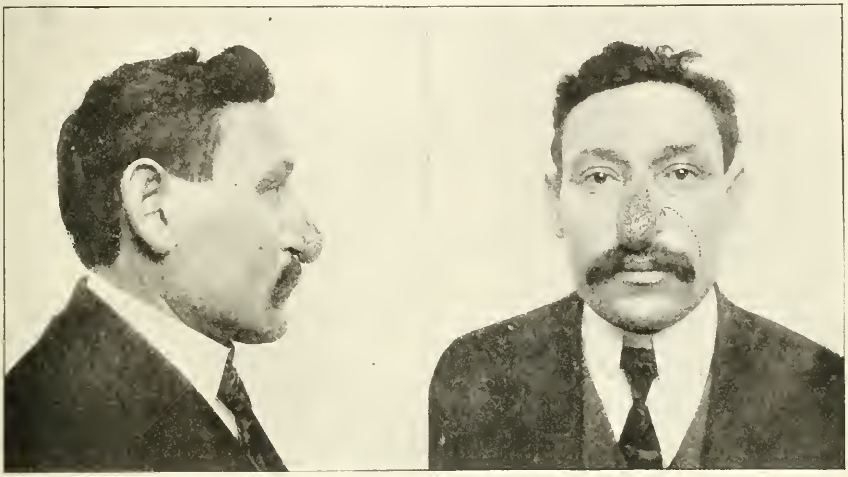

Fig. 1. Fig. 2.

Before operation.

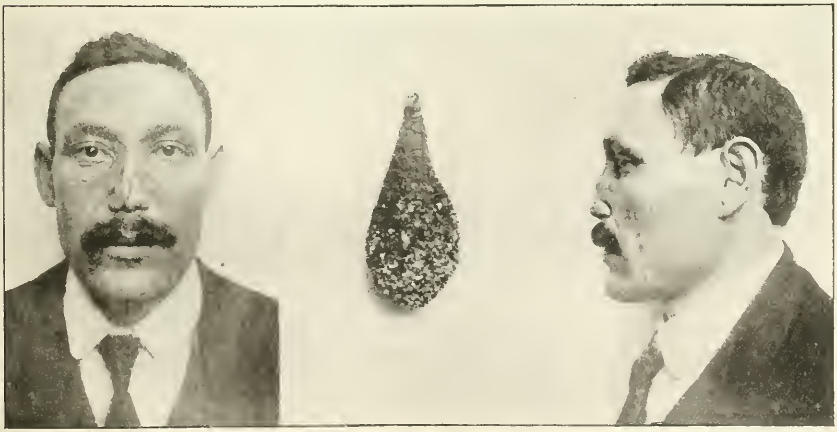

Fig 4. Fig. 3. Fig. 5.

Fig. 3. Specimen one-half actual size. Figs. 4 and 5. After operation.

from the tip of the nose nearly to the vermilion border of the upper lip. The growth was in the skin and was freely movable over the deeper tissues. The illustrations give some idea of the condition, but unfortunately the color values are entirely lost.

At *operation* the whole skin of the nose was removed, leaving the cartilage, at the *alæ*, and subcutaneous tissues bare. Two curved incisions were then made, one on each side, starting from the side of the nose half way between the internal canthus and the *ala* and carried backward and downward across the cheek to a point 1.5 in. outside the angle of the mouth. (See Fig. 2.) The skin flaps thus formed were then dissected free and slid over the lower half of the denuded area, the point "A" being brought to the tip of the nose. The upper half of the denuded area was closed with but little tension by sliding the skin up from the sides.

There was some sloughing of the corners, and a small secondary operation should be done to close the V shaped opening to the right of the septum, but the appearance of the patient on the whole is much better than before the operation.

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Reports of Societies.

MEDICAL JURISPRUDENCE SOCIETY OF PHILADELPHIA.

Meeting of Monday, April 20, 1908.

The President, Dr. William M. L. Coplin, in the chair.

THE BAR AS SEEN FROM THE WITNESS BOX.

Dr. Henry Leffmann read this paper. His experience has been principally in criminal courts and locally, although he has been in courts in other counties in other states. He has seen many changes in the more than quarter century that he has been in expert practice. He has had experience not only in the state courts, but in the United States Courts, where the cases were mostly concerning the sale of oleomargarine, but he often had to wait while cases of other types were tried and thereby saw much of the miscellaneous Federal business. He recalled the old inconvenient courts in Court House Row, particularly the court house on Sixth Street, below Chestnut, with its exasperating lack of acoustic qualities. From the observation of law in operation his impressions are that the practice of law is very different from the theory. The principle of law was said to be an attempt to establish a system of ethics supplementing the so-called fundamental moral codes, not expecting to render absolute and exact justice at all times, but average justice. Human life is too intricate and human impulse too uncertain to admit the attaining of absolute justice, but in practice the law is principally exerted to secure a proof. The dominating motive of the lawyer is to win his case. While not implying dishonesty, Dr. Leffmann says that the practice of law has developed codes of legal ethics and systems of procedure, in which technicality and insincerity have become not only legitimate but necessary. It is said that while the medical profession is the subject of criticism in regard to its changing theories in pathology and therapeutics and that while much of the criticism may be acknowledged as just, there may be seen throughout the profession the dominating object of the amelioration of suffering and the saving of life, the net result of medical activity being to make a community more comfortable, longer lived and more efficient. Such is not the result of legal activity. While the state and national legislatures swarm with lawyers, reform in judicial procedures moves with leaden feet. Nothing is more uncertain than a legal opinion. Regarding the allotment of fees, it is said that lawyers have two distinct codes, — one for themselves and one for outsiders. Courts are extremely liberal in allowing fees to attorneys. Dr. Leffmann has known of $250 having been allowed as a lawyer's compensation for a small service, the trial judge remarking that it was little enough, when a similar charge by an expert witness for several times the amount of the work would have been regarded as extortion. Further, lawyers do not hesitate to put witnesses to loss of time and expense without compensation.

Dr. Charles W. Burr believes that one great difficulty between medical experts and judges arises from their entirely different points of view. He does not think the plan of having medical experts paid by the state would be a good method, because there would be appointed men not skilled in learning, but men who had backing of whatever political power might be in the ascendancy.

Dr. Charles K. Mills regards the idea of having state experts an impractical one and that the abuses which would creep in would be of such magnitude that the present abuses would be as nothing in comparison.

Dr. J. Hendrie Lloyd referred to the carelessness with which lawyers sometimes prepared their cases in which expert testimony is concerned, and gave some instances in his experience. He feels that there is too much democracy in the courts to-day, and that they have unfortunately lost to a great extent the old monarchical power, so effectual under the English government.

Dr. S. Solis Cohen thinks the point raised by Dr. Lloyd regarding the absence of monarchical power in the judge rather a misunderstanding of the situation, and that sometimes the question is one of the absence of common sense rather than of power. When judges will rule in a diametrically opposite way upon a point which ought to be a settled principle of an exact science, there is little wonder at the conflict which expert testimony sometimes arouses. The failure of some attorneys to consult experts in time for a careful preparation of their cases, mentioned by Dr. Lloyd, he regards as the keynote of the whole question. Personally, he has been amazed at the certainty of the lawyer that in a given case he would testify as the attorney desired, without having had time to study the question. The idea that the physician can adopt within five minutes any opinion desired by the attorney should be eradicated, by physicians refusing all such cases. It has been his good fortune to find very eminent members of the bar very willing to receive suggestion from the physician as to the manner in which the case should be prepared. He believes that the trained lawyer and man of sound judgment, of learning and insight, is anxious to have instruction on the scientific aspect of the case and to know the exact value to be attached to the different matters that can be brought forth. He has always felt that he could be of more service to counsel by assisting in the preparation of the case than by going upon the stand, because of the difference between an advocate and a witness. The expert witness should merely go upon the stand to testify to the facts of his observation and his scientific judgment. On the other hand the physician, who is consulted with the idea of serving the interests of the side which the lawyer represents, may state what sort of testimony should be sought for, but having done that he is morally disqualified from going upon the stand.

Finally, Dr. Cohen believes that it would be possible after perhaps several centuries of intermingling in such a society as the Medical Jurisprudence for a comity to arise between lawyers and physicians that would prevent any lawyer from attempting to "bullirag" any physician who was giving his honest opinion upon the witness stand. That would also tend to make judges desire to restrain any such undignified, indecent and insolent exhibitions.

Adolph Eichholz, Esq., said that the question of the lack of consideration received by the expert at the hands of the lawyer, while an undoubted evil, is a part of a larger evil, the remedy for which is not at present apparent. The court was compared to a big battle field, where human contentions, private difficulties, factions and adverse opinions were fought out, and necessarily many things are done and said that would not happen in gentlemen's parlors. Such evils do not affect the medical profession alone, but almost any class of men called upon in the administration of justice.

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Book Reviews.

Personal Hygiene in Tropical and Semi-Tropical Countries. A Popular Manual written for the Use of Foreigners Residing in the Philippines, Cuba, and Other Portions of the Tropics. By Isaac Williams Brewer, M.D. Philadelphia: F. A. Davis Company. 1908.

The writer of this manual, with no claim to originality, states certain facts regarding the special precautions demanded by residents in tropical and semi-tropical countries. The suggestions it contains are timely, useful and succinctly stated. We commend it to those about to visit the tropics for a longer or shorter time.

Light and X-Ray Treatment of Skin Diseases. By Malcolm Morris, F.R.C.S. (Edin.), and S. Ernest Dore, M.D. (Cantab.). With 12 plates. Chicago: W. T. Keener & Co. 1907.

This is an excellent little book of its kind, not intended, as the introduction states, to be an exhaustive monograph on the subject, but a summary of the methods of application and results of Finsen, x-ray and other modes of treatment of late introduction. The description of the various forms of apparatus is remarkably clear and distinct, and the conclusions are based upon the authors' own experience chiefly. The authors are conservative in their views, and consider that the curative effects of the light treatment have undoubtedly been somewhat exaggerated. Many cases are reported, with considerable detail, and there are numerous illustrations. The illustrations serve the purpose for which they are intended, but are inferior to most modern halftone cuts.

A Text-book of the Diseases of the Nose and Throat. By D. Braden Kyle, A.M., M.D., Professor of Laryngology and Rhinology, Jefferson Medical College, etc., with 219 illustrations. Fourth edition. Philadelphia and London: W. B. Saunders Company. 1907.

This fourth edition follows the third after about three years. It contains several additions and revisions, expanding the book by about one hundred pages and including many of the contributions of recent progress. It is the most exhaustive American textbook of recent date on the nose and throat by a single author. It contains descriptions of pathological conditions which are elsewhere entirely omitted, or grouped under some simple heading. It is not an easy book to read, but a valuable one for reference.

Practice of Medicine for Nurses. A Textbook for Nurses and Students of Domestic Science, and a Hand-Book for All Those who Care for the Sick. By George Howard Hoxie, A.M., M.D., Professor of Internal Medicine in the University of Kansas. With a chapter on the Technic of Nursing by Pearl L. Laptad, Principal of the Training School for Nurses of the University of Kansas. Illustrated. Philadelphia and London: W. B. Saunders Company. 1908.

The author of this new book for nurses, in spite of the fact that in the preface he states that he does not believe that the nurse should either "diagnose or prescribe," enters into very considerable detail regarding a wide series of diseases. It is becoming an increasingly difficult matter to determine the limitations of a nurse's training. The tendency to teach medicine rather than the principles of nursing is sufficiently evident in many books written primarily for the benefit of the nurse. The author of this manual has attempted to avoid this pitfall, but we think has not altogether succeeded in doing so. For example, the small amount of information given on diseases of the nervous system is not calculated to do more than excite the acquisitive student to seek further details. Although we have no desire to criticise any attempt to render the work of the nurse more interesting and more intelligible, we nevertheless feel that it is necessary to insist primarily upon a fundamental knowledge of the principles of nursing rather than upon the principles of medicine. It should be said of this book that many practical points are discussed and that a chapter on the Technic of Nursing is added by the principal of the Training School for Nurses of the University of Kansas.

Surgery, its Principles and Practice: Edited by William Williams Keen, M.D., LL.D. Vol. III. Contents: Surgery of the Head, Harvey Cushing, M.D.; Surgery of the Neck, E. Wyllys Andrews, M.D.; Diseases of the Thyroid Gland, Albert Kocher, M.D.; The Nose and its Accessory Sinuses, by Harmon Smith, M.D.; Surgery of the Larynx and Trachea, by George Emerson Brewer, M.D.; Surgery of the Thorax, by George Emerson Brewer, M.D.; Surgery of the Breast, by John M. T. Finney, M.D.; Surgery of the Mouth, Teeth and Jaws, by Edmund Owen, M.B., F.R.C.S.; Surgery of the Tongue, by John Chalmers Da Costa, M.D.; Technic of Abdominal Surgery, by John C. Munro, M.D.; Surgery of the Abdominal Wall, by John C. Munro, M.D.; Surgery of the Peritoneum and the Retroperitoneal Space, by John C. Munro, M.D.; Surgery of the Esophagus, by Georg Gottslein, M.D.; Surgery of the Stomach, by A. W. Mayo Robson, F.R.C.S.; Surgery of the Liver, the Gall-Bladder and the Biliary Ducts, by William J. Mayo, M.D., and Charles H. Mayo, M.D.; Surgery of the Pancreas, by B. G. A. Moynihan, F.R.C.S.; Surgery of the Spleen, by B. G. A. Moynihan, F.R.C.S. Philadelphia and London: W. B. Saunders Co. 1908.

The third volume maintains the promise of the preceding parts of this admirable work. Every one of the subjects enumerated in the table of contents is thoroughly and lucidly considered. The average of these monographs is very high, both in written matter and in illustrations. Certain chapters call for special mention. That dealing with the surgery of the head is the best article that has appeared upon this subject: it is divided into small sections, to each of which is appended an appropriate biography and the pictures are particularly good. The chapter on the thyroid is also particularly to be commended. The Mayos, as might be expected, present a truly admirable essay upon the liver and biliary passages. Mayo Robson's long article on the stomach is extremely interesting, though its illustrations are not quite so elaborate as might have been anticipated. There is not in the entire volume a chapter that can be unfavorably criticised and as a whole the volume carries the work toward its expected goal, that of being the best treatise of surgery in the English language.

Medical Gynecology. By Howard A. Kelly, A.B., M.D., LL.D., F.R.C.S. (Hon. Edinb.), Professor of Gynecological Surgery in the Johns Hopkins Hospital, Baltimore; Fellow of the American Gynecological Society; Honorary Fellow of the Edinburgh Obstetrical Society; Honorary Fellow Royal Academy of Medicine in Ireland; Fellow British Gynecological Society, etc. With 163 illustrations, for the most part by Max Broedel and A. Horn. New York and London: D. Appleton & Co. 1908.

This is a book of 662 pages, uniform as regards size, binding and general arrangement of printed matter with the author's Operative Gynecology. A list of the chapters shows the character of the work: I. Consulting Room and Appointments. II. Hygiene of Infancy and Girlhood. III. Normal Menstruation. Menopause. IV. Dysmenorrhea. Dilatation. Membranous Dysmenorrhea. V. Intermenstrual Pain. VI. Amenorrhea. Vicarious Menstruation. VII. Menorrhagia and Metrorrhagia. Extra-Uterine Pregnancy. VIII. Constipation. Headache. Insomnia. Obesity. IX. Backache. Coccygodynia. X. Acute Infectious Diseases as a Cause of Pelvic Disease. XI. Vaginitis. Vulvitis. Cervicitis. Endometritis. XII. Pruritus. Vaginismus. Masturbation. XIII. Displacements of the Uterus. XIV. Pelvic Inflammatory Disease. XV. Sterility. XVI. Gonococcus Infection. XVII. Syphilis. XVIII. Abortion. XIX. Injuries and Ailments Following Labor. XX. Fibroid Tumors. XXI. Carcinoma. XXII. Cystitis. XXIII. Functional Nervous Diseases met with by the Gynecologist. XXIV. Appendicitis in Association with Pelvic Disease. XXV. Splanchnoptosis. Movable Kidney. XXVI. Post-Operative Conditions.

Dr. Lewellys F. Barker contributes the sections on neurasthenia, hysteria and psychasthenia, Dr. Lilian Welsh and Mary Sherwood the chapter on the hygiene of the growing girl, Dr. Walter L. Burrage the chapter on gonococcus infection and that on fibroid tumors of the uterus, Dr. Prince A. Morrow the chapter on syphilis, Dr. Edward J. Ill, that on abortion. The section on movable kidney is by Dr. F. W. Griffith, enteroptosis by Dr. Thomas R. Brown, and masturbation by Dr. R. L. Dickinson.

As will be seen by the foregoing list of subjects the scope of the book is a little different from previous textbooks on medical gynecology. It contains a maximum of recent knowledge in the form of summaries of the literature coupled with practical suggestions by clinical workers. Present day ideas have taken the place of timeworn traditions and outgrown methods. This is shown in so many places that it is difficult to choose one portion more deserving of notice than another.

The thorough consideration of backache and constipation is a useful section for the physician who practices gynecology. Dr. Barker develops his new ideas with reference to the treatment of the psychoneuroses with a great deal of what might be called medical common sense. It is to be regretted, however, that he has touched so lightly on the diagnosis of these affections. The acute infectious diseases as a cause of pelvic disease is a subject previously neglected in works on gynecology and elsewhere. It is of the greatest interest in the line of preventive medicine to every practitioner of medicine and in the chapter devoted to this subject it is handled with judgment and skill, bringing forward all the ascertainable facts. The chapter on dysmenorrhea is scientific, full of fresh knowledge and helpful in therapeutic hints. Excellent practical suggestions with prescriptions and specific instructions for treatment abound throughout the book. The hygiene of puberty by the Professor of Physiology in the Woman's College of Baltimore and the Director of the Gymnasium at Bryn Mawr should be read by every physician who is called upon to advise young women and girls. The post-operative treatment is, as would be expected, rational and to the point.

Too much praise cannot be given the illustrations. The work of the accomplished staff of artists at the Johns Hopkins is well known. In this book Mr. Broedel has some remarkably good line drawings in addition to a lot of other work from his pencil, that add much to the value of the volume. A very full index of 52 double column pages is a useful feature of medical gynecology. It is not surprising to learn that the publishers, in response to orders already received, are printing a second five thousand copies, for it is the sort of book that should prove popular with the profession at large and deservedly so.

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THE FLY AS AN INTERMEDIARY.

The rôle which insects play as intermediaries between the higher forms of life and the bacteria which are responsible for infectious diseases, is coming to be adequately realized. The baneful offices of *stegomyia* and *anopheles* are now well appreciated. The flea is, it would seem, the main factor in conveying the bacillus pestis from rat to rat and from rat to man. The louse is considered to convey relapsing fever and, in the Philippines, the plague. The bedbug is held to have conveyed smallpox, tuberculosis and intermittent fever; the tick to have conveyed "spotted" or Rocky Mountain fever. Leprosy, elephantiasis, filariasis, anthrax, trachoma, intestinal worms, typhus, conceivably cancer and of course tuberculosis and typhoid are held by responsible observers to have been transmitted through the agency of insects.

The part played by flies is now receiving well-merited though tardy attention. Dr. Lord, of this city, was among the first to submit to the profession indubitable evidence of the transmission of tuberculosis by these insects; and since the appearance of his paper[1] many corroborative observations have been made. No one, for example, can doubt the wide distribution of the tubercle bacillus by means of flies who has seen the representation of a Petrie plate containing a nutrient medium upon which was confined (by means of a glass jar) a fly which had previously walked in and had got the sputum of a consumptive well entangled in his feet. The plate was at first perfectly clear; soon, however, colonies visible by the unaided eye and made up of uncountable tubercle bacilli developed in the tracks made by this fly upon the gelatin.

Unquestionably flies help greatly to swell the infant death-rate, which is always greatest in fly time. The enervating effects of high temperatures are, of course, a factor. But most dysenteries and diarrheal diseases are essentially microbic in origin; and the germs are in large measure supplied by flies. There are few more congenial culture media for bacteria than milk, especially in the environment furnished by the homes of many poor people. It is here *a propos* to note the remarkable immunity which breast-fed infants enjoy from diarrheal diseases. This fluid becomes easily contaminated with the excreta of flies and with the noxious matter clinging to their feet. Surely these insects loom large as factors in tuberculosis propagation, among children especially, as also in the dissemination of diarrheas and dysenteries. Typhoid fever must come well within this category, although there are, of course, other methods of propagation. Flies pollute food and drink by means of the excreta which they convey from dung heaps, manure pits and the like. They breed almost entirely in fecal matter. They certainly disseminate cholera; and cases of tetanus seem to have originated through their agency.

The report which Daniel D. Jackson, S.B., made for the Merchants Association of New York City, and submitted by that body to Governor Hughes, on "The Pollution of New York Harbor as a Menace to Health by the Dissemination of Intestinal Diseases through the Agency of the Common House Fly," is here of interest. In order for a right appreciation one must first consider the atmospheric conditions in cities. Dr. Jackson, for example, in a specimen of city dust, found plaster, iron-rust, stone dust, cement from building operations, dirt from excavations or from loosely constructed carts, ashes, house-sweepings, dried garbage blown from barrels and cans, chimney soot, cinder from industrial plants, excrement of horses, dogs and other animals and dried sputum of the tuberculous and of those having bronchitis, naso-pharyngeal catarrh and pneumonia. It is surely no trifling matter when such ubiquitous impurities are taken up by flies and other insects and are deposited upon food stuffs which are exposed upon the thoroughfares and in the homes. Dr. Jackson supplies a specific instance: he captured along the metropolitan river front a fly which was carrying in its mouth and on its legs 100,000 fecal bacteria; "he had been behind the large packing-houses down by the wharf and was on his way to the nearest milk-pitcher." It is certainly a thing most disgusting and reprehensible in a great community that public comfort stations are lacking in such districts; and undoubtedly many cases of disease have their origin in indiscriminate evacuations in open places about wharves. Dr. Jackson invites us to consider, with regard to typhoid fever and other intestinal diseases, that the autumn rise in typhoid fever, if set back two months from the report of deaths to the time of the contraction of the disease, will exactly correspond to the curve of prevalence of flies and to the curve of rise in deaths from intestinal diseases of both children and adults. It also corresponds to the temperature curve. It is therefore a mistake to attribute the disease to hot weather. Climatic conditions, while contributory, do not furnish the essential cause. The activity of *Musca domestica* is in proportion to the temperature; and the time when this insect is most active and most numerous corresponds precisely with the time of the contraction of typhoid fever and other intestinal diseases.

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[1] Lord (F. T.): Flies and Tuberculosis. The Boston Med. and Surg. Journ., Dec. 15, 1904.

We have given editorial consideration[2] to the subjects of typhoid carriers and of typhoid outbreaks from contaminated milk; we see here added another link in the chain by which this preventable disease is transmitted.

ANNUAL REPORT OF THE BOSTON CITY HOSPITAL.

THE Boston City Hospital has presented its forty-third annual report which contains the twenty-third annual report of the present superintendent, Dr. G. H. M. Rowe. The usual figures and statistical tables are presented, which apply to the year ending Jan. 31, 1907. The delay in publication, probably in large measure unavoidable, detracts somewhat from the interest and value of this as of other similar reports.

The growth of the institution goes steadily on. The number of patients admitted and treated was considerably larger than in any previous year except that immediately preceding, and only a trifle less than that. The number of out-patients, (38,650) was larger than in any previous year. The number treated at the Relief Station (29,390) was larger than in any previous year. The total number treated in all departments (80,295) was the largest in the history of the hospital. The average length of stay (16.8 days) was shorter than in any previous year. Ten years earlier this average was 20.2 days. The number of visits of out-patients was 124,633. The number of patients transported by ambulances was 7,916. The ambulance service has grown to large proportions and such has been the improvement of the service in size, efficiency and dispatch, that it has probably become, according to Dr. Rowe, the largest connected with any general hospital in the United States.

The maximum number of patients in the main hospital on any one day was 504, as against 545 in the previous year. The minimum number was 379, in comparison with 334 for the previous year. The daily average during the year was 448. The average daily cost for patients of all classes in the hospital proper was $1.96, and deducting receipts the net weekly cost per patient to the city was $9.80. It may well be reiterated here that the administration of its municipal hospital emerges with great credit from the searching investigation which the various departments of the city have been undergoing at the hands of a Finance Commission.

The Burnham Memorial Building, in honor of a former trustee, built with funds left by him to the hospital and containing wards for medical patients, is nearing completion.

The South Department, the department for contagious diseases, continues its beneficent work, limited only by its accommodations. At times during the present year the number of patients in this department has exceeded that in the main hospital. The death-rate from diphtheria for this year, deducting deaths within twenty-four hours of admission, was 7.17. Recurrent epidemics of scarlet fever and measles put a great strain at times upon accommodations and upon the devotion of staff and of attendants. Fortunately a new pavilion containing wards for patients with measles has now been added to this group of buildings.

This report, while containing nothing sensational or novel, testifies to the steady good and faithful work which has been done for the citizens of Boston at the institution which it represents. We hope it may long be our pleasure and privilege to refer in these terms to the administration, management and professional work of this municipal hospital.

MEDICAL NOTES.

DR. L. F. BARKER HONORED. — Dr. L. F. Barker, Professor of Medicine at the Johns Hopkins University, has been awarded the honorary degree of doctor of laws by Queens University, Kingston.

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[2] April 2, 1908, p. 458; April 16, 1908, p. 526.

Retirement of Dr. Chaillé. — Dr. Stanford E. Chaillé retired from the deanship of Tulane Medical College, Tuesday, May 19, after fifty years of service in that institution. Dr. Chaillé delivered an address and laid the corner stone of the new building for the department of medicine.

A Psychiatric Clinic in Toronto. — It is announced that a psychiatric clinic, modeled after that of Kraepelin in Munich, is to be established in affiliation with the new general hospital at Toronto. If such a clinic is established, it will probably be the first of its kind in America, although the psychiatric department connected with the University of Michigan is not unlike it in design.

The Harvey Society.— At the annual meeting of the Harvey Society, of New York, held May 15, 1908, the following officers were elected for the coming year: President, James Ewing; Vice-President, Simon Flexner; Treasurer, Edward K. Dunham; Secretary, F. C. Wood. Council, Graham Lusk, S. J. Meltzer, Adolph Meyer.

The society adopted a resolution as follows:

"*Resolved*, that, in the desire of Dr. Graham Lusk not to undertake again the duties of president of the Harvey Society, its members express to him their cordial appreciation of the great value of his services to the medical sciences in this country in founding the society, in successfully administering its affairs during its early growth and in placing it upon a substantial basis. The place now occupied by it abundantly demonstrates the wisdom of Dr. Lusk in organizing a medium of communication between the laboratory and the medical practitioners; and whatever the society shall accomplish in the future will be due in no small part to the worthy example which he has set."

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, May 27, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 55, scarlatina 61, typhoid fever 33, measles 306, smallpox 0, tuberculosis 68.

The death-rate of the reported deaths for the week ending May 27, 1908, was 19.10.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, May 23, 1908, was 243 against 208 the corresponding week of last year, showing an increase of 35 deaths and making the death-rate for the week 20.72. Of this number 118 were males and 125 were females; 238 were white and 5 colored; 142 were born in the United States, 97 in foreign countries and 4 unknown; 53 were of American parentage, 152 of foreign parentage and 38 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 64 cases and 4 deaths; scarlatina, 62 cases and 2 deaths; typhoid fever, 41 cases and 7 deaths; measles, 321 cases and 10 deaths; tuberculosis, 57 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 37, whooping cough 3, heart disease 28, bronchitis 4, and marasmus 10. There were 12 deaths from violent causes. The number of children who died under one year was 34; the number under five years 59. The number of persons who died over sixty years of age was 69. The deaths in public institutions were 99.

An Act for the Defence of Suits for Malpractice. — Should the act adopted at the February meeting of its Council be approved by the society at its annual meeting in June, active members of The Massachusetts Medical Society will be entitled, on conditions specified, to receive, without personal expense therefor, legal advice and court service of an attorney-at-law or attorneys-at-law in the employ of the society, for the purpose of conducting their defence in any court in this Commonwealth, when they are accused of malpractice, or of illegal transactions in connection with the commitment of persons to institutions for the insane.

An Athletic Meeting of the Blind. — There was recently held on the grounds of the Perkins Institution for the Blind in Jamaica Plain an athletic event in which the contestants were blind. Coincidently with this contest others were held in various states at schools for the blind, and the final results were sent to Columbus, Ohio, where the award of prizes was made. Sixteen teams were entered and it is said that by simple devices for certain of the events in which eyesight would seem to be absolutely essential, creditable records were made. The affair, under the direction of the National Associations for the Blind, was the first of its sort held in this country.

NEW YORK.

Bequest. — Among other charitable bequests in the will of the late William K. Hinman, of New York, is one of $3,000 to the Presbyterian Hospital.

Graduation of Nurses, St. Vincent's Hospital. — At the closing exercises of the training school for nurses of St. Vincent's Hospital on May 20, twenty-six graduates received diplomas.

Food Supply of New York. — During the course of a recent address Health Commissioner Darlington stated that in consequence of the enforcement of the pure food laws the food supply of New York was now exceptionally good. Out of the 800 analyses last made, in only 35 specimens were the requirements not met with and but 5 of these called for court action.

A Death from Atropine Poisoning. — Eduardo Eraso, a Venezuelan coffee planter stopping at the Victoria Hotel, died on May 17, from atropine poisoning, the result of a mistake by a Sixth Avenue druggist. The prescription filled by the druggist was for a solution of sparteine sulphate and it is supposed that it was made up from a vial of atropine sulphate. Señor Eraso's wife also took some of the poison and was made seriously ill, but it is believed that her life was saved by an emetic which was promptly given her by a maid.

Department of Mechano-Therapeutics at Columbia. — A department of mechano-therapeutics has just been established at the medical department of Columbia University, under the direction of Dr. Charles H. Jaeger, Chief of Clinic and Instructor in Orthopedic Surgery, the equipment for which is to be furnished by Mrs. Samuel Matshak, as a memorial to her husband, a New York merchant, who died last autumn. The apparatus provided will be of the most complete description, affording suitable exercise both for surgical cases, in order to prevent stiff joints, etc., and for medical invalids and convalescents. It is stated that this is the first equipment of the kind in any university or college in this country.

A Death from Rabies. — William H. Marsh, a Brooklyn manufacturer, died on May 20, from rabies, contracted while fondling a pet spaniel suffering from the disease. An interesting point in this case is that the patient was not bitten by the dog and it is not known positively in what way the virus was conveyed into his system. The diagnosis of rabies was positively confirmed at the autopsy, which was made, in conjunction with the coroner's physician, by Dr. Ira Van Gieson of the research division of the Health Department, who is the foremost expert on rabies in New York. Unfortunately, in removing the brain Dr. Van Gieson received a scratch on the wrist from a scalpel and he immediately placed himself under a course of Pasteur treatment. In consequence of the public alarm caused by the death of Mr. Marsh the Health Department has determined to take active measures for the removal of all stray dogs from the streets, a course long advocated by President Darlington, and a co-operative plan to accomplish this is now being arranged between the department and the Society for the Prevention of Cruelty to Animals. It is estimated that there are more than 150,000 vagrant dogs in the city, of which 50,000 are in the Borough of Brooklyn alone. A campaign of this kind was successfully carried out on Staten Island last autumn and since then no case of rabies, either in the canine or human subject, has been reported there. In Manhattan a large number of persons bitten by dogs have been constantly under inoculation treatment either at the Health Department laboratories or the New York Pasteur Institute.

Obituary.

J. DUTTON STEELE, M.D.

Dr. J. Dutton Steele, of Philadelphia, died on Sunday, May the 17th, at Wayne, Penn. Dr. Steele had been suffering for several months from a complication of ailments brought about by influenza. His recovery, however, was anticipated until a few days before his death, when a change for the worse took place and he began to sink rapidly.

Dr. Steele was a member of that younger group of medical men who are just beginning to make an impress upon the medical profession in America. He was born Feb. 21, 1868, was graduated from Williams College in 1888, and from the University of Pennsylvania in 1893. At the time of his death he was a member of the medical staffs of the Presbyterian and University hospitals in Philadelphia and an instructor in medicine in the Medical Department of the University of Pennsylvania. He was a member of the Association of American Physicians, the Interurban Clinical Club, a Fellow of the College of Physicians of Philadelphia and a member of various local medical societies.

Dr. Steele's work has been largely in the realm of gastro-intestinal disturbances, and on these subjects he had conducted a number of important investigations, which he had presented at various meetings of local and national societies. Dr. Steele had made a strong impression upon his associates in these societies as an able investigator, a man of many pleasing personal characteristics and one endowed with high ideals in medicine. His death is a serious loss not only to his family and to the community in which he lived, but to the general medical profession in America.

Current Literature.

The Journal of the American Medical Association. April 25, 1908.

1. *Stengel, A., and Pancoast, H. K. *A New and More Rational Method of Treatment of Leukemia by the X-ray. Preliminary Report.*
2. Reber, W. *Comparative Potency of Hyoscin and Scopolamin Hydrobromid in Refraction Work.*
3. Hunner, G. L. *Acute Pyelitis Due to Acute Appendicitis.*
4. Allport, F. *The Operation for Thrombus of the Sigmoid Sinus and Internal Jugular Vein of Otitic Origin.*
5. Prince, A. E. *Treatment of Chronic Trachoma.*
6. Hamburger, W. W. *The Ocular Typhoid Reaction. Preliminary Report of a Modification of the Ocular Test of Chantemesse.*

1. Stengel and Pancoast advise the treatment of leukemia by the x-ray by the exposure of different areas of the body with definite regularity. They believe that by exposing the bone marrow all over the body that they are directing their treatment against the primary focus of the disease. The enlargement of the spleen they consider a secondary manifestation. The older method of directly exposing the spleen to the x-rays from the start they consider an unwise procedure. Exposure of the spleen should not be attempted while the organ is still very large and the leucocytosis is still high. The danger from exposure of the spleen is the resulting toxemia from the destruction of cells. The spleen, however, is diminished in size by applications to the bone alone. They consider the leucocyte count of much less importance than the differential count. From their experience they conclude that it would not be safe in the average case to stop the treatment short of 100 applications. They advise daily exposures which may frequently yield quicker and better results. All cases will not respond to this method of treatment. In acute primary attacks and relapses x-ray treatment is, perhaps, as a rule, contra-indicated. The writers append no clinical records of their cases.

[R. I. L.]

The American Journal of the Medical Sciences. April, 1908.

1. *Edsall, D. L. *The Hygiene of Medical Cases, Particularly in Hospital Wards: With Notes on Various Ward Infections, and Observations Relating to the Probable Rôle of Secondary Gastro-Intestinal Infections in Typhoid Fever.*
2. Osborne, O. T. *The Nature and Management of Diabetes Mellitus.*
3. *Arnold, H. D. *The Importance of the Early Detection of Aneurysm of the Aorta.*
4. Perkins, J. *Carcinoma of the Mediastinum Simulating Aneurysm.*
5. Mackenzie, R., and Morrow, W. S. *Cardiac Arrhythmia Due to Extra Systoles Originating in the Bundle of His.*
6. *Deaver, J. B. *Some Reasons Why Cholecystectomy should not be Performed as Frequently as is Advocated by Many Surgeons.*
7. *Ashhurst, A. P. C. *Perforation of the Gall Bladder During Typhoid Fever; Cholecystectomy; Recovery with Analysis of Twenty-one Operations on the Gall Bladder during Typhoid Fever.*
8. *Weisenburg, T. H. *The Diagnosis and Treatment of Syphilitic Lesions of the Nervous System.*
9. *Orbison, T. J. *The Neurasthenia of Auto-intoxication.*
10. *Houghton, H. A. *The Indican Reaction as Evidence of Enterogenic Intoxication.*
11. *Rogers, J. *The Treatment of Chronic Stenosis of the Larynx and Trachea.*
12. Dixon, S. G. *The Reaction of the Phagocytes of Elephant's Blood on the Bacilli of Tuberculosis.*

1. Edsall expresses his conviction that the transmission of various infections in medical wards occurs more frequently than is generally suspected. The usual regulations take into consideration only a few infections, such as typhoid fever and tuberculosis, and even in these only a portion of the means of conveyance is covered by preventive measures. For instance, while the excreta, bedclothes and food utensils may be disinfected, insufficient attention is often paid to the hands of physicians and nurses, by which the infection may be carried to other patients. The precautionary measures are often moreover given little attention by the physicians in charge. Isolation can be applied to only a few diseases, and even if cases of certain diseases are isolated from the general wards, it is to be remembered that many cases in the isolated group may have secondary infections which may be acquired by other patients isolated with them. The chief sources of infection are the food, the hands of doctors and nurses, instruments, food vessels and other ward utensils, such as bed-pans and urinals, and lastly the atmosphere. Of foods the most important for consideration is milk. Few hospitals have adequately supervised milk supplies. In all hospitals where the milk supply is not carefully and continuously supervised, the only safe method is to resort to pasteurization. The milk must moreover be kept at a low temperature until it is used, and should be placed in an efficient cooling plant at once on delivery. One graduate nurse should be responsible for the proper care of the milk received, and in each ward an especially designated nurse should be required to see that the milk of the ward is kept cold and is protected from infection. When possible it is important that the duties of nurses who handle the milk and food supply should not include care of the person, excreta or bedclothes of any infectious case. From the hands of attendants, especially of nurses, there is danger of infection in various ways, but especially by careless methods in caring for the patients' mouths. In performing this duty the nurse should wear sterilized rubber gloves, and should touch the patient only with sterilized applicators. Bedpans and urinals should be boiled and the nurses should wear rubber gloves in handling them. Protection of nurses against infection, especially typhoid, must be considered, since statistics from a number of hospitals show that the average morbidity among nurses, especially in the medical wards, is large. In the medical wards of the Johns Hopkins Hospital the morbidity among nurses is estimated as seventeen times greater than among Baltimore citizens in general. Typhoid may also be contracted by patients in a hospital, but this is comparatively rare. In the author's experience there have been ward epidemics of secondary gastro-intestinal infection from milk, and also of groups of cases of abdominal complications in typhoid, probably from similar causes. The importance of these secondary infections in typhoid, Edsall believes to be great. Otitis media, skin infections, pneumonia, tonsillitis and "influenzal" attacks may occur strikingly in groups. It is urged, therefore, that wards shall be managed in such a way that no indirect contact infections can occur. It is further urged that certain diseases not generally regarded as contagious, notably pneumonia, be isolated. A general description of the methods by which these ends are attained in the author's service is given, with a brief statement of what improvement of conditions has resulted.

3. Arnold urges that more attention be paid to the early diagnosis of aneurysm. If this were done, he believes that more could be done in the way of treatment. Aneurysms occur most commonly in the ascending and transverse portions of the arch of the aorta. In the ascending arch aneurysm is most easily detected by its physical signs; in the transverse arch aneurysm usually gives rise to early symptoms. In physical examination most stress is laid upon light percussion to outline the transverse dullness at the level of the manubrium, which normally should not extend more than 2 or 3 cm. to the right and 1.5 to 2.5 cm. to the left of median line. In auscultation a systolic murmur loudest over the dull area is of value as confirmatory evidence, but its absence does not exclude the presence of aneurysm. More important Arnold regards increased loudness of the cardiac sounds, owing to a more ready transmission to the surface. An

accentuated ringing aortic second sound may be noted, corresponding to the diastolic shock. Hoarseness of voice or aphonia, barking cough and wheezing respiration are suggestive. Diastolic shock and changes in the pulses are to be looked for, although they are rarely early signs. Arteriosclerosis out of proportion to the age of the patient is suggestive. Tracheal tug is often present in early cases. Slight heaving of the chest wall or pulsation in the episternal notch may occur early. Obstruction to the venous circulation is important evidence. Dysphagia, pain increased by exertion, dyspnea and sometimes cough are common results of pressure. If these are increased by the action of digitalis the presence of aneurysm is to be strongly suspected. Hemoptysis may occur by the oozing of blood; in a case which the author reports this occurred among the early symptoms. The x-ray as a means of diagnosis is referred to, as of value where positive evidence is obtained, but cases are cited where in spite of negative x-ray findings the clinical diagnosis was beyond question. In treatment two chief objects are to be attained; the blood pressure is to be kept within bounds, first by regulation of the amount of exertion, and second by securing peripheral dilatation. Rest in bed in the earlier stages is unnecessary. But the patient should be guarded against undue muscular strain, and should understand the mechanical principles which underlie treatment. Mental quietude is important. Of drugs the vasodilators are of most value; the author includes iodide of potassium in this class.

6. Deaver protests against the view that cholecystectomy is an operation without objections on grounds of physiology. He regards the gall bladder as an organ which serves a useful purpose, as is shown by the manner in which in some cases the common duct after cholecystectomy has undergone dilatation or diverticulum formation. He believes also that simple drainage of the gall bladder is a much safer operation than deeper operations, and that the organs are left in a much more suitable condition for further operations in case such secondary operations are necessary. Post-operative adhesions are more extensive and serious after cholecystectomy. Cholecystectomy, he concludes, is indicated only in the following conditions: hydrops of the gall bladder, cancer, calcareous degeneration and fibrosis, chronic empyema, gangrene and in cases where there are many small stones, all of which cannot be removed.

7. Ashhurst reports 2 cases of perforation of the gall bladder in typhoid fever, with operations. He also cites 19 cases from the literature of operations upon the gall bladder during the course of typhoid fever for cholecystitis or empyema, with or without peritonitis and perforation. Of the 21 cases 13 died. Among 2,864 cases of typhoid fever treated in the Episcopal Hospital, Philadelphia, in 1905–7 he finds records of 18 cases with gall bladder complications.

8. Weisenburg's article is a summary of the subject of the syphilitic affections of the nervous system in the various stages of the disease. He estimates that cerebrospinal diseases occur in 5% to 10% of all cases of syphilis. Early treatment is not always effectual in preventing them. Pathologically in the early forms there is round cell infiltration about the blood vessels, endarteritis and meningeal thickening, rarely gummas, myelitis and encephalitis. Late forms are due principally to results of endarteritis, or to tissue changes of unknown cause as in tabes dorsalis. Of clinical types of cases the earliest is a myelitis, in most cases affecting the lower thoracic or thoracic lumbar region, with paraplegia, paralysis of bladder and rectum and loss of sensation with girdle sense and pain. Lesions may be multiple. Hemiplegia may occur. Basal meningitis occurs, with oculo-motor palsy. After the fifth year after infection gummata occur and diseases resulting from endarteritis. The late affections, supposedly due to toxins of the disease, are general paresis, tabes and postero-lateral sclerosis. In treatment chief stress is laid upon the use of mercury by inunction, to be continued for six weeks before hope of benefit is given up. Hot packs two or three times a week are supposed to aid its action. Iodides are regarded as of secondary importance. Doses of 50 to 70 gr. a day are considered sufficient.

9. Orbison reports 8 cases of neurasthenia with excessive indicanuria, which were relieved as the indicanuria diminished under treatment.

10. Houghton writes in the hope of stimulating interest and confidence in the Jaffé and Obermeyer tests for indicanuria to determine the presence of excessive intestinal putrefaction. For quantitative results he refers to Folin's scale, according to which the color is compared to that of Fehling's solution.

11. Rogers describes his method of treatment of chronic stenosis of the larynx, as performed in 23 cases. The treatment consists chiefly in fitting under deep general anesthesia an O'Dwyer tube, as tight as can be worn without danger of pressure necrosis. This tube is worn for long periods. [F. W. P.]

The Journal of Medical Research.
March, 1908.

1. *Ravenel, M. P., and Reichel, J. *Tuberculous Infection through the Alimentary Canal.*
2. Landis, H. R. M. *Agglutination Studies in Tuberculosis.*
3. Bergey, D. H. *Factors Determining the Coagulation of Blood Serum by Bacteria.*
4. Longcope, W. T. *The Influence of Blood Serum upon Autolysis.*
5. Lavenson, R. S. *Congenital Obliteration of the Bile Ducts with Cirrhosis of the Liver.*
6. Pepper, W. *A New Method of Examination of the Feces for the Ova of Uncinaria. With Report of a Case of U. Americana and a Case of U. Duodenale.*
7. *Rivas, D. *Contribution to the Differentiation of Bacillus Coli Communis from Allied Species in Drinking Water.*
8. *Steele, J. D. *Experimental Observations on the Value of Intestinal Antiseptics.*
9. Royer, B. F., Weston, P. G., and Clark, G. F. *A Study of Phagocytosis in Diphtheria.*
10. Rhein, J. H. W. *Syringo-Myelia with Syringo-Bulbia.*
11. Spiller, W. G. *The Association of Syringo-Myelia with Tabes Dorsalis.*
12. Hartzell, M. B. *A Further Contribution to the Study of Benign Cystic Epithelioma.*
13. *Rosenau, M. J., and McCoy, G. W. *The Germicidal Property of Milk.*

1. Ravenel and Reichel have made a number of very carefully controlled experiments on the subject of tuberculous infection through the alimentary canal. The objects of the experiments were to prove the ability of the tubercle bacillus to pass through the intestinal wall of the healthy guinea pig, and to determine the time required to reach the lungs. An emulsion of tubercle bacilli of known virulence was mixed with an equal volume of fresh cream and injected into the stomach of a number of guinea pigs with a very fine hypodermic needle, the stomach having been exposed by an incision through the abdominal wall. The pigs were killed from four to twenty-four hours after inoculation, and the lungs carefully removed, ground up with physiological salt solution and injected intraperitoneally into another set of pigs, which were killed after six weeks. Fifty-six per cent of these latter showed infection with the tubercle bacillus, some of the cases inoculated with the lungs of pigs killed four hours after inoculation being positive. Ten pigs were allowed to live for six weeks after inoculation as controls, but all these, in spite of the precautions taken at the time of the inoculation, showed evidence of infection about the wound. In view of this result, the authors feel unable to draw any positive conclusions from their work, since it is possible that infection took place through the blood or lymph channels, to some extent at least. At the same time the distribution of the lesions convinces them that the passage of tubercle bacilli through the intestinal wall did take place, and they believe their results give confirmatory evidence to the work of others in the demonstration of the importance of the alimentary canal, as a portal of infection in tuberculosis.

7. Rivas has made a study of the numerous bacilli found in drinking water which closely resemble the colon bacillus and are commonly classified as members of the

colon group. He believes that the bacillus coli is a single micro-organism and not a group, for he is convinced that many of the reported variations in the action of bacillus coli in media of different kinds, as in acid production, formation of indol, non-liquefaction of gelatin, and of gas production, are due to a difference in the media rather than to a difference in the micro-organism. He believes that the organisms now classified under the name "colon group" are in reality not so closely related to the bacillus coli, as to warrant this name. He suggests the term saccharolytic group in preference, on account of the great power these organisms have for fermenting carbohydrates. He gives the following three tests to differentiate the colon bacillus from these organisms: (1) .25 ccm. of a forty-eight-hour culture in dextrose bouillon is rapidly boiled in 5 ccm. of a 10% sodium hydrate solution. There will appear immediately after boiling a lemon yellow color in the tubes of colon bacillus, while in the others, as an indication of the absence of bacillus coli, the solution will remain clear and colorless, taking on a slightly pinkish tinge after five to ten minutes. (2) If 1 ccm. of sodium hydrate solution be added to the cultures and then 1 ccm. of 50% sulphuric acid, a purplish color will appear either at once or in a very few minutes, if bacillus coli is present. (3) The third test is the exhaustion of the sugar from a 1% dextrose bouillon medium after incubation for forty-eight hours at 37° C. The colon bacillus will not do this, while the saccharolytic group will. Although this latter group presents many characteristics which resemble the colon bacillus, the author believes that these tests will suffice for differentiation.

8. Steele has studied the effect of intestinal antiseptics on 6 cases, using the Strasburger method of determining the total amount of bacteria in the stool, to estimate the effect of antiseptics on the intestinal bacteria. He finds that in normal individuals the number of bacteria is markedly diminished, but that in the presence of an abnormal condition of the mucous membrane, the administration of an antiseptic may actually increase the number of bacteria present. He used bismuth salicylate and beta-naphthol in his experiments. He is firmly convinced that evacuation of the intestinal contents, combined with regulation of diet, is by far the most effective means at our command to check excessive bacterial action in the intestines.

13. Rosenau and McCoy report on a very extensive investigation of the germicidal properties of milk. Judged by the number of colonies that develop upon agar plates, the bacteria in milk first diminish and then increase in number. This so-called germicidal property of milk occurs only in the fresh raw milk. For the most part there is no actual reduction in the number of bacteria, but as compared with the controls a restraining action is evident. The action is that of a weak antiseptic rather than a germicide. When the milk is kept warm (37° C.) the decrease is pronounced within the first eight hours. After this time no restraining action is manifest. When the milk is kept cool (15° C.) the decrease is less marked, but more prolonged. The decrease in the number of bacteria is largely apparent, being due at least in part to agglutination. Phagocytosis plays no essential part in the germicidal action of milk. This action of milk is specific against certain bacteria. Dilution experiments demonstrate the enfeeblement of agglutinins rather than the presence of a germicidal substance in solution. The germicidal actions of blood and milk resemble each other in some particulars, although blood serum acts much more quickly and more powerfully than milk. Freezing milk and then thawing it does not affect the phenomenon, while boiling it or heating it above 80° C. destroys its germicidal properties. The effect of lesser degrees of heat varies with the micro-organism. The germicidal action of milk varies with different animals, and with the same animal at different times. At most the action is variable and feeble. It cannot take the place of cleanliness and ice, but may be taken advantage of in good dairy methods.

[W. B. R.]

British Medical Journal.

March 7, 1908.

1. *Young, R. A. *Clinical Remarks on Pulmonary Tuberculosis in Infancy and Childhood.*
2. *Low, V. W. *Address on the Modern Treatment of Surgical Tuberculosis.*
3. *Wynn, W. H. *A Case of Actinomycosis (Streptotrichosis) of the Lung and Liver Successfully Treated with a Vaccine.*
4. Cattle, C. H. *A Case of Abscess of the Lung Cured by Incision and Drainage.*
5. Hall, A. J., and Simpson, G. *A Case of Phlegmonous Gastritis.*
6. Lunn, J. R. *A Successful Case of Thoracoplasty for the Relief of Chronic Empyema.*
7. Dean, G. *A Typhoid Carrier of Twenty-nine Years' Standing.*

1. Young gives an excellent article on pulmonary tuberculosis in infancy and childhood. He first discusses the various statistics as to the presence of pulmonary lesions in childhood. In his own experience, out of 337 cases of children brought to the hospital for treatment of cough, expectoration and wasting, he found only 45 with definite signs suggestive of tuberculous disease of the lungs, and in only a very small number was the diagnosis confirmed by a positive sputum examination. He discusses the etiology of this condition, particularly the question of the aërogenous versus the enterogenous infection, and he dwells on the part played by predisposing causes, citing one authority who found that only 3% of the children of consumptive parents who were sent to the country died, while no less than 50% of their brothers and sisters who remained at home succumbed. He then takes up the pathological anatomy of this condition, divided into four types: tuberculosis of the tracheo-bronchial glands, acute miliary tuberculosis, acute caseous tuberculosis, and chronic or fibrous tuberculosis. He takes up the symptoms and physical signs of these four types, and dwells at length upon the diagnosis, the use of tuberculin, the methods of collecting the sputum and the ophthalmic and skin tuberculin reactions. He speaks briefly of treatment by hygienic methods and by means of tuberculin, with and without taking the opsonic index.

2. Low writes on the modern treatment of surgical tuberculosis. He believes that surgeons are getting to be far more conservative in their operations, and, as is quite right, are putting far more importance on the hygienic, open-air, constitutional treatment than on local surgical measures. He speaks at length on the use of tuberculin in treatment and also mentions the Bier treatment and the Klapp suction apparatus. He believes that the patient's powers of resistance to the disease should be periodically measured by suitable blood examinations. Where resistance is low tuberculin should be used, and in cases of circumscribed tuberculosis efforts should be made to increase the circulation through the infected area.

3. Wynn gives the details of a case of actinomycosis of the lung and liver successfully treated with a vaccine. He gives the clinical history of this case in the greatest of detail, describes the method of preparing his vaccine from the infecting organism, and the result of treatment with this preparation.

[J. B. H.]

March 14, 1908.

1. West, S. *Clinical Lecture on the Treatment of Pneumonia.*
2. Russell, S. J. R. *The Purvis Oration on the Diagnosis of Organic from Functional Affections of the Nervous System.*
3. *Trotter, W. *Clinical Lecture on some of the Commoner Symptoms of Cerebellar Abscess.*
4. McCallum, A. J. *The Colony and Bromide Treatment of Epilepsy.*
5. *Russell, J. W. *A Case of Hysterical Somnambulism, Showing Abnormal Acuity of Vision in the Somnambulistic State.*
6. Taylor, H. F. L. *A Case of Merycism.*

3. Trotter considers the common symptoms of cerebellar abscess. These are: (1) general evidences of an infective process; (2) evidences of a lesion in the substance of the brain spreading with variable rapidity, but as a rule subacutely; (3) evidences of a lesion of the lateral lobe of the cerebellum. He takes up, first, the general constitutional signs of suppuration; next, headache, vomiting and

optic neuritis, as the three familiar signs of increasing intracranial tension, and in addition some of the less common signs such as giddiness, wasting and the various mental states, varying from a mild apathy to the deepest coma, the commonest being a very slight dullness and disappearance of spontaneity. Under the subject of the localizing cerebellar signs he goes into detail in regard to the extrinsic and intrinsic signs. The latter may be divided into ocular symptoms and signs affecting the limbs, incoördination and hypotonicity. He does not take up the subject of operation, except that he believes in removing a considerable area of the bone and incising the dura freely, so that if the abscess is not actually found, at least the pressure is removed.

5. Russell reports an interesting case of hysterical somnambulism in a girl of twenty-one who, while still asleep, was able to do delicate crochet work, and write letters and essays in almost complete darkness. On attempting to do these same things when awake, under the same conditions, it was absolutely impossible for her to do so. Under hospital treatment the girl recovered. [J. B. H.]

The Lancet.

April 4, 1908.

1. Shrubsall, F. C. *Hunterian Lectures on the Pygmy and Negro Races of Africo.*
2. *Symonds, C. J. *Lettsomian Lectures on Tuberculosis of the Kidney and Malignant Disease of the Cecum.*
3. *Hunter, W. *Delayed Chloroform Poisoning; its Nature and Prevention.*
4. Kerr, H. *Observations on the Bacteriology of Scarlet Fever.*
5. Miller, J. *Note upon the Tuberculo-Opsonic Index of the Urine and Sweat in Health and in Tuberculous Disease.*
6. *Reyn, A., and Kjer-Petersen, R. *Observations on the Opsonins, with Special Regord to Lupus Vulgaris.*
7. Hirsch, C. T. W. *Motoring Notes.*

2. Symonds devotes the third of the Lettsomian lectures to malignant disease of the cecum, presenting in detail the clinical history, with operation and after results, of five cases of this disease. He then takes up the diagnosis and differential diagnosis of this condition and considers the limits of operation. He does not believe that involvement of a neighboring coil of intestine is a bar to excision. He considers the palliative treatment by means of short circuiting, and the value of the Murphy button, which he finds of great service when the bowel is healthy.

3. Hunter believes that delayed chloroform poisoning is due to a disturbance in fat metabolism caused by the anesthetic. The vomiting which occurs after anesthetics he believes is toxemic, due to the profound depression of liver function, with consequent diminution of its antitoxic function. Forced abstention from food before administration of anesthetics may in individual cases be carried too far and is in his opinion largely responsible for the fatal effects of delayed chloroform poisoning. Such effects could in all probability be completely prevented if instead of withholding food particular care was taken that the patient had always a very nutritious and easily digestible meal, well sweetened, two or three hours before operation.

6. Reyn and Petersen spend the greater part of their paper on a technical consideration of the best way of estimating the opsonic index of cases of lupus vulgaris. They then consider the treatment of this condition with tuberculin T. R., quoting the experience of other men in this line. They used doses of 1-4000 to 1-2000 mgm. at intervals of about three weeks, increasing the dose up to 1-500 mgm. In the second part of their paper they report a series of cases of lupus treated in this way, with charts showing the variations of the opsonic index. They conclude it is not to be recommended for the sole treatment of lupus, but that combined with the x-ray or Finsen light it may be serviceable. [J. B. H.]

Archiv für Klinische Chirurgie.

Bd. 83. Heft 3.

1. *Klein, L. *The Radical Abdominal Operation for Suppuration of the Uterine Adnexa.*
2. *Rehn, L. *The Surgery of the Heart and Pericardium.*
3. *Villinger. *Experiments with a New Drug for General Inhalation Anesthesia (Dioform).*
4. Göbell, R. *The Total Extirpation of Pancreatic Cysts.*
5. Poulsen, K. *Dislocation of the Semilunar Bone of the Wrist.*
6. Gluck, T. *The Surgery of the Pericardium.*
7. Guleke, N. *Dwarf-like Growth of the Skeleton Due to Premoture Union of the Epiphyses.*
8. Stettiner, H. *Atresia of the Anus ond Communication of the Rectum with the Prostatic Urethra; Multiple Atresios and Stenoses of the Intestine.*
9. Henschen, K. *Torticollis and Deviotions of the Spine Due to the Chronic Dyspnea Accompanying Goiter.*
10. Haasler, F. *Duodeno-Jejunol Hernia on the Right Side.*
11. Grüneisen, M. *Incarcerated Obturator Hernia.*

1. On the basis of 48 cases of pelvic suppuration from tubal infection, Klein concludes that the best operation is one which removes all the internal genitalia, with the exception of one ovary, or a part of one ovary. Drainage is carried out through the vagina, the abdomen being closed. Because of the danger of catgut ligatures, only silk is used. All ties are left long and their ends brought out through the vagina, whence they can be removed a few days after the operation. The bladder or the ureter was injured in four instances; these injuries were repaired at subsequent operations. In ten instances there occurred an intestinal fistula. Although the cervix was removed, as a rule, in order to afford better drainage, there was no instance of hernia into the vagina. The mortality was 6.25%; the duration of hospital treatment three weeks. In every instance where recovery took place the patient was able to do her work as usual.

2. In an extremely exhaustive and interesting paper Rehn discusses the surgery of the heart. Following an injury of practically any sort, if there occurs speedy distension and filling of the pericardium, with symptoms of heart pressure, a diagnosis of a wound of the heart is made certain. A severe, continuous bleeding from an external wound in the region of the heart points to an extra-pleural injury of the heart, while the appearance of frothy blood only shows an injury to the inside of the thorax. Such bleeding may come from the heart. The stereoscopic x-ray examination may be of great aid in making a diagnosis in the early stages of the bleeding, when the percussion signs are inconclusive. Thus we can see an increase in the area of cardiac shadow, and can determine whether or not there is a foreign body in the heart wall. A diagnosis of very probable heart injury can be made if the external wound corresponds in nature and direction with such an injury and there are present besides signs of hemothorax or hemopneumothorax, together with abnormal murmurs over the cardiac area. Murmurs may be either extra- or intrapericardial. Even the signs of air in the pericardium do not mean that there is necessarily an injury to the heart itself. The nearer the external wound approaches the sternum, the more probable that the heart has been injured, for this corresponds to the most fixed portion of the organ. A systolic, spurting murmur is of great diagnostic value, but is not often heard. A foreign body found protruding from a wound of the heart should never be removed until the heart itself, or at least the pericardium, has been exposed by operation. Fatal bleeding is thus avoided. If the patient is unconscious no anesthetic should be given. No single method of exposure of the heart should be followed, but the operator should be governed by the conditions found. Sauerbruch's cabinet or Brauer's table are of great advantage if accessible. The osteoplastic bone flap should be used as little as possible, for it is very liable to infection and is often unnecessarily extensive. In many cases where the diagnosis is not certain, an exploratory pericardiotomy should be performed. This must be so performed that it offers the best opportunity of emptying the pericardium, while at the same time it protects the pleura. Through a 6 cm. incision along the border of the seventh rib, starting at the xiphoid, a small portion of the sternum together with the cartilage of the seventh and if need be of the sixth ribs are removed with bone forceps. Then by following close to the sternum the pericardium is easily found and opened. The more

it is distended, the easier the operation. If, on opening the pericardium, there is found a wound of the heart, this must be sutured by interrupted stitches of fine silk. The profuse bleeding is best controlled by compression of the inferior and superior cavas with the fingers of the left hand, the heart being drawn forward by traction on the edges of the pericardium. Speed and gentleness are essential in all manipulations. It is of small importance whether the stitches penetrate the endocardium or not, but they should not be placed too near the edge of the heart wound. During the placing of the sutures, the heart should be given opportunity from time to time to regain its equilibrium. Of 124 cases of wounds of the heart which were sutured, 40% recovered, while 60% died. In 45% the left ventricle was injured, in 32% the right. In 16 patients there was present a double wound. Whether or not one can successfully ligate a coronary artery cannot be answered at present. Branches of this artery can undoubtedly be tied without harm, however. An injury of the vena magna must be met by an attempt at suture of its wall. The question of drainage of the pericardium or of the pleura, or of both must be decided by the individual operator, since the statistics at present are too few to be conclusive. If either cavity be closed, however, it should first be carefully emptied of all free blood.

3. Villinger finds in dioform an anesthetic which acts much the same as chloroform, but from which the recovery is more rapid and the after effects less severe. It is the dichloride of acetylene and has the formula $CHCl=CHCl$, being obtained by the action of the pentachloride of antimony on acetylene. [W. C. Q.]

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Correspondence.

LETTER FROM BERLIN AND VIENNA.

[*From our Special Correspondent.*]

Recent Hospital Construction.

Berlin, April 30, 1908

Mr. Editor: The new hospitals in Vienna and Berlin are well worth the study of those interested in hospital construction.

The new *Allgemeines Krankenhaus* in Vienna comprises a group of large, four-story buildings placed without crowding in ample grounds. Though perfectly simple in exterior, the size and good proportions of the buildings render them not only dignified but attractive to the eye. The building for gynecology and obstetrics is the only one that has been finished inside. It will be in use soon.

The hospital is interesting chiefly on account of the care with which every detail of construction and internal arrangement has been planned. All the floors and the walls to the height of about five feet are tiled. Above the tiles the walls are coated with a smooth enamel paint and where the plastering meets the tiles it slopes inward to the same plane. There is no moulding, ledge, or crack where dirt can lodge and water can be used freely on walls and floors.

Visitors to the gynecological operating-room will enter by a special door and stand behind a railing under the window where they will have a good view of the operating. They are not to be allowed to pass through the room and those in the front row will stand at a level about ten inches below the main floor so that they cannot intercept the light of the operator.

The plan for obstetrical work is similar, but has additional precaution against contamination. Between the sterilizing room and the operating-room is a cabinet with glass doors opening into both rooms. This cabinet is to be kept sterilized. Everything destined for use in the operations goes into the cabinet directly from the sterilizer and need not be taken out into the operating-room until required for use. Running in and out of attendants and exposure of sterilized articles to dust are thus reduced to the minimum. On account of the great expense of building and maintaining such a large hospital unproductive elaboration has been avoided, but the hospital is a model of excellence of detail.

Still finer is the new hospital for children in Vienna. As an ample sum was provided by private generosity there was no need for economy. It is beautifully finished throughout and all the fittings are of the best. The wards are decorated here and there with frescoes of fruit or flowers, giving a bright and cheerful look. In the center of one of the large wards is a fountain and plants are used effectively. The plans and furnishings are the most modern and some of the appointments are original with Professor Schlesinger who was consulted about the plans.

The great Virchow Hospital just finished in Berlin is equally interesting. It has the advantage of being outside the city where economy of space was unnecessary. Behind the administration building is a long avenue of trees lined on either side by low buildings of the same shape and size, standing at regular distances apart. The medical wards are on the right, the surgical on the left. The power and heating plant stands in the background at one side and the pathological and bacteriological laboratories at the far end of the avenue.

The general plan of the ward pavilions is the same, with modifications to meet special needs. The pavilions are long and narrow and lie north and south at right angles to the avenue. An entrance hall runs through the middle of every pavilion from side to side. This hall is flanked by small rooms and by a corridor leading to a ward on either hand. The small rooms comprise an examining room, room for special treatments, laboratory, ward kitchen, nurses' room, bath and toilet rooms and a small sitting room for patients. In the extreme ends of the medical pavilions are small rooms for special cases. The wards have windows on the two long sides which admit sunshine morning and afternoon. The floors are tiled, but the plastering of the walls is finished with a rough surface, pleasing to the eye but hard to clean. Although there are no marble halls, a few very simple frescoes give the wards a cheerful look and plants have not been tabooed. The beds can be wheeled easily into the hall and out-of-doors — a great advantage. On the second floor are quarters for a physician and rooms for nurses. Delirious or noisy patients from all parts of the hospital are sent to a ward designed for this purpose. It has small rooms for one or two patients each. Instead of using bedsteads the mattresses are laid flat upon the floor. Box-like padded beds are at hand, but are rarely used, and tying is never resorted to. There are special wards also for contagious and other classes of disease. The cooking is done centrally and the food is warmed in the ward kitchens before serving.

One of the best features of the plant is a pavilion where all kinds of hydro- and electro-therapy, Zander exercises and special gymnastics are conducted in accordance with prescriptions brought by the patients from their respective departments. Men are treated in the morning, women in the afternoon.

The general plans and the plans of the pavilions of this hospital seem ideal and from the point of view of economy and efficiency the money invested has been well spent.

Very truly yours,
George C. Shattuck, M.D.

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REUNION AND DINNER OF HARVARD MEDICAL ALUMNI AT CHICAGO.

20 Hereford St., Boston, May 25, 1908.

Mr. Editor: May I use the columns of the Journal to call the attention of all graduates of the Harvard Medical School to the reunion and dinner which will be held at Chicago during the coming meeting of the American Medical Association? The evening of Tuesday, June 2, has been officially designated for reunions and entertainments for the alumni of various medical schools and other organizations. The Harvard dinner is in charge of Dr. Henry F. Lewis, of 42 Madison St., Chicago. The hour set is 6 p.m., in order that those who desire may attend the orations in medicine and surgery later in the evening. It is hoped that every medical graduate of Harvard who intends to be in Chicago will indicate to Dr. Lewis his intention to attend the dinner, in order that Dr. Lewis may be able in advance to make proper arrangements.

Very respectfully yours,
David Cheever, M.D., *Secretary,*
Harvard Medical Alumni Association.

RECORD OF MORTALITY

For the Week ending Saturday, May 16, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	—	—
Chicago	635	165	Waltham	4	0
Philadelphia	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	5	3
Baltimore	201	56	Brookline	10	1
Cleveland	—	—	North Adams	8	3
Buffalo	—	—	Chicopee	4	2
Pittsburg	—	—	Northampton	6	1
Cincinnati	—	—	Medford	4	—
Milwaukee	—	—	Beverly	4	—
Washington	—	—	Leominster	4	2
Providence	83	15	Hyde Park	3	1
Boston	270	75	Melrose	2	0
Worcester	33	10	Newburyport	—	—
Fall River	39	15	Woburn	5	0
Cambridge	25	4	Westfield	4	1
Lowell	30	7	Marlboro	5	0
Lynn	26	5	Revere	5	1
New Bedford	29	10	Attleboro	4	0
Springfield	21	2	Peabody	—	—
Lawrence	15	3	Adams	2	1
Somerville	19	5	Clinton	3	0
Brockton	14	3	Gardner	3	1
Holyoke	15	5	Milford	2	—
Malden	13	2	Watertown	1	0
Chelsea	11	3	Plymouth	—	—
Newton	11	3	Weymouth	0	—
Salem	22	12	Framingham	3	—
Haverhill	9	2	Southbridge	7	4
Fitchburg	11	3	Wakefield	—	—
Everett	9	2	Webster	—	—
Taunton	15	2	Arlington	3	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED MAY 13, 1908.

KERR, J. W., assistant surgeon-general. Granted leave of absence for fifteen days, to be taken en route between Chicago, Ill., and Washington, D. C. May 12, 1908.

WHITE, J. H., surgeon. Detailed to represent the Service in the Section of Hygiene and Sanitary Science of the American Medical Association to be held in Chicago, Ill., June 2–6, 1908. May 6, 1908.

ROSENAU, M. J., surgeon. Detailed to represent the Service in the Section of Pathology and Bacteriology of the American Medical Association to be held in Chicago, Ill., June 2–6, 1908. May 6, 1908.

MATHEWSON, H. S., passed assistant surgeon. Granted leave of absence for one month from May 15, 1908. May 11, 1908.

CORPUT, G. M., passed assistant surgeon. Granted leave of absence for ten days from May 11, 1908. May 9, 1908.

HAMILTON, H. J., acting assistant surgeon. Granted leave of absence for nine days from May 10, 1908. May 8, 1908.

REIMER, H. B. C., acting assistant surgeon. Directed to proceed from Boston to New York for special temporary duty, upon completion of which to rejoin his station. May 11, 1908.

ROYSTER, W. L., acting assistant surgeon. Granted leave of absence for four days from May 7, 1908, under paragraph 210, Service Regulations.

WALKLEY, W. S., acting assistant surgeon. Granted leave of absence for ten days from May 18, 1908. May 12, 1908.

BOARDS CONVENED.

A board of medical officers was convened to meet at Port Townsend, Wash., for the purpose of making a physical examination of an officer of the Revenue-Cutter Service. Detail for the Board: Surgeon W. G. Stimpson, chairman; Acting Assistant Surgeon R. Lyall, recorder.

Boards of medical officers were convened to meet on May 11, 1908, for the purpose of making physical examination of applicants for the position of cadet engineer in the Revenue-Cutter Service, as follows:

New York, N. Y.: Passed Assistant Surgeon J. A. Nydegger, chairman; Acting Assistant Surgeon F. Mahoney, recorder.

Baltimore, Md.: Surgeon L. L. Williams, chairman; Passed Assistant Surgeon J. T. Burkhalter, recorder.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 23, 1908.

A. FARENHOLT, surgeon. Detached from the "Independence," and ordered to the "Maryland."

J. T. KENNEDY, surgeon. Detached from the Naval Recruiting Station, Dallas, Texas, and ordered to the "Independence."

E. M. SHIPP, surgeon. Detached from the "Illinois," and ordered to the "Pennsylvania."

J. F. URIE, surgeon. Detached from the "Pennsylvania," and ordered to the "Illinois."

G. M. MAYERS, past assistant surgeon. Ordered to the Navy Yard, Mare Island, Cal.

M. W. BAKER, past assistant surgeon. Detached from the "Colorado," and ordered to the "Nebraska."

H. A. DUNN, past assistant surgeon. Detached from the "Nebraska," and ordered to the "Colorado."

H. O. SHIFFERT, past assistant surgeon. Ordered to the "Lancaster."

D. C. CATHER, assistant surgeon. Detached from the "Lancaster," and ordered to the Naval Recruiting Station, Kansas City, Mo.

H. A. GARRISON, assistant surgeon. Detached from the Naval Hospital, Philadelphia, Penn., June 20, and ordered to the Naval Station, Guam, L. I., sailing from San Francisco about July 5.

C. L. MORAN, assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to the Naval Recruiting Station, Dallas, Texas.

M. C. BAKER, assistant surgeon. Detached from the Navy Yard, Mare Island, Cal., June 1, and ordered to the "Ohio."

APPOINTMENTS.

RICHARD CLARKE CABOT, M.D., has been appointed assistant professor of clinical medicine for five years at the Harvard Medical School from Sept. 1, 1908.

LEONARD WORCESTER WILLIAMS, Ph.D., has been appointed instructor in comparative anatomy at the Medical School of Harvard University for three years from Sept. 1, 1908.

DR. S. A. KNOPF, of the city of New York, has been elected professor of Phthisio-therapy to fill a newly created chair at the New York Post-Graduate Medical School and Hospital.

SOCIETY NOTICES.

MAINE MEDICAL ASSOCIATION. — The fifty-sixth annual meeting will be held in City Building, Bangor, Me., Wednesday and Thursday, June 10 and 11, 1908.

AMERICAN MEDICAL EDITORS' ASSOCIATION.— The Thirty-ninth Annual Meeting of this Association will be held at the Auditorium Hotel, Chicago, May 30 and June 1, 1908. Banquet, Monday evening.

AMERICAN ASSOCIATION OF MEDICAL MILK COMMISSIONS. —This Association will hold its second annual meeting at the Chicago Beach Hotel, 51st St. and Cornell Ave., Chicago, Ill., on Monday, June 1, 1908. Commencing at ten o'clock A. M.

OTTO P. GEIER, M.D.,
Cincinnati, Ohio

RECENT DEATH.

ROBERT HARRIS FAUNCE, M.D., M.M.S.S., died in Sandwich, May 25, 1908, aged forty-nine years.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 42. The Thermal Death Points of Pathogenic Micro-organisms in Milk. By M. J. Rosenau. Washington. 1908.

Auch ein Beitrag zum Kapitel "Schulzahnklinik." Von Prof. Dr. Jessen. Reprint.

Health-Education League. Booklets Nos. 1 to 15.

A New Method of Diagnosis and Treatment of Fistulous Tracts, Tuberculous Sinuses and Abscess Cavities. By Emil G. Beck, M.D. Reprint.

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Address.

NEW DUTY OF THE MEDICAL PROFESSION: THE EDUCATION OF THE PUBLIC IN SCIENTIFIC MEDICINE.*

BY HERBERT L. BURRELL, M.D., BOSTON.

The welcome that is extended to us this year by this great metropolis is peculiarly grateful, for Chicago is the home station of this national association. This great city should serve as an inspiration to us all, for it personifies the best of the American spirit — vigor, enterprise and stability of purpose. This city, during the year, has lost one of its most gifted citizens, one whose name was honored in all countries, an ex-president of the association. All honor to the memory of Nicholas Senn, surgeon, writer, investigator, publicist, a man who did pioneer work in surgery and who was always ready to promote the interests of the medical profession.

The coming together of men of mutual aims must always be a subject of public interest. What is the meaning of this gathering of medical men from the length and breadth of this great country?

First: That individually they may be better able to care for the sick. Second: That they may collectively be better fitted to prevent disease. Third: That they may know men and their ways and by social intercourse may live fuller and broader lives. This association is a great power for good or for evil. May its acts be guided by motives that are directed toward the health and prosperity of the people.

There are many subjects of which I should be glad to speak. Some of them have been considered by the association in previous years. Medical education; medical legislation; the desirability and the question of the advisability of the medical profession taking an active interest in practical politics; the establishment of a national bureau of health; the abuse of medical charity and the work of the Council on Pharmacy and Chemistry,— all are subjects of vital interest. To-day, I invite your attention to what I believe is a relatively new duty of the medical profession, that of judiciously educating the public in the present position of medical knowledge and in the advances that are being made in scientific medicine.

Until recently medicine has observed a silence as to its position and accomplishments that has made it unique among its sister sciences. A veil of mystery has surrounded it. Born, as medicine was, of fear, nurtured by superstition, it went through the centuries in twilight until it grasped the torch of science, which is beginning to illuminate its way. For long years medicine was only a handmaiden to theology. Faith, that inestimable gift to man, was the guiding star of medicine. Faith in "simples," in fetiches, in amulets, in poisons, in all the forces of nature and in all the dread legion of phantasms that may be formulated by the mind, — all these at times have held sway in medicine. Theories, hypotheses and "fads," ingenious and often containing a grain of truth, have in turn dominated medical practice.

The profession has properly been conservative, because the truth in reference to health and disease has not been known. When the vital processes are looked at in the abstract, they are so marvelous and still so far from being entirely understood that it is little wonder they are surrounded by an air of mystery. The family practitioner of our grandfathers' days was a man who was greatly respected. He was discreet and silent. When he entered the sickroom he held his counsel. He appreciated the fact that he was in the presence of a human being afflicted with disease. Frequently he realized that he did not know either the natural processes of health or the natural history of the disease that he was facing; therefore he was silent. The satirists have always pictured the practitioner of medicine as a venerable old gentleman who discreetly nodded his head in acquiescence or disapproval, who said vague things and who encouraged his patient and the household to hope for the best and to prepare for the worst. I believe it is generally accepted that our profession has been deemed one that has been filled with charity and love of man, but it has not been conspicuous for its scientific methods.

During my lifetime I have seen, as have many of you, the development of scientific medicine. But medicine to-day, although a science, is still in part an art. Yet the sum of scientific knowledge in medicine is already very large, and as a science medicine has changed from the position in which it haltingly progressed until now it is advancing steadily along many lines.

The art of the practitioner during the past few years has not progressed so rapidly as the science of medicine. Rightly, the attention of the profession has been directed to ascertaining the causes of disease; hence the natural history of disease and its diagnosis have in large measure occupied the attention of the profession. The lack of training in scientific methods led men to reach conclusions from insufficient data; and when these men found that they were mistaken they were frequently swept to the other extreme, that of failing to accept anything of value unless it could be absolutely proved.

Meantime the art of the practitioner has languished. Proprietary medicines and nostrums have been too frequently used by practitioners, feeling as they have that "they may help and the patient wants them." Fortunately, experimental pharmacology at last has come to give us the truth, for by its findings we now know what really follows when a drug is given.

At present I believe that physicians are too conventional in their methods of treating disease. They have not paid sufficient attention to the alleviation of the suffering that accompanies some of the incurable maladies. Hydrotherapy, massage, electrotherapy, and particularly psychotherapy, as measures of relief, are permitted to rest in the hands of empirical practitioners, who but slightly understand the forces with which they are dealing. Human beings cling hard and fast to hope. They, fortunately, will rarely accept defeat. They constantly hope when in distress that aid will come by some intervention, physical, psychic or divine. This insistent demand for relief must be remembered by practitioners, but they should also recognize, as Louis did, that there is a natural course of disease.

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* President's address at the fifty-ninth annual session of the American Medical Association, at Chicago, June 2–5, 1908. From advance proofs, Jour. Am. Med. Asso.

Progress in science is always haltingly made. In medicine, which is but applied biology, the movement now is steadily forward; for through chemistry, biology and physics has come some knowledge that enables us to comprehend more clearly many of the vital phenomena of life. To-day we are in possession of certain irrefutable facts. It is unnecessary for me to catalogue to you the advances that have been made in medicine during this last generation; suffice it to say that it has caused a revolution. The application by Lord Lister of Pasteur's work in biology has made a new era in surgery. Chemistry and biology have made sanitation a science. Physics has enabled us to comprehend some of the vital processes. These contemporary sciences have illuminated medicine, but have medicine and surgery in themselves properly advanced? I think not. The field for advance is still open in clinical medicine and surgery. The human being, particularly when sick, has not been scientifically observed as thoroughly as he should. Valuable scientific facts may be obtained by the clinician in the out-patient department and wards of a hospital, or, for that matter, wherever he meets disease. The reason that more of these observations have not been made in hospitals is due primarily, I believe, to the lack of adequate training of men in scientific methods, but perhaps more largely to the general belief that scientific work in medicine must be done in a laboratory. It will be granted, I think, that in science the closer one can observe a problem the better. Should not the wards of a hospital be the real laboratories of medicine? To-day there is in the wards of hospitals a wealth of facts that is not recorded even when recognized. When the opportunities that are really within our grasp are utilized, then there will be still greater progress in medicine.

The three great professions, theology, law and medicine, have ever been the custodians of the spiritual, the material and the physical welfare of man. Medicine has been until recently in the background. The principle of theology has always been and always will be a matter of faith. The law has been a series of rules of action based on precedent and intended to secure equity and justice between human beings. Medicine, however, from being an art that ministered to the physical distress of man, has come into a broader field of activity. Intelligent men and women now recognize that faith is dependent in large measure on the physical condition of the individual. Our criminal classes, it is now known, are frequently physical degenerates. Moral obliquities are often caused by physical conditions. The material welfare of man is no longer in the hands of the law alone; for great epidemics, which destroy scores of people and invalid thousands and which often paralyze the commerce of a part of the world, may to-day be controlled by a knowledge of contagious diseases.

The leech which served in the crusades was a camp follower, a servant retainer. To-day the medical man who is responsible for the health of troops in the field has as high a responsibility in gaining success as the commander-in-chief of the army. The balance of power between the nations of the earth is maintained, in part at least, by the fitness of troops for service. This statement I make as applicable to every civilized nation. Its truth has been demonstrated in every modern war, never more strikingly than in the Spanish-American War.

A singular and unprecedented apathy, to be charitable, prevented the chairman of the Committee on Rules of the House of Representatives of the United States Congress from permitting the United States Army Reorganization Bill to come before that body. And this notwithstanding the fact that the bill was favored by the President of the United States, the Secretary of War and the United States Senate, while a careful canvass demonstrated the fact that the bill was favored by a majority in the House of Representatives. But within a few weeks the chairman of the House has seen the truth and has allowed the bill to be passed and it has now received the signature of the President. We are at last in a position io meet, n part at least, the exigencies of a modern war.

No man, woman or child in the civilized world can be so situated, in labor, in travel, in attending schools or churches, in fact in existing, without being a debtor to the knowledge that has come from scientific medicine. This new phase of development in our profession adds greatly to its responsibilities. We are no longer a group of men and women who only soothe the brows of the afflicted and alleviate human suffering. Intelligent physicians or surgeons to-day know the natural history of some of the diseases with which they come in contact. Science has placed in their hands knowledge with which to control these diseases. They are public servants and their duty demands that they protect the individual against the ravages of disease as well as alleviate or cure. We, as the medical profession, are now in possession of truths that can help our fellow man. Is it not our duty to tell our fellow man? For we are told that the "gospel must first be published to all nations" (Mark 13: 10).

Education has been, and I sincerely trust always will be, the corner stone of our civilization in this country. No permanent advance will ever be made unless the people are educated to the truth. Laws are never effective unless the people want them to be enforced. I cannot recall any great or permanent advance that has been made by force alone; and even when force has apparently succeeded, it usually leaves an unjust and more or less complex, unstable condition. Our Civil War blotted out a great evil, but it left a race problem that has not been satisfactorily settled. The "flare-back" of force usually defeats itself. I have an abiding faith in the public. I believe in it. When made to think, it reaches a wise solution of a problem. Observe — the key to safe public opinion is to make the public think. Unthinking people are less to be depended on than animals. If it is true, that the medical profession now has accepted facts that bear on the welfare of the people, is it not our duty to make them known? Judicious publicity is, I believe, a new duty of the medical profession to the laity. How can this be accomplished? There has already been established a Board of Public Instruction in this association. This board, as well as all committees, should be answerable to the Board of Trustees; it should be representative and eminently judicial in character and should have as advisers the experts in the profession.

In what medical subjects should the public be educated? It will be better to teach thoroughly a few important subjects than to attempt to cover too large a field. Let us not be blind to the fact that our scope of usefulness as physicians in dealing with the large disease problems depends in great measure on the co-operation of the public. We must have intelligent co-operation to make our work as effective as may be. Tuberculosis is still the most pertinent subject on which information should be given. The public should be informed that at present an early, thorough operation is the most certain way of curing cancer. The work already accomplished by the public in co-operation with physicians in controlling tuberculosis, ophthalmia neonatorum and scarlet fever comes to every one's mind. The work that has been done in controlling yellow fever in Louisiana by the public and the medical profession is a striking example of educating the people as to the facts concerning disease. The various infectious diseases are obviously ones concerning which the public should be informed. The people should be educated as to the necessity of pure air, pure water and pure food; they should know the hygienic value of bathing. They should know that hospitals are provided not alone for the care of the sick poor but that knowledge of disease may be advanced. Take a familiar example in our social life: When it is recognized and brought home to the public that contagious diseases in children are to a degree unnecessary, that by proper sanitation and medical school inspection they may be in large measure prevented, then people will demand that their little ones in public schools shall be protected against disease, which often leaves them invalided and crippled for life. A child among the better classes to-day, until it begins to go to school, is usually free from contagious diseases, but the moment it enters a school it is subjected to dangers from infection which it rarely escapes. To be consistent in our present method of life we might as well expose our children deliberately, as they did in country districts in former times, when a child was sent to a neighbor's to get the measles, as it was a convenient time for him to be sick. The physical and intellectual development of our children is in the public mind but the possibility of preventing them, by adequate precautions, from having infectious diseases is not appreciated. The sanitation of churches, places of amusement, vehicles of transportation, so intimately concern the public that the essentials of their proper care should be widely known. When the public is so informed, it will demand a reasonable degree of security from infection. But, it may be said, all the truth is not known regarding these subjects; true, and, therefore, we must be very sure that we tell only the truth.

Commercial houses within a few years have found that it pays to care for their employees. It is true that in some instances a spirit of altruism has led to this action, but practical experience has shown that a higher and a better type of work comes from employees who are intelligently cared for. In one commercial house in Boston a physician gives his professional services to the employees as he might to a hospital clinic. If any salesman falls below in his sales he is directed to appear before this physician. A careful examination usually reveals some adequate physical cause that accounts for the individual's lack of energy. Anemia, indigestion, constipation, incipient tuberculosis, are recognized and treated and the salesman is frequently restored to his full earning capacity. Intelligent merchants recognize that the better care that they take of their employees the better service will be rendered in return. Loyalty is a force the value of which cannot be overestimated, and it is secured and preserved by employers who are really interested in their employees.

The czar-like dictation of labor unions which arbitrarily limits the amount of work that a man or woman is permitted to do is a force that seems necessary to meet the greed of capital, which in the past often cast aside its employees like worn-out garments when they were no longer useful. I hope that labor unions in the future will demand not that the number of hours and the productiveness of the individual shall be limited, but that capital and labor shall protect the individual against disease, in order that he may have the highest degree of productiveness. Throughout the world there are co-operative business establishments in which the interests of the employees are protected in a measure, but this protection is usually financial. If the employer and employee could recognize that the preservation of the working capacity of the employee is of even greater importance than a 10% dividend on a few hundred dollars saved, a great mutual gain would be secured. Business men should see to it that their employees are informed as to the proper methods of life; protection against disease by employers is not alone a duty on their part but a real financial investment, as recognized in the work of the Welfare Department of the National Civic Federation. The medical profession must recognize that co-operation with business men in these public duties is a new duty of citizenship.

Who among the public should first be educated? Those who are leaders in the community; those who are in positions of responsibility, national, state, city and town authorities, trustees of hospitals and schools, — they should first be informed as to the facts concerning disease. Experience has shown that the lay public takes a keen interest in everything concerning medicine and its progress. The success of nostrum vendors has demonstrated their skill in appealing to the sentiment of the public. The Board of Public Instruction should always appeal to the reason of the people. Great discretion should be used in selecting the subjects in which the public should be educated. Experience would teach such a board what not to do. "Don't" should be the motto for this board when in doubt as to educating the public.

What are the means by which we may reach the public? Newspaper articles on selected subjects, giving facts concerning a given disease, but not the treatment of disease, should be furnished the press. These articles should be signed and published under the authority of the Board of Public Instruction. That these articles should be judiciously edited must be apparent to all. No statement issued by the Board of Public Instruction should fail to be the absolute truth. Irreparable damage to the medical profession and to the public might be done by unwisely exploiting mooted subjects. It would be unfortunate if this new duty of educating the public in medical matters were taken up indiscriminately by the members of the medical profession. It may well be appreciated that this new duty may be considered a legitimate means of advertising the individual. But self-seeking for the medical profession, or for any individual member of it, would be quickly recognized by the public. Discredit, then, would be brought on the profession and on the individual.

Another means of reaching the public might be by magazine articles. The facts concerning certain diseases might well be given to skilled lay writers, who should be paid for their services. A lay writer has the art of presenting a subject to the public in an attractive manner. For example, let the subject of animal experimentation be investigated by one of the magazine writers of this country. Open wide the sources of information to such a writer. Then let a series of articles be published in order that the public may know the truth as to the inestimable benefits that have come from animal experimentation, not to men alone but to animals as well. Reprints of such articles, pamphlets and circulars of information would be a powerful means of educating the public. Let circulars of information regarding the subject of animal experimentation and of vaccination be placed in the hands of every legislator in this country; in fact, in the hands of every citizen who is misinformed as to the truth. In the event of a great epidemic of yellow fever or cholera, let a pamphlet containing the facts concerning the spread of the disease be sent to every householder in the district. Every physician would be then obliged to know the facts. This leads me to call your attention to one of the obvious effects on the medical profession of educating the public. It is to be regretted, but it is true, that there are ignorant practitioners in our profession. If the public is informed as to the facts concerning an individual disease, a physician will be forced to inform himself as to the recent advances in that disease.

To my mind, one of the most important movements in the association is the establishment of county graduate schools in the various states. I can conceive of no better stimulus to this work than the adoption by the county schools of a plan by which one of its members shall inform the public, once a year, as to the facts concerning some selected disease.

The work of the Council on Medical Education is progressing. Dilapidated medical schools are disappearing. Why? Publicity. When the public recognizes that in order to become a well-educated physician certain requirements are absolutely essential, then, and not till then, shall we have true reform in medical education. I commend to your consideration the work of the Council on Medical Education. It is dealing with the tap root of the tree of the medical profession. Its reforms must not be too radical. There are still isolated areas in this great country that cannot support the best educated physician. But the American Medical Association at least can stand firmly for safe, sane and sound practitioners. To my mind, one of the most important functions of the Council is that it has established a monitorship over medical schools. Let the Council give to the profession, and to the public if necessary, the facts concerning the various medical schools of this country; publicity will do the rest.

Free lectures to the public on selected medical subjects constitute one of the most useful methods of spreading information. These lectures should be given by men who are authorities in their subjects; and the experiment as it has been tried in various parts of the country, particularly in Chicago and at Harvard, has been a success. At Harvard during this last winter the lectures have been so popular that at times a hundred or more people have been turned away, being unable to gain admission. A wide range of subjects has been covered in these lectures. Many factors influenced the attendance: first, the subject selected; second, the individual who gave the lecture; and third, the condition of the weather. Sunday afternoon lectures were better attended than Saturday evening lectures. Inclement weather markedly diminished the attendance. The most conspicuous factor that influenced the attendance at the lectures was the co-operation of the press. For example, when a lecture was given on a subject of great public interest, then if the press devoted from a half column to three columns to noticing it, the stimulus to the attendance at succeeding lectures was marked. Personally I have had nothing to do with these lectures, but I believe that they can be made effective almost in proportion to the co-operation of the press.

The medical profession and many of the public are afraid of the press. Whether this position on the part of the public is justified or not need not be discussed. I have never had occasion to appeal to the press for assistance and co-operation in any public measure without receiving hearty, but at times, to my mind, indiscreet assistance. The position of the press, as I understand it, is that it is the judge as to what constitutes news. Newspapers will publish what they think the public wants to know, but not what we think the public ought to know. They assume, quite properly, the right of decision. The greatest power that we can have to diffuse information is the public press. Let us be frank with it, and I believe that it almost invariably will be honest with us. *Collier's Weekly* and the *Ladies' Home Journal* have been wonderful forces in diffusing the truth.

There yet remains, ladies and gentlemen, a means of educating the public which I believe will be the most potent of all. This rests in the hands of the family physician, the man who has the care of the household, who watches the growth of the children, who sees the father and mother bend under the strain of life, react and again assume their work, the counselor of the family; he it is who can carry into the homes of this country the judicious truth concerning disease. Well-educated people have recognized that the wave of specialism which threatened to obliterate the family practitioner was dangerous for the welfare of the whole. The trouble is that we all consider ourselves, when ill, as peculiar examples of some disease, when, as a matter of fact, all we need is the counsel and advice of a sound-minded family practitioner who has known us and our families for many years. This does not in the least deny the great advantage of having the benefit of special knowledge in reference to a special subject.

There is a distinct reaction, I believe, against the obliteration of the family practitioner. The well-educated family practitioner now has a new duty. He it is who should be the instructor of the family. This is particularly true in relation to the subjects which in medicine cannot with propriety be taught the public in masses; these subjects may be taught most appropriately to the parents and, if need be, to the children by the physical counselor of the family.

A great duty rests on the practitioner of medicine to-day. He must not shirk it; he must rise to his new burden, accept it and bear it. The reward to the medical profession for taking this new burden of judicious publicity in medicine will be a broader life for the practitioner, a greater consideration for his fellow man, better citizenship and the recognition by the world that the medical profession is a great public benefactor.

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Young Folks' League for the Home Treatment of Tuberculosis. — A Young Folks' League for the Home Treatment of Tuberculosis has been organized in New York.

Original Articles.

THE USE OF SILK LIGAMENTS IN ADDITION TO MUSCLE AND TENDON TRANSFERENCE IN INFANTILE PARALYSIS.

BY ROBERT SOUTTER, M.D., BOSTON,

Assistant Surgeon, Children's Hospital, Boston; Member of American Orthopedic Association.

The writer wishes to show a method he has used to overcome deformity in paralytic cases to supplement tendon and muscle transplantation.

The use of silk was first introduced by Professor Lange, of Munich. Later he advised the use of silk strands for relaxed ligaments. Since Dr. Lange's report the use of silk in tendon transference has been well established as a practical surgical procedure. Those who are familiar with the action of the old-fashioned seton will readily see the principle of Professor Lange's demonstration. He has shown by experiments on animals and by autopsy that silk causes the formation of a tough tissue which surrounds it and extends from its origin to its insertion. In other words, a strong natural tendon is produced throughout the length of the silk, which is substantial and tough. This new natural tendon not only reinforces the silk, but is sufficiently strong to take its place. The faults of the old methods of transplantation have been that the transplanted muscles were inserted into paralyzed tendons, which in time stretched. Excluding cases of faulty technic, many cases of muscle transference done by other methods have resulted well in motion, while the deformity, especially that of varus or of valgus, would persist to a greater or less degree. In these cases the transplanted muscle was not strong enough to perform both the function of motion and to hold the corrected position.

In paralytic cases there may be total paralysis of some or all the muscles, or partial paralysis of some or all of the muscles and deformity from the partial or total paralysis. For the purpose of treatment this divides the cases practically into five classes.

Class 1. Those cases where muscle training pure and simple is sufficient to increase the strength of the paralyzed muscles and to correct the deformity.

Class 2. Those cases where groups of muscles remain paralyzed and other groups are strong. When the acute stage of the disease is over, it is advisable to use massage, electricity and muscle training. When a sufficient time has elapsed, to be sure that nothing more can be gained, the resulting paralysis and deformity can be effectively treated by transplantation of one or more muscles to take the place of those that are paralyzed.

The point at which the transplanted muscle is to be inserted is selected, so that in doing its new work it will not only take the place of the paralyzed muscle, but overcome the position of the deformity. In this class the use of a silk ligament is advisable when the deformity is great, or when the transplanted muscle cannot reasonably be expected to correct the deformity, though it will take up the new motion.

Class 3. Those cases in which there are so few muscles remaining unparalyzed that the selection of the muscle to transplant is not only limited, but the transplantation is performed for the motion, the muscle not being strong enough to correct the deformity at the same time. The addition of a silk ligament to prevent deformity and steady the joint is distinctly indicated. The cases reported in this paper are of this class and Class 4. (Fig. 1.)

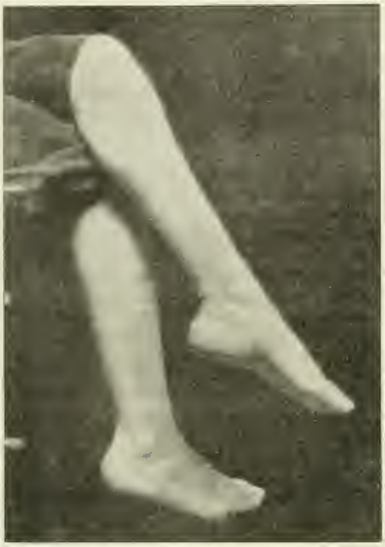


Fig. 1. Showing the flail ankle joint and toe drop due to paralysis of anterior tibial group.

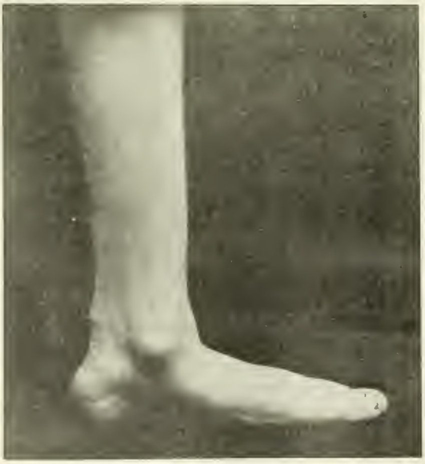
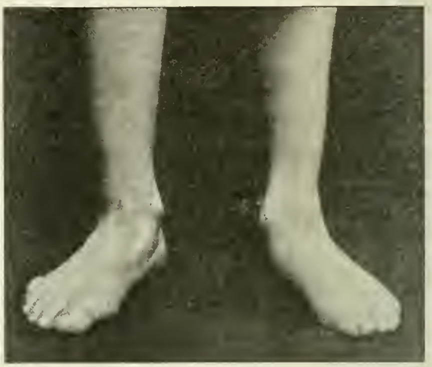


Fig. 2a. Shows valgus and abduction due to flail ankle and paralysis of the muscles. Before operation.

Class 4. Those cases in which the paralysis is so distributed or so extensive that no muscle transplantation can be done and the muscles that remain unparalyzed are thrown out of commission on account of the resulting distortion and paralyses. By using silk ligaments the distortion is held corrected and from half to all the functions of the unparalyzed muscle may be utilized. These cases were formerly treated by stiffening the joint. (Fig. 2.)



Before operation.

Fig. 2b. Infantile valgus. Weak position of the left ankle. Weight bearing in time will increase this deformity as there are no adductors and no anterior tibial muscles.

Class 5. Those cases in which there is total paralysis. In this group selected cases may be treated by silk ligaments; others will do better by stiffening the joint.

The use of silk strands as ligaments is applicable in many of those cases in which arthrodesis is commonly performed. It is applicable in a large proportion of paralyzed cases to prevent varus or valgus, or calcaneous or equinus, either in connection with the muscle or tendon transference, or to prevent muscles that are not paralyzed from causing distortion and deformity and thus losing their usefulness. (Fig. 3.)

Case N. E. Y. Nine years old. Infantile paralysis of left leg when three years old. Complete paralysis of anterior muscles below the knee including extensor of toes. Flail ankle in position of marked valgus and equinus. Good power of tibialis posticus, slight of peronei muscles.

Operation: Silk ligaments from tibia to scaphoid and to cuboid. Tibialis posticus transplanted by means of silk to internal cuneiform.

Results fifteen months later, good power of dorsal flexion from transplanted muscle. Good correction of valgus, good weight-bearing power. (See Figs. 7 and 8.)

Case A. N. Eleven years. Infantile paralysis of both legs. Onset at age of two. (Fig 5.)

Right leg. Marked equinus with relaxed tibiotarsal joint, allowing the foot to turn in complete or varus valgus. Complete paralysis of all the muscles below the knee except those to tendo Achillis, requiring lengthening of tendo Achillis and silk ligament from the periosteum of the tibia to the scaphoid, and silk ligament from the periosteum of the tibia to the cuboid.

Left leg was operated on; transference of the tibialis posticus was all that was necessary. Result, fifteen months after operation, very good power of dorsal flexion, good position of the ankle. Result, right leg, nine months later, good strong position of the foot: no tendency to varus or valgus; good power in tendo Achillis.

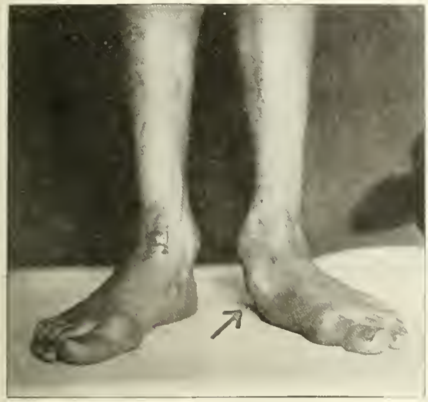


Fig. 3. Showing flail ankle and marked valgus and abduction due to paralysis. Before operation.

Case S. O. N. Nine years. Infantile paralysis. Onset at age of one year.

Paralysis of both legs below the knee with loose tibiotarsal joints and extreme varus or valgus as he might chance to walk.

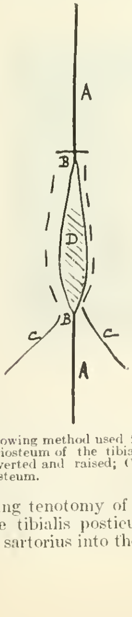


Fig. 4. Diagram showing method used for quilting the silk at the sides of the slit periosteum of the tibia. A, slit periosteum; BB, periosteum edge everted and raised; C, ends of silk; D, space between edges of periosteum.

Right leg requiring tenotomy of the tendo Achillis, transference of the tibialis posticus to the scaphoid, transference of the sartorius into the patella and outer aspect of the tibia. *Left leg* requiring tenotomy of tendo Achillis and planta fascia, silk ligament from periosteum of tibia and second from periosteum of tibia to cuboid and transplantation by means of silk strand from tibialis posticus to middle cuneiform. Result, eight months later, excellent power to extend at the knee, good position of feet, beginning power in transplanted muscles, good weight-bearing power without distortion at the ankle.

Case T. H. Ten years. Infantile paralysis. Onset at birth. Right.

Marked equino-valgus and loose condition at the tibiotarsal joint; the peroneus longus was inserted in the middle cuneiform. Tenotomy of the tendo Achillis. Two silk ligaments attached to the annular ligament, one to the cuboid and the other to the scaphoid. Result, six months later, good position of the foot and very slight beginning motion in the transplanted muscle.

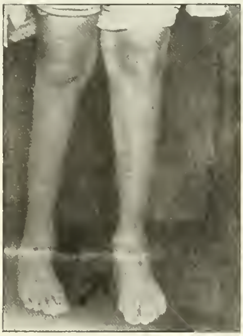


Fig. 5. Case A. N. Standing without support, showing good firm position of the ankles after operation. Prevention of deformity due on right to silk ligaments.

Case S. T. Nine years. Infantile paralysis. Onset when four years of age. Left ankle almost flail.

In position of equino-valgus. Operation consisted of a transplantation of the long flexor of the toes to the middle cuneiform by means of silk strands, and silk ligaments from the tibia to the cuboid and another from the tibia to the internal cuneiform. Tenotomy of the tendo Achillis. Transplantation of the biceps tendon to the patella by means of silk to take the place of the quadriceps extensor. Result, ten months later, good extension at the knee, good strong position of the foot and some motion in dorsal flexion at the ankle.

Case E. Y. Six years. Infantile paralysis. Onset since birth. Right leg. Worn braces several years.

No power in the adductors nor in the muscles that raise the foot. Walks on external malleolus. Some power in the overstretched peronei, good power in the long flexor of the toes and tibialis posticus.

Operation: the transplantation of the peroneus longus and the flexor longus digitorum into the scaphoid and the peroneus brevis to the middle cuneiform by means of silk strands. A silk tendon was attached from the periosteum of the tibia to the cuboid to prevent varus. Result, five months, impression and position of the foot good.

Case N. I. Eleven years. Infantile paralysis. Onset at five years of age. Left. Has been held in corrected position by braces for several years. Marked equino-valgus. Good power in peronei and in long flexor of the toes. No power in the anterior muscles of the leg nor in the toe extensors.

By means of silk strands of the long flexor of the toes was transplanted into the internal cuneiform and the peroneus longus to the cuboid. Silk ligament from the periosteum of the tibia to the internal cuneiform to prevent valgus and equinus. Result, eight months later, excellent strong position of the foot and some motion in the transferred muscles.

CASE V. A. N. Nine years. Infantile paralysis. Onset at eleven months. Left. Has worn braces for several years. Marked equino-valgus. No power in the muscles that raise and adduct the foot. No power in the flexors or extensors of toes. Good power in the peronei. Operation consisted of a transplantation of the peroneus longus to the internal cuneiform and a second strand to the cuboid by means of silk strands. Silk strands were attached to the periosteum of the tibia and inserted into the scaphoid to correct the pronation and abduction of the front part of the foot. Result, eight months later, good strong position of the foot without deformity and beginning motion in the transplanted muscle.

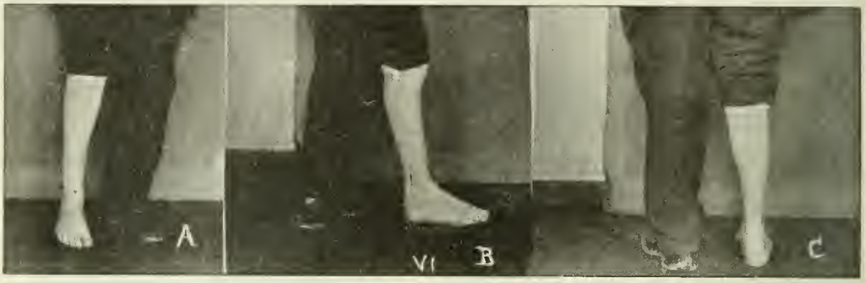


FIG. 6. (A) Case I. C. Standing with weight applied. Notice good position without valgus and no tendency to abduction.
(B.) Side view of same case.
(C.) Rear view of same case standing with weight on leg.

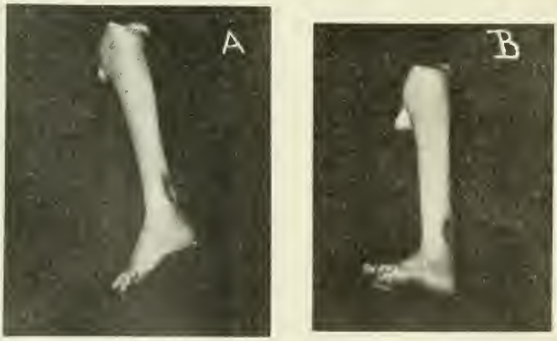


FIG. 7. Case N. E. Y. Showing power of dorsal flexion due to transplanted muscle.
(A) Muscle relaxed.
(B) Transplanted muscle contracting.

CASE I. C. Twenty-one years old. Infantile paralysis from childhood. Good plantar flexor of toes due to short flexor. Before operation flail ankle joint in position of valgus and equinus. Operation consisted of lengthening tendo Achillis by zigzag tenotomy and stretching; silk ligament from periosteum of tibia to cuboid, another to the saphoid. Transplantation of tibialis posticus to scaphoid by means of silk extension. Ten months after operation, foot was holding firmly in corrected position when walking and standing. (See Fig. 6.) No tendency to valgus or equinus. Notice the firm position of the foot, when the weight is applied.

Two points cannot be too often emphasized in infantile paralysis. First of all, deformity can be prevented by careful treatment. Second, no operation, except some simple operation to cure deformity, should be undertaken until massage, electricity and, best of all, careful muscle training has been used for three or four years.

In the early stages deformity should be prevented by light apparatus, otherwise the distortion from the contraction of the strong muscles will have a permanent effect on the bones and joints and, together with the contractures of the fascia and ligaments, will prevent the paralyzed muscles from regaining power.

The possibility of the return of function of the paralyzed muscle is much more hopeful than is generally supposed, even in very extensive paralysis. Everything to foster the return of function should be done before transplanting muscles or using silk ligaments, even though these procedures would be of great benefit. The operative procedure in these cases does not differ from that employed and described in connection with those cases operated on by the writer and reported in a previous paper, with those operated on by Dr. E. H. Bradford. (Boston Medical and Surgical Journal, Nov. 21, 1907.) The procedure employed by the writer for the use of silk ligaments is as follows:

In attaching the ligament to the tibia, the periosteum is slit longitudinally. No. 14 or 16 or 20 silk is quilted up the everted edge on one side and down the everted edge of the other side of the slit. (See Fig. 4.) This gives a very strong attachment, which cannot be pulled out. Three or four stitches are taken on either side. The everted edges of the periosteum are sufficiently loose to answer in the same way as any soft tissue in stretching down with the growth of a child, while in an adult it makes a very strong attachment. The double silk is then carried down and inserted well under the periosteum and superficial portion of the bone by means of a blunt pointed, short curved needle with a handle, somewhat similar to a Cleveland needle in shape. The needle does not, however, open. When it has been passed through the bone the eye is brought to the surface. The two ends of a piece of silkworm gut are passed through this eye, then the needle is withdrawn and pulls the silkworm gut doubled through the hole in the bone. This leaves two ends of the silkworm gut protruding from the bone at one hole and a loop from the other. One end of the silk tendon is passed through the loop of the silkworm gut. Then the silkworm gut is pulled out, bringing with it one end of the silk tendon. This method is used in order not to enlarge, unnecessarily, the hole in the bone. In tying the knot the ends are left a little long, so that they will bend down. The fascia is brought over the silk and knot by means of interrupted catgut sutures, subcutaneous tissue and skin by means of interrupted catgut or horse hair sutures.

Plaster of Paris bandage was worn from eight to ten weeks, then a brace to limit the extremes of motion. This was removed at night and during the day for muscle training and exercise. After four months a small brace inside the shoe is worn for long walks only.

In these cases, from the use of silk ligaments the correction and prevention of distortion is immediate. Some have good motion from the transplanted muscle, some starting motion, but in all the foot is maintained firmly in a position of greatest usefulness.

In the cases reported the weight-bearing power was the most important. The flail, uncertain position of the ankle and foot before operation made it necessary to choose between stiffening the joint or else prevent distortion by silk. The latter was by far preferable and in every case the resulting ability to bear weight was good.

It is important in the use of silk ligaments that in children at least one end should be attached to some soft tissue, such as a tough fascia, a ligament or the raised periosteum. It is not advisable to attach the ligament to a tendon or paralyzed muscle, for in time these will stretch and the position will be lost. In these cases, as well as in all cases of tendon and muscle transference, careful muscle training is a very important part of the after-treatment. (Fig. 7 and Fig. 8.)

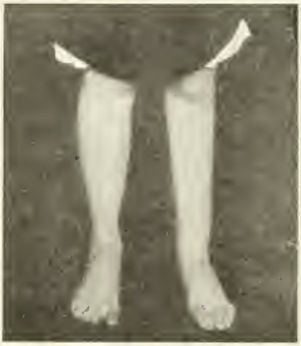


Fig. 8. Case N. E. Y. After operation showing weight-bearing power without deformity.

Silk ligaments will stiffen the joint sufficiently to prevent lateral motion, but allow dorsal flexion which is so necessary in walking. It is for this reason preferable to arthrodesis, even where the paralysis is pretty extensive. By preventing distortion silk ligaments are extremely useful to supplement necessary transplantation. The newly transferred muscle takes up its work more readily and is relieved from other strain.

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A REPORT OF SOME ATYPICAL CASES OF TONSILLAR AND PERITONSILLAR INFLAMMATIONS WITH ONE UNUSUAL COMPLICATION.*

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In the title of this paper the word "tonsillar" is used only to indicate the presence of such inflammation in all the cases reported, but not as an introduction to a discussion of inflammations confined to the tonsil.

In the interest of brevity, mention is made here that all these cases presented the usual constitutional and local symptoms of peritonsillar abscess, — chill, fever, temperature varying from 102° to 104½°, headache, pain in back, constipation, sore throat, great dysphagia, with difficulty in opening jaws,— so these will not be repeated in all the histories.

Case I. R. M., male, thirty. Strong, well nourished, seen in consultation December, 1906. History of tonsillar and peritonsillar inflammation of eight days' duration with severe constitutional symptoms. The glands on left side of neck were swollen. The jaws could be fairly well opened, although with difficulty. A good view of the throat was obtainable. Right tonsil was not large and not inflamed.

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* Read at a meeting of the New England Otological and Laryngological Society, Jan. 17, 1908.

The left tonsil was an inch and a half or more long and an inch thick, darkly red and bound down by anterior pillar. No exudate or crypts were noted. The anterior pillar and soft palate were red, swollen, and very markedly pushed forward and inward in a typical manner. Although the attending physician had incised the soft palate on the preceding day without result, the appearance was so typical that I had no doubt of getting pus. Three incisions to the depth of an inch at varying distances from the supratonsillar fossa failed to locate any pus.

The statement of the physician in attendance is that there was not at any time sufficient discharge for the patient to be aware of it and the subsidence of the swelling was slow, the relief from distressing symptoms coming very gradually and that it was fourteen days from the beginning of the attack before convalescence was established.

CASE II. Hospital orderly, twenty-two. Previous good health. Attack of sore throat for which was off duty one week. Three days after resuming work sore throat returned. On the second day I saw him, and noted a swelling of glands on right side of neck with what felt like infiltration of cellular tissue. The right tonsil was ragged, 1½ inches by 1 inch in size, bound down by anterior pillar ; no exudate. The soft palate swollen, tonsil, pillar and palate pushed forward. On the third day all these symptoms were more marked; so pronounced that an incision was made in usual place in palate and blunt probe used for exploration, but with negative result. On the fourth day the swelling of neck, palate and roof of mouth forward as far as incisor teeth and to median line had become more marked than I have ever seen such a swelling. The old incision was again opened, and search made with probe, but no pus was found. A Leland knife was passed between the posterior pillar and the tonsil cutting its way out, into the supratonsillar notch, cutting down through the tonsil, and between the anterior pillar and tonsil.

The result of the first two incisions was negative, but the last one opened into a collection of perhaps ⅓ of a dram of pus.

The symptoms were not materially relieved for twenty-four hours when the swelling began very gradually to subside. The patient was not conscious of any subsequent discharge of pus, nor did I see any on examination made twice daily. The repeated incisions in the soft palate left a gaping wound the edges of which necrosed without visible suppuration. Gradual resolution took place and the patient was on duty again in fourteen days.

CASE III. Male, thirty-two. Tonsillitis one week; had been better, but for two days was suffering a relapse with peritonsillar involvement. Glands somewhat swollen on left side of neck. Left tonsil swollen, lower part bound in anterior pillar, no follicles or exudate seen. Palate swollen and all tissue pushed forward and inward in characteristic manner. Two days later (fourth of relapse), although no fluctation could be felt, the pushing forward of tissue was so marked that an incision was made at junction of anterior pillar and soft palate but with negative result. On the fifth and sixth days of the disease incisions were made in same region, probe used, but no pus found.

As in the other cases reported, the patient was not aware of any escape of pus later and the swelling slowly subsided. Duration of the attack about fifteen days.

CASE IV. Nurse, twenty-six. Three previous attacks of peritonsillar abscess which were evacuated early by usual incision. Had sore throat two days before she reported it; was seen twenty-four hours later, third day of disease, some swelling of glands on right side of neck, right tonsil swollen with suspicious patch of exudate at upper part, soft palate swollen and it with anterior pillar pushed forward.

Cultures showed many streptococci and one culture was positive for K. L.

Because of the presence of K. L. bacillus, and my previous experience, no incision was made, although a surgeon who saw the patient thought fluctuation was present and it to be a typical peritonsillar abscess. This patient was not aware of any discharge of pus and the subsidence of the swelling was gradual. She also volunteered the statement that there was no difficulty in opening her mouth as there had been in the previous attacks when frank abscesses had formed.

In none of these cases did I see marked swelling of the throat except in the peritonsillar region. All looked so characteristically like peritonsillar abscesses pointing anteriorly that I fully expected to find pus.

Search in the region of the posterior pillar was made in all the cases, but no swelling located. It has been my observation that cases where the pus is in the posterior pillar do not present such marked swelling of the soft palate or anterior pillar.

Two classical symptoms were not distinguished in these cases, that is, fluctuation and a whitened area denoting pointing. These signs are unmistakably present so late in the course of the disease that, while it is a rather spectacular thing to open the abscess then, the surgeon rarely feels he has saved his patient but a few hours of suffering. As to the desirability of repeated incisions when there is failure to find pus, I am uncertain.

In spite of the recommendations of many writers of textbooks that early incisions were valuable, even if pus was not found, on the ground that they relieved congestion and afforded a chance of earlier escape of pus when it was formed, my former belief was that such incisions subjected the patient to unnecessary pain without compensatory advantages. I am familiar with the statement that patients make that they are relieved by such incisions, but have come to regard the relief, because it is so transitory and usually followed by more discomfort than before, as due to the effect of the cocaine, and perhaps a little to the mental stimulus of having something done. Personally, no case has been observed when pus was known to have escaped later from an incision which failed to locate it. This negative observation is not in accord with that of Price Brown,[1] who reports such a case, and thus loses most of its weight. The superficial soreness of the throat must be increased by such incisions.

The objections that the fresh cuts open up new avenues of infection do not appeal to me as of great weight, because the tissues are already infected.

Case II, where the small quantity of pus was found, would indicate that a thorough search should be made between the pillars and the tonsil. The releasing of such a small quantity of pus, in so marked cases as I have wished to describe, has no immediate effect on the symptoms, but would probably hasten convalescence by removing a nidus of infection.

The advantages of early incision are very strongly presented by Dr. Brannen in the *Medical Record* of Oct. 28, 1893, and his statistics of erosions of the internal carotid are formidable. These erosions, Dr. Brannen believes, could be often avoided by early evacuation of pus.

A failure to find pus invites a consideration of the possibility of its presence and the methods employed to locate it. Both palpation and inspection should be employed. Palpation with the finger has not afforded the writer a large degree of information as to the presence or absence of pus, but it is a safeguard against puncturing an aneurysm or abnormally large or abnormally placed blood vessel. That it is a very valuable method with men who have highly-trained fingers, there can be no doubt.

A review of the teachings of well informed men who have written textbooks and monographs on the subject has been of interest and of value to the writer. It would seem from the clinical observation of Coakley[2] and others, that 90% of the cases point anteriorly and just above and inside the supratonsillar fossa; coupled with Cobb's[3] original demonstration of the direct road from the tonsil to the pharyngo-maxillary space, was sufficient evidence where pus is usually to be found, if we wait long enough.

The method devised by Dr. Leland,[4] of thorough opening of the tonsil at its base, is, I believe, expected to prevent the extension to the pharyngo-maxillary fossæ.

D. Braden Kyle[5] advocates scarification of tonsil or deep puncture, presumably of tonsil, but does not indicate any location for this puncture.

Shurley[6] says, "As soon as suppuration has become established, locate with the finger and open, preferably the anterior pillar."

Roe[7] condemns scarification of tonsil as needless, determines fluctuation by palpation and inspection; incision in or just inside the half arch of pillar cutting horizontally, with vigorous use of the probe.

Roe further quotes Leland's method and Harrison Allen's of carefully probing each follicle.

Killian's[8] method in 1898 was to open above or in supratonsillar fossa with a probe.

Roy[9] adopted a modification of this in making a superficial incision for the introduction of the probe.

Bosworth[10] located by palpation; made small incision and searched with probe. I do not find that he expresses an opinion as to value of incisions before fluctuation is determined or the place where pus will most likely be found.

Price Brown's rule is not to open until morally sure pus is present, subject to exceptions.

Bishop[11] usually opens near edge of anterior pillar as soon as abscess can be discerned, and believes his patients are saved several days of suffering.

C. H. Knight[12] uses angular lance-shaped cataract knife directed obliquely upward and inward, parallel to fiber of palatoglossus muscle; searches with blunt probe and polypus forceps. Quotes Leland.

Gradle[13] says the attempt should be made to find pus even if the chances seem against success, meaning, I suppose, if fluctuation and usual evidences of pointing are absent; speaks only of the soft palate as place of incision.

Grayson[14] teaches the incision recommended and so strikingly illustrated by Coakley. This illustration will remain in the minds of students of laryngology after many others are forgotten.

Newcomb's[15] observations have been somewhat of a comfort to me, for he says that it is not always easy to find the exact site of the exit of pus when spontaneous rupture has occurred, and also that actual formation of pus does not occur in all cases, the swelling subsiding after several days. Occasionally a case will continue indefinitely, the process neither subsiding nor going on to suppuration. Considers early incision advisable if there is protrusion of the anterior pillar. Quotes Leland.

Farlow also states that he has seen cases in which no pus was found, and observes that if the other side soon becomes involved, pus is usually not located on this second side.

Lennox Browne[16] is understood to have taught never to scarify tonsil and never to make deep incisions unless absolutely certain of advanced suppuration, these remarks referring to tonsil; incisions outside tonsil not recognized.

Richards'[17] directions for locating and evacuating the pus are orderly and distinct. The point of opening seems to be outside that of the Coakley incision in the soft palate, but even then, not so far out, as the writer has found a large quantity of pus after failure nearer the median line.

J. Watson Williams[18] not so easily understood; his directions being to make a fairly deep vertical incision behind the palate (does this mean the anterior pillar?), not in the tonsil, from below upward and inward, parallel with the free margin of the anterior pillar.

The suggestion of Dr. Sprague to insert a right-angled knife, probe pointed or sharp, in the supratonsillar fossa point upward, pushing it, if possible, into the soft palate, and cutting from without inward, commends itself to the writer as a good one. The use of this method in Case 5 might have disclosed the location of the abscess or sinus and provided drainage at time of first visit.

The fifth case I wish to report did not resemble those whose histories have already been given. Its interest lies in the unusual complication to which it gave rise. Because of the rarity of this complication, I wish to place it upon record:

On Sept. 9, 1905, J. D. was seen in consultation with Dr. Tobin. The patient was a man forty years old, painter, previous health fairly good. Present history was of an attack of peritonsillar abscess on left side beginning Sept. 1, followed by similar abscess on right side. The first one had ruptured about Sept. 6, and the right one the 8th. Consultation was desired because the symptoms of sepsis had not disappeared upon rupture of abscesses, and patient was having a return of discomfort on left side of throat and neck.

No nurse was in attendance but the temperature had been taken two or more times a day by the attending physician and showed a range from 100° to 104°. The rise was preceded by a chill or chilly sensation and the declines attended by sweating and prostration. There had been rather severe and persistent headache which at this time was mostly on left side.

The patient was a well nourished man, but felt very ill, not wishing to sit up at all. The glands of the neck on both sides were swollen, perhaps more on left side. The fauces and tonsils were reddened, but there was no very perceptible bulging in peritonsillar region or soft palate. The left side was thought to look just a little fuller than the right. The right tonsil was not larger than first phalanx of little finger, but the left was more than an inch and a half long and one inch thick. The patient had had right chronic otorrhea for years and there was a polyp in this canal. Whether sepsis was in ear or throat was an open question, but absence of pain and tenderness on right side of head and neck rather excluded the ear and sinus.

A tentative opening, for there was not enough bulging to make one at all sure of getting pus, was made in the soft palate at usual point, also a long incision in the tonsil. No pus was seen, but a severe hemorrhage resulted from the tonsillar incision, so severe as to be alarming, and patient was seen in afternoon because it was still bleeding profusely.

For the history of the case from this time until Nov. 26, a period of two months, when I next saw the patient, I am indebted to Dr. Tobin who was in attendance until Oct. 24, at which time he entered the hospital, and to the hospital records. The statement is that the fever was constant, varying from 100° to 102° or 103°, with cough, headache, foul smelling breath, diarrhea and progressive emaciation. The record on admittance to the hospital, Oct. 24, 1905, is as follows: Fairly well nourished, mucous membrane pale, skin pale, dry and harsh, cheeks flushed, expression anxious, right sided facial paralysis, persistent cough, raising foul smelling, stringy muco pus, slight diarrhea, teeth bad, slightly deaf, temperature 102°, pulse 114, regular low tension. Leukocytosis 15,000; red count, 2,150-000; chest examination negative; urine negative.

From date of admittance the temperature was irregular, at one time dropping to 97° and two days later it was 103° at night. There is no record of chills or severe collapse during this period. The temperature gradually dropped to about normal, but was irregular, varying from 98° to 99°. The general condition did not improve, cough and left-sided headache were persistent. The patient sat up only infrequently.

Nov. 20. There was severe pain in left side of head and orbit, double vision, ptosis and protrusion with immovability of left eye. Because of this ocular condition, I was asked to see him on the 26th.

There was complete ophthalmoplegia external with moderate exophthalmos. The pupil was larger than the right one, but not widely dilated, as no test of accommodation was made it cannot be stated with certainty whether or not the ophthalmoplegia was total. The veins of the retina were large and full with a little blurring of edge of the disk. There were old and fresh patches of choroiditis.

Examination of left ear showed only a chronic nonsuppurative catarrh; there was a large destruction of drum in right ear. At times a right facial paralysis was noted, but it was not constant and is not present at time of writing. Transillumination of antral and frontal sinuses was very satisfactory, good illumination being obtained at all points. There was no perceptible swelling of neck or zygomatic region. Anterior rhinoscopy disclosed small polyp on left middle turbinate, but no discharge from middle fossa.

Posterior rhinoscopy was negative except a possible fulness in region of soft palate on left side. The left tonsil was about 1½ inches long and ½ inch thick, not ragged. A drop of pus was seen in the supratonsillar fossa and a small probe entered a sinus leading directly upward. This sinus was dilated and about ½ dram of foul pus washed out. A probe could be inserted directly upward for ¾ of an inch when it was stopped by what seemed to be a fold of soft tissue with bone behind it. At no future time could I pass a probe further than this or in any other direction.

A portion of the tonsil was removed, the sinus repeatedly dilated with a divulsion dilator and washed out daily. On the 30th, the report was of less pain and cough. The ptosis was less on Dec. 5 and on the 7th the eye could be moved out several mm. The improvement in function and decrease of the exophthalmos was progressive and the patient left the hospital, Dec. 23, completely recovered from the ocular complications, sinus not discharging and gaining rapidly in flesh and strength. The paralysis of the third and sixth nerves indicated their involvement in the sphenoidal fissure. The exophthalmos did not seem to be sufficient to indicate an abscess of any size in the orbit, but more than would be caused by a paralysis of muscles alone. There was little rise in temperature at the time of ocular complication, but the pulse became more irregular, varying from 60 to 110 in the same day. The steady recovery in strength, cessation of cough and subsidence of ocular symptoms which followed drainage of the peritonsillar fistula point almost conclusively to it as the cause of the patient's multiplex symptoms.

Syphilis, the most common cause of such ocular paralysis, would be excluded by the negative history and prompt recovery without anti-syphilitic treatment. Several cases have been reported of involvement of the contents of the orbit from infection by way of blood vessels and lymphatics or direct extension by way of the mucous membrane of the nose and nasal duct following acute tonsillitis, but the writer has been unable to find any of direct extension of pus to this region.

Several cases have been reported of involvement of the contents of the orbit from infection by way of blood vessels and lymphatics or direct extension by way of the mucous membrane of the nose and nasal duct following acute tonsillitis, but the writer has been unable to find any of direct extension of pus to this region.

Casselbery [19] says that, in exceptional instances, pus may form so high up as to point in the nose or post-nasal space, and Sedizak [20] describes a case of extension to the antrum of Highmore, with envolvement of the lingual tonsil, at which latter point rupture occurred, with severe hemorrhage. If I understand the report correctly, there was evidence of orbital invasion in this case, presumably by extension from the antrum.

The following questions have been raised in the writer's mind by the first four and similar cases:

1. Was the failure to find pus due to the lack of proper technic in the search?

2. Was there gradual discharge of pus in these cases through incisions or some spontaneous opening?

3. Is there a class of peritonsillar inflammations, severe and characteristic in appearance, which do not break down, but are resolved gradually?

4. If third is correct, would bacteriology throw any light upon the difference in development of these cases and those of frank abscess?

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Dr. Cobb states that at present his views have become so far modified as to believe that the average peritonsillar is in the tissue around the tonsil, not in the fossa, but that the more dangerous cases break through into the fossa and sometimes in this way get to the mediastinum and are fatal.
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THE EARLY DIAGNOSIS OF TYPHOID FEVER BY BLOOD CULTURES FROM THE EAR.*

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AND
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Conradi,[1] in January, 1906, showed that it was possible to recover the typhoid bacillus from the circulating blood in a much larger per cent of cases of typhoid fever by the use of ox bile as a medium than by ordinary culture media previously employed. Several series of cases showing similar results have since been published. The recent epidemic of typhoid fever in Boston, caused by infected milk, has given the writers an opportunity to make cultures on 120 consecutive patients who were admitted, as typhoid fever cases, to the medical services of the Boston City Hospital.

Fresh ox bile was used as a culture medium in 90 of the cases; inspissated bile in the other 30. Five cubic centimeters of the fresh ox bile were placed in tubes and sterilized in an autoclave for thirty minutes at 15 lb. pressure. The inspissated bile was used apparently with equally good results. It was derived from fresh bile, which had been sterilized and from which the water had evaporated at room temperature. The residue was prepared for use by the addition of distilled water to make it up to the original amount and resterilized. Some investigators have used a solution of bile salts, with results equally as good as with ox bile. These results suggest that it is the presence of the bile salts which favor the growth of the typhoid bacillus.

The method generally employed for obtaining blood for a blood culture is by puncturing a superficial vein in the arm and withdrawing the blood in an antitoxin syringe. This method for general use is not practicable, as it requires experience and faultless technic. We obtained the blood in each of our cases from the lobe of the ear. The field of operation was cleansed with soap and water, followed by 70% alcohol. This was allowed to evaporate before the ear was punctured. A deep puncture was made in the ear with the point of a small scalpel. The blood was collected in clean sterile pipettes made from medium-sized glass tubing, one end of which was drawn out into a capillary. These pipettes were prepared for use by washing with soap and water, alcohol and ether. They were then placed in clean test tubes, plugged with cotton, and sterilized with dry heat. In the majority of cases the blood was drawn freely into these pipettes by capillary attraction; in a few instances manipulation and squeezing of the ear were necessary. The amount of blood taken from each case averaged about 1 ccm. (15 drops). When the blood flowed freely we took as much as 20 drops. Occasionally we were unable to obtain more than 10 drops. Each specimen of blood as soon as collected was transferred at the bedside from the pipettes to the ox bile, before clotting could take place within the pipette. In nearly every case gravity alone caused the blood to drop freely into the bile, but in a few cases, where clotting had started, it was necessary to break off the capillary end of the pipette in order to allow the blood free exit.

In no case did the patient complain of pain or discomfort, while the blood was being taken, and all the wounds healed by first intention.

The dark color of the bile medium when mixed with blood makes it difficult to determine the presence of a few micro-organisms. For this reason, after our bile cultures were incubated at 37° C. for six hours, we transferred four platinum loops of it to plain bouillon. In most of the cultures, from which we recovered the typhoid bacillus, it was present in the first transfer to bouillon. If this transfer was negative for the typhoid bacillus, others were made from the bile culture after longer periods of incubation, until this organism was either obtained, or at least four transfers were made. If the fourth transfer showed no typhoid bacilli, we regarded this case as negative.

The following table shows the period of incubation before each transfer, the number of transfers, and the organisms recovered from the 120 cases on which cultures were made.

Hours of incubation of bile culture.	Transfers of bile to bouillon.	Organisms Recovered.		
		Typhoid bacillus.	Staphylococcus pyogenes aureus.	Contaminations.
6	1st transfer	25	1	0
12	2d ,,	9	0	2
24	3d ,,	0	0	5
36	4th ,,	0	0	5
	Total	34	1	12

The original bile cultures and the bouillon subcultures, as soon as made, were returned to the thermostat. The only contaminating organism was the staphylococcus epidermidis albus; it occurred in 10% of the cultures, but in no way interfered with the isolation of the typhoid bacillus.

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* From the Pathological Laboratory of the Boston City Hospital.
[1] Deut. med. Wochenschr., xxxii, 58.

In 120 patients (admitted with the diagnosis of typhoid fever), on whom blood cultures were made, 98 subsequently developed typical typhoid symptoms. The following table shows the results of the cultures in the typhoid cases, as compared with the Widal reaction in the same.

		Blood Cultures.		Widal Reaction.	
Duration of disease.	No. of cultures made.	Positive.	Per cent.	Positive.	Per cent.
1st week	20	19	95	1	5
2d ,,	71	14	17.7	71	100
3d ,,	7	1	14.2	7	100

The percentage of positive typhoid cultures obtained in this series during the first week of the disease is about the same as that of other observers. In the second and third weeks the percentage of positive cultures is considerably lower than that obtained by Joslin and Overlander[2] in a series of cases studied in this laboratory. In their cultures the blood was taken from a vein of the arm and at least 2.5 ccm. of blood were used for each culture. This suggests that the typhoid bacilli in the blood are fewer in number in the second and third weeks than in the first.

The method of identification of the typhoid bacillus is comparatively easy. Peabody[3] states that an actively motile bacillus, recovered from the circulating blood in every case of the series investigated by him, proved on further study to be the typhoid bacillus. If the organism recovered is Gram-negative and does not produce gas in stab cultures of dextrose agar, this statement is probably true. The paratyphoid bacillus by its production of gas in stab cultures of dextrose agar is easily differentiated from the typhoid bacillus. The more elaborate and exact identification of a motile, Gram-negative bacillus obtained from the circulating blood, by means of its production of gas and of acidity in the sugar bouillons is rarely necessary. The agglutination of the organism recovered by a known typhoid serum was present in 80% of our cases, in the first subculture. It is possible to make further subcultures and finally obtain the agglutination in each case. The paratyphoid bacillus rarely agglutinates with a known typhoid serum in dilutions of 1 in 50 and above.

The presence of a positive Widal reaction in the first week of typhoid fever is uncommon. The case in our series, which gave a positive Widal reaction on the sixth day of the disease, possibly belongs to the second week, as the date of onset was difficult to determine in some cases. In the second week the Widal reaction ordinarily is present in about 84% of the cases, and gradually increases until practically every case at some time gives the reaction, although the reaction may persist for only a short time. In our series it was present in 100% of the cases in the second and third weeks. This is probably due to the fact that these patients were all infected with the same organism which was of high virulence, as shown by the clinical course of the disease. The Widal reaction may be suggestive or even positive in a few diseases other than typhoid, and also may persist for some time after an attack of typhoid fever. In our series it was present in 2 patients admitted for typhoid fever, who had been exposed to infection by the contaminated milk. Both of these gave a history of a previous attack of typhoid fever. Blood cultures were negative in these cases on the third day of their illness and neither subsequently developed the clinical course of typhoid fever.

In the 22 cases admitted as typhoid fever with symptoms which subsequently proved to be due to other causes, the blood cultures were negative, except in one case. In this case we recovered the staphylococcus pyogenes aureus. To exclude a possible contamination a second blood culture was made and the staphylococcus pyogenes aureus was recovered a second time from the blood. Joslin and Overlander also recovered the staphylococcus pyogenes aureus from the circulating blood in one case of their series.

CONCLUSIONS.

Blood cultures in early cases of typhoid fever (that is, within the first week) give an accurate diagnosis in 90% to 100%.

The information obtained in this way is, therefore, extremely valuable, because the Widal reaction is rarely obtained before the ninth or tenth day of the disease.

The simplicity of the method of obtaining blood from the ear for blood cultures warrants its general use by practitioners.

In early cases 1 ccm. of blood is sufficient for each culture. In cases of two and three weeks' duration a larger quantity of blood gives a higher per cent of positive cultures.

In febrile conditions of a few days' duration with symptoms simulating typhoid fever a negative blood culture probably excludes typhoid fever.

In septicemias due to the staphylococcus pyogenes aureus, it is possible to recover this organism from the blood by the ear method with the use of ox bile as a culture medium.

ANTI-TYPHOID INOCULATION.*

BY G. P. SANBORN, M.D., BOSTON,
Formerly Assistant in Prof. Sir A. E. Wright's Laboratory, St. Mary's Hospital, London.

The aim of anti-typhoid inoculation is to produce such conditions within the body that typhoid bacilli will be destroyed soon after their entrance, but if these conditions are incompletely achieved by the procedure, and the bacilli find lodgement and grow, it is the hope that the inoculation will at least have the effect of modifying the severity of the subsequent attack. In either case the conditions to be brought about consist of an elaboration of specific typho-tropic substances, in response to the inoculation.

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[2] Bost. Med. and Surg. Jour., may 7, 1908.
[3] Arch. of Internal Med., Feb. 15, 1908.

* Read at the annual Meeting of the Suffolk District Medical Society, April 25, 1908.

Pfeifer's experimental inoculation in man proved that subsequent to an inoculation of heated typhoid bacilli, there took place an elaboration of specific typho-agglutinins. This suggested that heated cultures used as vaccines might induce the elaboration of various specific anti-bacterial substances against typhoid. Wright has shown that a vaccine consisting of a suspension of typhoid bacilli, heated to 60° C., and thus killed, can be relied upon to produce, when injected into man, the elaboration of specific bactericidins, agglutinins, and opsonins, in excess of those normally found, that in this way an active immunity to typhoid is acquired, and that, as a result, a person thus treated if exposed to typhoid, is not apt to contract the disease; or if infection does take place, its course is generally mild.

A simple method of preparing vaccine for this purpose is the usual one for preparation of any vaccine. The dosage that has given the best results and that Wright uses at present is 1,000 million bacilli, followed in a week or ten days by a dose of 2,000 million, both given subcutaneously in the back between the shoulders.

The clinical symptoms that follow such dosage are not severe. At the site of inoculation there develops in two or three hours some redness, swelling, possibly lymphangitis, accompanied by some pain and tenderness. The general symptoms are usually limited to moderate malaise, headache, slight temperature, all limited to the first day, or a portion of it. The patient should be kept quiet, or confined to bed, until these symptoms are over. The second dose rarely produces symptoms.

The extensive series of anti-typhoid inoculations that Wright carried out in the British Army in South Africa furnish important evidence as to the efficacy of this procedure in protecting against typhoid. I would call especial attention to the fact that severe symptoms which sometimes followed inoculation, and the marked symptoms that usually followed in this series of inoculations, are never met with after the dosage that Wright now uses and that he has found produces sufficient protection. The statistics show that the incidence of typhoid among those men who were inoculated was about one half that in those who were not inoculated. Further, among those who after inoculation contracted the disease, the case mortality was about one half that among those that contracted the disease in the uninoculated group. Therefore, it is clear that not only was the incidence markedly diminished, but also the severity of the disease in those who, after inoculation, were unfortunate enough to contract the disease.

As to the reasons for the incidence of the disease in the *inoculated* group we may speculate that in some cases there was insufficient response to the vaccine given, in the formation of protective substances; in some, it is possible that proper dosage was not given, so that in either case protection was not achieved; in some, that infection took place in the usual manner during the *period of diminished resistance* that experiment has shown follows the injection of any bacterial vaccine of sufficient dosage to later cause an increase in anti-bacterial substances. At this period of "negative phase" there must be greater susceptibility to infection, and we can in this way account for certain of the cases that developed the disease soon after inoculation. We may further speculate that in some cases, particularly the fatal, the inoculation was given *after* infection in the usual way had taken place, but before any symptoms had developed to suggest this condition. In these it is conceivable that the inoculation merely added fuel to the flames.

The application of these methods of individual protection against typhoid, in preventive medicine, in consideration of their apparent efficacy, is worthy of study. The danger of inoculation "*per se*" if the vaccine is properly made, standardized, and given in proper dosage, should be nothing. The subsequent subjective symptoms under present methods are not to be dreaded. The protection in this way achieved seems to be of reasonable degree, continues for two years or more in some cases, and, besides, seems effective in limiting any subsequent infection to the production of a mild attack only.

The conditions under which anti-typhoid inoculation may be considered in practical medicine, and offered, subject to the final decision of the patient, seem to be something as follows:

(1) When an individual contemplates a sojourn in a typhoid-infested district; for instance, it is not uncommon in England for the families of civil and military officers going to certain of the colonies to be protectively inoculated.

(2) When a person starts on an extended journey into places where typhoid exists, where sanitary arrangements are questionable and drinking water of doubtful purity, and under conditions that would render an attack of typhoid a serious handicap, in the carrying out of special purposes.

(3) In the event of an epidemic of typhoid, before the source of infection is discovered, when an attack of typhoid would be of serious consequence to a particular individual, not only in consideration of the question of ultimate recovery that always exists, but of the confinement for a number of weeks and the necessary absence from the conduct of affairs of perhaps the highest importance to the individual.

(4) In the case of nurses in a general hospital, constantly caring for the typhoid patients, and too frequently succumbing to infection, protective inoculation may be considered and offered.

(5) In the case of an army in the field.

A plain statement should be made to each individual to be inoculated as to the symptoms that may follow. If the importance of freedom from typhoid out-weighs a few hours of malaise subsequent to the inoculation, the physician may advise such a course. If we are considering protective inoculation during an epidemic in individuals possibly already exposed, we must further explain, first, the possibility of their being already infected and in the septicemic stage before symptoms have developed, and the probability that if inoculated under these conditions, a more serious attack may be brought on than would have naturally followed if the individual had not been inoculated; second, the possibility of their becoming infected immediately after inoculation during the period of depressed resistance or "negative phase," when they would, of course, be abnormally susceptible to the disease. It should be added that the disease, occurring under the latter circumstances, is usually mild in its course.

I bring up the subject of protective inoculation against typhoid, not because there is at present any indication that it will have general application in preventive medicine, but because when considering preventive measures it is well to have in mind the possibility of protecting individual cases, if conditions warrant it, to a degree that experience has shown is consistent with diminished susceptibility to infection, and with a mild course of the disease, if the individual chances to succumb to infection.

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Clinical Department.

A STERILIZING HOPPER.*

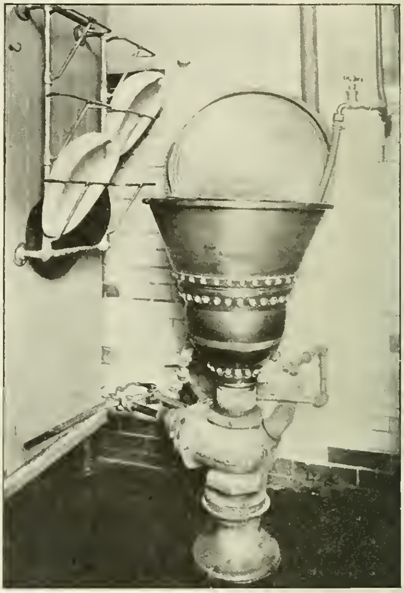
BY F. A. WASHBURN, M.D., BOSTON,
Assistant Resident Physician, Massachusetts General Hospital.

THE discharge into the sewer of feces and urine which contain the contagion of typhoid fever is a menace to the health of the community. Here, in Boston, the danger lies in contaminating water in which people bathe and infecting beds of shell fish.

The disinfection of typhoid stools is usually attempted by means of chemical agents: carbolic acid, formalin, lime, etc. These are very uncertain methods, even when most carefully carried out, as the agent with difficulty penetrates the interior of the stool. When chemical disinfection is employed, it is necessary to keep the stools standing about the service room of the ward for a prolonged period. This is both unsafe and objectionable.

As we believe that a large general hospital, treating many cases of typhoid fever, has no right to turn into the sewer unsterilized or partially sterilized stools and urine, the Massachusetts General Hospital has introduced a piece of apparatus for boiling such contaminated matter. The accompanying illustrations show this utensil. It is our ordinary copper hopper, double jacketed at the lower part in the same manner as a kitchen kettle is double jacketed. A gate valve is introduced between the bottom of the hopper and the trap. The cover is made with a water seal about the edge, and a vapor vent is supplied to carry off the steam and obnoxious odors.

In common daily use the gate valve of the hopper is open, the cover is up, and the steam, of course, is not turned on. When it is to be used for sterilizing purposes the gate valve is closed, the bedpan is washed out by means of water through the rubber hose attached to the faucet and water is allowed to enter the hopper to the line painted on the outside. Experience has shown that this is the line of safety; that if water is introduced above this line very vigorous boiling may cause the contents to overflow. Steam is then introduced into the double jacket by opening the valve of the steam pipe inlet, the cover is closed and, with our 70 lb. pressure of steam, boiling is almost instantaneous. When five minutes have elapsed, the gate valve is opened, the cover is raised, and the hopper is flushed out by means of the hose attached to the faucet.



Bedpans and urinals are also boiled in a small copper tank with a steam coil in the bottom.

The following is a copy of the sign which hangs over the sterilizing hopper:

"To use sterilizing hopper, close valve at bottom by pushing lever toward hopper and fill with water to level of ring painted on outside. Open steam valve and heat for five minutes.

"Flush hopper thoroughly after using."

There is no obnoxious odor connected with the use of this apparatus, provided the cover is shut from the time boiling is started until a short time after the sterilized contents have been discharged into the sewer.

It is not necessary to use nearly as much steam pressure as we do, although a lower pressure means a longer wait before boiling occurs.

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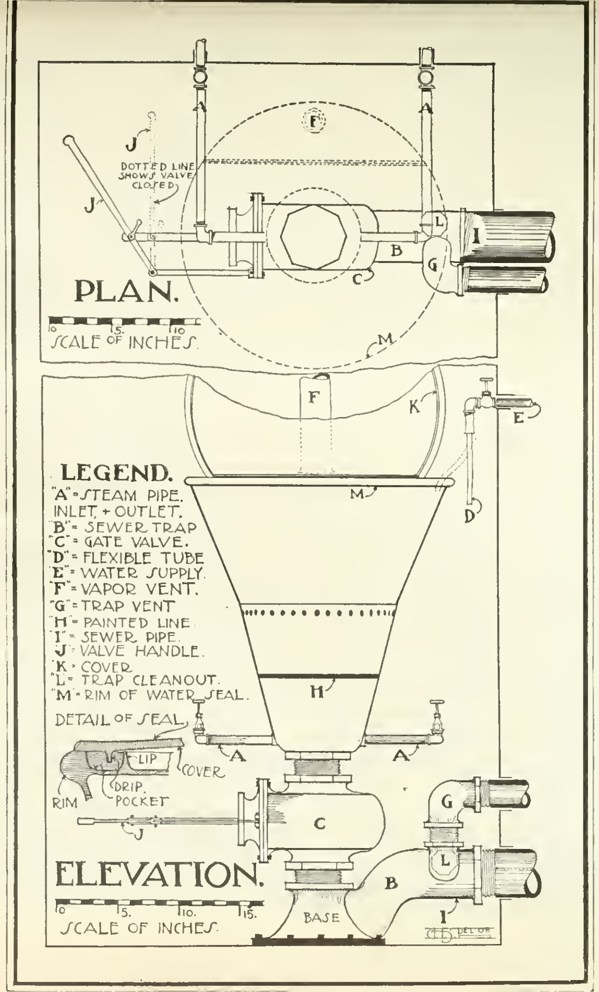
* Read at the annual meeting of the Suffolk District Medical Society, April 25, 1908.


PLAN.
SCALE OF INCHES.
0 5 10
A
A
F
J
J
DOTTED LINE SHOWS VALVE CLOSED
L
I
B
G
C
M
F
K
E
D
LEGEND.
"A" = STEAM PIPE. INLET + OUTLET.
"B" = SEWER TRAP
"C" = GATE VALVE.
"D" = FLEXIBLE TUBE
"E" = WATER SUPPLY.
"F" = VAPOR VENT.
"G" = TRAP VENT
"H" = PAINTED LINE
"I" = SEWER PIPE.
"J" = VALVE HANDLE.
"K" = COVER
"L" = TRAP CLEANOUT.
"M" = RIM OF WATER SEAL.
M
H
DETAIL OF SEAL.
LIP
COVER
RIM
DRIP POCKET
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BASE
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0 5. 10. 15.
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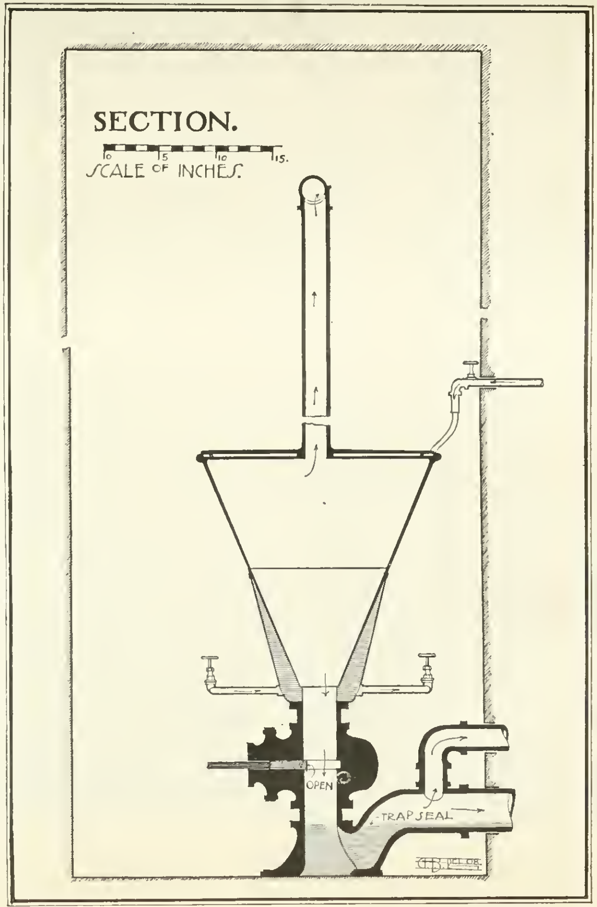
SECTION.
SCALE OF INCHES.
0 5 10 15.
OPEN
TRAP SEAL
G.H.B. DEL 08

A PSOAS ABSCESS MISTAKEN FOR A CASE OF "ACUTE ABDOMEN."

BY W. P. COUES, M.D., BOSTON.

W. H. W., colored, fifty-three years of age, was seen Jan. 27, 1907. The patient had been ill for two weeks and was evidently, from casual observation, a very sick man.

The history is as follows: His mother and father died of old age, two sisters died when young, one brother is living and well. His wife is living. She has had no miscarriages, but suffers much from asthma and bronchitis. There are three children living. It is of interest that a daughter has a contracted pelvis and has had three successful Cesarian sections. One of her children died of tuberculosis, another grandson was operated upon for tubercular peritonitis by the writer, and died, after improvement and hope of recovery were entertained.

W. H. W. had used alcohol rather freely. Occupation, that of a beef-handler, necessitating the lifting of heavy weights on the back constantly. Five years ago he had an abscess of the neck for which he was treated at the City Hospital. He said he had typhoid fever when he was a boy.

Two weeks ago he was taken ill with pain in the back of the head, and later in the testicles. Pain came on also over the left hip and buttock. He had fever every day. The bowels did not move freely at this time. There had been no nose bleed and no blood had been noticed in the stools. He was delirious on Jan. 27, in the morning. Lately the bowels have been loose.

Examination showed a well developed muscular negro. There were no scars on the penis. The pupils reacted to light. The tongue was coated and somewhat tremulous. There was nothing abnormal detected in the examination of the chest. The temperature was 100°, the pulse 130. There was no marked anemia. A stained blood film showed large mononuclears, 3%; small mononuclears, 13%; neutrophiles, 84%. The urine was concentrated and contained a trace of albumin.

The left hip and sacral regions were very tender, particularly the hip about the trochanters. There was no swelling, but movement of the hip was painful. It was impossible to get a history of the abdominal symptoms from the patient. The family stated that the distention and pain on pressure had come on that day. Examination showed a very much distended abdomen, with marked resistance in the left lower quadrant. There was rigidity of the whole abdomen; palpation over the left lower quadrant was very painful. There was no pain on palpation over the appendix region. There were no masses felt though the rigidity made it hard to say positively that none existed. Rectal examination was negative.

The sudden abdominal distention, rigidity and tenderness to pressure were seemingly explained by an acute abdominal infection, perhaps masked before, possibly a terminal infection. The pain in the hip and testicles was incorrectly interpreted as referred pain from abdominal trouble, as is seen in certain cases of appendicitis where pus gravitates into the pelvis. A positive diagnosis was not arrived at. On Jan. 28, the patient was very much weaker, the abdomen was still distended, board-like and still very tender to pressure in the left lower quadrant. The patient was sent to the Massachusetts General Hospital for immediate operation.

At the hospital after a most careful examination the medical features of the case seemed to be more pronounced and the patient was sent to the medical wards. Symptoms of meningeal irritation were found which had escaped the writer's notice. The patient failed rapidly and died the next day.

The interest of the case is largely in the autopsy findings. For permission to refer to them I am indebted to the hospital.

"A large abscess was found situated in the left psoas muscle and extending up to the region of the intervertebral disc between the fourth and fifth lumbar vertebræ and to the region of the sacro-iliac synchondrosis. The left hip-joint was normal on section and the retroperitoneal lymph glands were tuberculous. There was a tubercular meningitis, probably caused by rupture of the abscess into the spinal canal."

In connection with this case a recent paper by F. Brenner[1] is of interest. Brenner calls attention to the fact that numbers of cases of tuberculosis of the vertebræ, even when far advanced, are overlooked clinically.

In 2,500 autopsies at Frankfort he found 39 cases of unmistakable vertebral tuberculosis. Of these 22, or 56%, in spite of the marked changes found at autopsy, gave no symptoms, or at least none leading to a diagnosis. From the examination of this material he showed that tuberculosis of the vertebræ was not uncommon in adults, but the diagnosis is much more rarely made during life than in children. Perhaps this is because the disease in adults does not lead to deformity as readily as in children. He found that the lower thoracic and upper lumbar vertebræ were most commonly affected, and that the inter-vertebral fibro-cartilages were mostly secondarily infected from the vertebræ. According to Brenner, the influence of traumatism must always remain doubtful. There was history of traumatism in cases where a diagnosis was reached, and also where the condition was unrecognized until autopsy. In all cases of abscess of the thorax, Brenner shows the importance of examining the vertebral column, even when the abscess seems to originate from the ribs. In all paranephritic and all doubtful perirectal exudates he emphasizes the importance of careful examination of the vertebral column.

Medical Progress.

RECENT PROGRESS IN DERMATOLOGY.

BY JOHN T. BOWEN, M.D.,
AND
HARVEY P. TOWLE, M.D.

I. FREEZING BY CARBON DIOXID AND ETHYL CHLORID IN THE TREATMENT OF DISEASES OF THE SKIN.
II. TEN CASES OF MYCOSIS FUNGOIDES.
III. REACTION OF THE SKIN AND OF THE EYE IN DIFFERENT DERMATOSES.
IV. UNIVERSAL DERMATITIS OF NURSING INFANTS.
V. SKIN DISEASES IN THE NEGRO.

FREEZING BY CARBON DIOXID AND ETHYL CHLORID IN THE TREATMENT OF DISEASES OF THE SKIN.

The last review of the *Progress of Dermatology* dealt with the treatment of various diseases of the skin by freezing with liquid air (Oct. 17, 1907).

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[1] Brenner, F.: Frankfurter Zeitschr. für Path., Bd. 1, Heft 2. Quoted in Zentralbl. für Chir., Feb. 29, 1908.

In that review it was shown that liquid air is an exceedingly active agent, which possesses the power of almost instantly freezing the tissues with which it is brought in contact to a depth and intensity proportionate to the duration and force of the application. It was also shown that because the action of liquid air is so energetic the results can be controlled only by the most perfect technic. On account of the rapidity with which it freezes the tissues the intensity and duration of the application must be judged with great accuracy as the margin between a safe amount and a dangerous amount is very narrow. Liquid air also has the disadvantages of being expensive, hard to obtain and harder to keep. In spite of these drawbacks it has yielded very striking results at the hands of skilled operators and has demonstrated beyond question that refrigeration is a valuable addition to our means of treating certain diseases of the skin.

Refrigeration, or treatment by freezing, was introduced in 1900 by Dethlefson, who reported cases treated by freezing with ethyl chlorid. In 1905 the first cases to be treated by carbon dioxid were reported by Juliusberg,[1] who applied it in the form of a spray. In 1907 Pusey[2] published cases treated by applications of carbon dioxid snow. Both ethyl chlorid and carbon dioxid will freeze the tissues with which they are brought in contact, ethyl chlorid in a few seconds, carbon dioxid nearly as rapidly as liquid air. Both have the advantage over liquid air of being comparatively inexpensive, easily obtained and easily kept. The fact that carbon dioxid is only about one half as powerful as liquid air and ethyl chlorid still weaker is a positive advantage in most cases rather than a disadvantage as this lesser energy allows a more complete control of the effects of the applications than is possible with liquid air and also gives a greater margin of safety.

Passing now to a more detailed consideration of carbon dioxid, it is important to note at the outset that Pusey[3] states that according to his experience there is no difference in the actions of carbon dioxid and liquid air. The greatest difficulty in its use seems to lie in its effective application to the part. Two different methods have been used, the spray by Juliusberg and the snow by Pusey. Both methods are based upon the fact that when the carbon dioxid gas is released from the strong iron cylinders in which it is stored under tremendous pressure, it expands so rapidly that it produces an intense cold.

Juliusberg's method of spraying resembles somewhat that by which frozen specimens are prepared for microscopical examination, but instead of a solid table, he uses a sort of watering spout attachment in which several small holes have been bored. The valve of the cylinder is opened. The gas is forced through the holes in the spout, which break it up into a spray, which freezes the tissues to which it is applied almost instantly. Indeed, according to Juliusberg, when the nozzle is at a distance of one centimeter the skin is frozen hard in one second and remains frozen from twenty to thirty seconds. The longer the application the more intense is the freezing and the greater the succeeding reaction. The clinical appearances which follow freezing with carbon dioxid are described as follows: after keeping the skin frozen for one minute there is anemia over the frozen area, which is followed in a few minutes by a hyperemia, which is so intense that if a slight incision is made a yellowish fluid wells up out of the wound. Under the microscope this exudate shows no formed elements. Twelve hours later there is inflammatory redness with the formation of vesicles which last for several days.

In order to determine what histological changes freezing with carbon dioxid produced in the tissues, Juliusberg excised one piece of normal skin immediately after freezing and a second piece fourteen hours later. In the first piece the only change found was in the vessels which were filled with thrombi. The sections of the second piece, which was removed after fourteen hours, showed that the effects of the freezing are progressive and become widespread. The whole epidermis had apparently undergone a homogeneous destruction. A few cells of the basal layer still retained apparently unaltered nuclei, but with this exception they had entirely disappeared, leaving empty, clear spaces behind. Below the epithelial layer was a band of polynuclear leucocytes. There were also masses of leucocytes scattered about among the swollen and hypertrophic connective tissue cells. The lymph spaces were dilated and filled with a homogeneous substance. The vessels also were dilated, occluded by thrombi and surrounded by a leucocytic infiltration. The whole connective tissue was filled with a network of fibrin which, in the papillæ, was arranged in orderly coils. Because the changes in the piece which was excised immediately were limited to the vessels, Juliusberg concluded that the first effects of freezing with carbon dioxid are manifested in the corium.

In treatment, Juliusberg sprays the part until it is thoroughly frozen. At this point, instead of continuing the spray, he shuts it off and does not reapply it until the tissues show signs of thawing. By means of this interrupted spray the part is kept solidly frozen for one or two minutes. A moderate application of this length causes only slight injury to the epithelial and subepithelial tissues, but an application of greater intensity may produce ulceration. A second treatment is not given until the reaction from the first has subsided. Juliusberg states that in superficial affections he expects to obtain a recognizable result in from three to four sittings given during a period from three to four weeks. He reports good results from this method of treatment in acne, sycosis, ulcus cruris, x-ray dermatitis, cancroid and lupus erythematosus, but poor results in lupus vulgaris and psoriasis. Later on he obtained satisfactory results in lupus vulgaris by combining cauterization with the freezing, often repeating the process two or three times at one sitting. Juliusberg thinks that carbon dioxid freezing works more satisfactorily in the treatment of lupus erythematosus. Arning (quoted by Juliusberg) obtained good results with carbon dioxid in carcinoma, sycosis, lupus and ulcus molle, but his most striking results were in lupus erythematosus.

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[1] Berl. klin. Wochenschr., 1905, No. 10.

[2] Jour. Am. Med. Asso., xlix, 1354.

[3] *Loc. cit.*

Pusey [4] uses carbon dioxid in the form of snow instead of as a spray. When the gas is released it strikes upon a piece of chamois skin wrapped around the opening of the cylinder and is deposited as snow. This carbon dioxid snow is moulded between the layers of the chamois skin "as one would make a snowball and then pared with a knife into whatever shape is desired." The snow pencil is then applied to the part to be treated. "The effects produced . . . depend upon two factors: first, the amount of pressure exerted; and, second, the duration of the freezing. The stronger the pressure, the deeper will the tissues be frozen. Under the maximum amount of pressure which can practically be exerted in using the snow, I should say that freezing from the depth of one eighth to one sixth of an inch can be produced in a few seconds. Under ordinary circumstances freezing to the depth of from one sixteenth to one twelfth of an inch is produced. As a rule, I exert just enough pressure to fix the snow firmly against the skin. . . . The duration of the freezing is, of course, the most important factor. . . . After an application of five seconds the inflammatory products will be absorbed in about five days without crusting and without any scarring whatever. After a freezing of ten seconds the vesiculation will probably be followed in about three days by the formation of a thin crust; in the course of a week this will disappear with very superficial sclerosis of the upper part of the corium, but without changes in the epidermis — practically without any scarring whatever." "After an application of thirty seconds the reaction is still more intense. A bulla is formed, which dries into a superficial crust and disappears in about two weeks, leaving a slight scar." The action of an application of fifty seconds is deeper still and results in a smooth, white, superficial, non-contracted scar. "In practice I [Pusey] have found applications of from ten to thirty seconds the most satisfactory." Pusey has obtained excellent results with carbon dioxid snow in the treatment of pigmented, hairy and vascular nevi, lupus erythematosus, superficial epitheliomata and senile keratoses.

Ethyl chlorid was used in the treatment of diseases of the skin by freezing before either liquid air or carbon dioxid, having been introduced by Dethlefson in 1900. To apply, the tube is held, top downward, several inches distant from the skin, so that the stream may reach the part in the form of a fine spray. At first a moist snow forms on the surface of the skin, but after a few seconds a white wave suddenly sweeps over the area, which indicates that the tissues are solidly frozen. Synchronously with the appearance of the white wave the patient experiences a feeling of sharp burning or tingling which, however, seldom amounts to actual pain. If the application is stopped at this point the effects will have passed away in from twenty to thirty seconds. By repeating the application whenever the tissues show signs of thawing, in the same manner in which Juliusberg employs the carbon dioxid spray, the part may be kept solidly frozen for any desired length of time. Therefore, by varying the duration of the application the operator can freeze the tissues either superficially or deeply. Like liquid air and carbon dioxid, a short, mild application of ethyl chlorid causes an anemia, which is speedily followed by a hyperemia. As the redness disappears the part desquamates slightly, but in a short time has returned to its normal condition. After a prolonged application the hyperemia is intense and is accompanied by more or less edema. Within a few hours a vesicle forms, which soon dries into a crust. This falls in two or three days and is succeeded by a quite marked desquamation, which continues for several days. The final result is a very thin, pale white, pliable, almost imperceptible scar or, rather, atrophy. Very severe and prolonged applications may be followed by ulceration and deep scarring. As a rule, an application varying in duration from two to five minutes is used in practice. Dethlefson repeated the treatment every day, but some prefer to repeat it at intervals of two or three days. Before giving a second treatment the crusts which result from the first application should be removed so far as can be done without tearing the tissue beneath and causing it to bleed. After a series of repeated frequent applications, the interval between the sittings is gradually lengthened. According to Arning, applications which cause vesiculation give no better results than the milder without vesiculation.

Ethyl chlorid resembles liquid air and carbon dioxid not only in the clinical appearances which follow its use, but also in the anatomical changes which it causes. Although the latter are less marked, they are of the same character as those produced by the use of the more active agents.

The first case reported, in which ethyl chlorid refrigeration was used, was one of lupus vulgaris [5] of twelve years' duration. After ten weeks' treatment the skin was practically normal. Nordentoft [6] reports a case of lupus of the nose of many years' duration, which was healed in forty-eight sittings. Sorenson [7] ranks Dethlefson's method of treating lupus vulgaris by ethyl chlorid refrigeration with the Finsen method. Hansen [8] reports 13 cases of lupus vulgaris treated by the Dethlefson method. Two were completely cured; 2 were apparently cured; 2 showed a gradual improvement; 4 showed an early improvement with recurrence later. With a view to the determination of the permanent results of the treatment of lupus vulgaris by ethyl chlorid, Hansen asked Finsen to report to him how many of his cases had been previously treated by ethyl chlorid.

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[4] *Loc. cit.*

[5] Abst. Arch. für Dermat. u. Syph., lvii, 460; lix, 306.

[6] Abst. Jour. Am. Med. Asso., xlii, 138.

[7] Hospitalstinde, xlvi, no. 24; Abst. Jour. Am. Med. Asso., xlii, 584.

[8] Hospitalstinde, xlvi, no. 33; Abst. Jour. Med. Asso. xlii, 1123.

Finsen replied that he had treated 62. In 36 of these the treatment with ethyl chlorid had been abandoned in a short time, because of its lack of effect. The remaining cases had been energetically treated for periods varying from three to eighteen months. Only 4 of the 36 showed any actual gain and in 2 of these the gain was dubious. In 11% Finsen considered that the ethyl chlorid treatment had been entirely ineffectual, and in 78% actually unfavorable. The smaller the extent of the lesion and the shorter its duration, the more injurious was its action. Hartzell[9] reported good improvement in 5 cases of lupus erythematosus after freezing with ethyl chlorid every other day for from five to eight minutes. Horwitz (quoted by Hansen, *loc. cit.*) reported 10 cases of nevi, epitheliomata, senile keratosis, etc., treated with good results by ethyl chlorid refrigeration. Morrow[10] opened up a new field for the use of ethyl chlorid when he reported 10 cases of herpes zoster, in which he had been able to relieve the severe pain accompanying the eruption by freezing the skin over the point of emergence from the spinal cord of the nerve involved and also the point where the pain was localized.

If we now compare these three agents, liquid air, carbon dioxid and ethyl chlorid, with one another, we find that they all possess the property of freezing the tissues with which they are brought in contact, although in varying degrees; that such good results as have been obtained by their use have been due to the changes set up in the tissues by the freezing; that these changes, speaking broadly, are an occlusion of the vessels with a subsequent anemic necrosis and atrophy of the epithelium proportionate to the intensity of the application; that the anatomical changes produced by all three are of the same type, differing only in degree according to the energy of the agent employed and the duration of its application. Liquid air, as it is the most active, is the most effective in the treatment of the deeper seated lesions in which an intense penetrating action is desired. It should be used, however, only by operators of great experience because, as its action is so energetic and rapid, the slightest slip in the technic is apt to result disastrously. Excepting the severest cases carbon dioxid is an excellent substitute for liquid air. The fact that, although it is less powerful than liquid air, it is nevertheless powerful enough to produce practically the same results; that because it is less powerful, it is under better control and therefore demands a less exacting technic; that it is comparatively inexpensive and is easily obtained, is an advantage which strongly recommends its preference. The same arguments, ease of control, inexpensiveness and universal sale, apply to ethyl chlorid, although its comparative weakness renders it less suitable for use in the deep-seated affections. Whichever of the three is used, good results cannot be hoped for without experience. In experienced hands any one of them is capable of being so skillfully employed that the results will be strikingly successful.

TEN CASES OF MYCOSIS FUNGOIDES. HERXHEIMER AND HÜBNER.

Herxheimer and Hübner[11] publish 10 cases of this disease, with remarks about the histology of the disease and its treatment with the x-rays. These 10 cases were mostly observed in Frankfort. In certain of the cases histological examinations were made. From their histological examination of pieces of tumor, examined both before and after treatment with the x-ray, they come to the conclusion that the Röntgen rays may be looked upon as a specific remedy for mycosis, and that it is histologically proved that they are able to gradually destroy the specific elements of the disease.

They point out that the treatment of mycosis fungoides has been, for a long time, most unsatisfactory. Numerous applications and ointments were proposed and abandoned, leaving only arsenic in common use, although sure results could not be expected from this capricious drug. Surgical methods, such as excision of the individual tumors, were not successful, inasmuch as recurrences were often observed in the wound from the operation. Since the Röntgen rays have been employed in the treatment of this affection, the picture has changed considerably. First employed in America, that they are favorable in a large number of cases has been confirmed, and this action concerns not only the objective, but also the subjective, manifestations of the disease. The itching often disappears promptly. This is sometimes one of the most disagreeable and annoying symptoms of the affection. At the same time, the x-rays cause the disappearance of the tumors by destroying the cells of which these tumors are composed, in an elective way. Some see in this action an analogy to the effect the x-rays have on leukemic spleen tumors, and think that is a proof of the leukemic nature of mycosis fungoides.

In the first of this series of 10 cases, the results of the action of the Röntgen rays was not so favorable as in the later cases, which the writers think may have been due to the fact that the technic was not fully perfected, or that the Röntgen rays were applied too late. In the last 3 cases reported, which were treated with x-rays from the beginning and energetically, the tumors disappeared, leaving pigmented places, after a few exposures. The fact that during the treatment with the x-rays new tumors may form would tend to make one less confident of a permanent cure; but in any case, we have in the x-rays a means of combating the symptoms of mycosis fungoides at all times.

In using the Röntgen rays, care must be taken that they work upon all the affected parts of the skin in equal measure. Somewhat harder tubes are needed than in the case of carcinoma of the skin.

(To be continued.)

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[9] Jour. Am. Med. Asso., xliii, 2016.

[10] Jour. Cutan. Dis. and Syph., xxiii, 157.

[11] Arch., lxxxiv, p. 241.

Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

A meeting of the Society was held at the Massachusetts Charitable Eye and Ear Infirmary, Jan. 17, 1908.

President A. Coolidge, Jr., M.D., in the chair.

W. F. Knowles, M.D., Secretary.

Dr. W. H. Merrill, of Lawrence, Mass., read a paper on

A REPORT OF SOME ATYPICAL CASES OF TONSILLAR AND PERITONSILLAR INFLAMMATIONS WITH ONE UNUSUAL COMPLICATION.

DISCUSSION.

Dr. F. C. Cobb: Dr. Merrill has covered this subject so completely that I have very little to add except as regards individual experience. I think the classification of peritonsillar abscesses as anterior, posterior and external has helped me a good deal. If you regard the tonsil as swinging between the anterior and posterior pillars and figure from the direction in which it is pushed, whether your pus is behind the anterior or posterior pillar, you are much more apt to find it. Now of those three the commonest form is the anterior superior variety where the pus is to be found in the region of the supratonsillar fossa and anterior to the tonsil.

As regards lancing a peritonsillar abscess, the old point of collection — a point which is still used a great deal — seems to be in most cases a mistake, for this reason, that the pus, if we follow these cases and watch them and allow them to break, where the break comes we find to be between the tonsil and the anterior or posterior pillar in the majority of cases. Once in a while the case will break in the point of collection, but the usual place is between the tonsil and one of the pillars, either front or back. In my experience it is rare for a case to break near the point of collection.

Now if the pus presents between the tonsil and the anterior or posterior pillar and we go in in the same line, that is, between the anterior pillar and the tonsil or between the posterior pillar and the tonsil, we are going in the same line, in the same axis, in which the pus is going and will encounter it sooner or later. If we go transversely we may or may not make a good many punctures which will not strike the pus. Therefore it seems to me that the most satisfactory way is to open these abscesses between the anterior or posterior pillar according as the anterior pillar is thrown forward or the tonsil.

As regards the danger of opening between the anterior pillar and the tonsil the textbooks tell us that the large vessels may be wounded by that. I have measured with a probe in several cases and found the depth of a peritonsillar abscess, that is from the anterior pillar to the posterior pillar, to be 1¼ inches. I think it is quite safe to go in at least an inch where the swelling is in the anterior pillar. I think when anatomists frighten us in that they have not taken into consideration the tremendous swelling which always occurs in peritonsillar abscess, which makes the depth much greater than it would appear.

As to failures to find pus I think we all agree, — I think it has been the experience of most of us at the hospital, that there is nobody who can always go in and find pus in peritonsillar abscess at any stage. I think the more experience one has with them the more often one finds pus. It is possible that if one had experience enough he might always strike it, but there are a few cases where the pus is very deep and where I should doubt very much if one found it; and if you do find it you don't get a free discharge. I think not until the fourth day ought a peritonsillar abscess to be opened, it seems to me, as a general rule, and where you find pus is really somewhere near the surface.

I have investigated a good many cases at the Boston Dispensary where lancing through the point of collection was followed next day by relief, and found, in a great many of them, that the patient, on being cross-examined next morning said: "I was perfectly well. I came back and had a good deal of pain and about midnight I was suddenly relieved and everything was all right." This showed that within a few hours of lancing the thing had broken somewhere else and discharged itself and there was no discharge coming through my opening.

As regards the puncturing where you do not get pus, after all, the patient's experience to me is the most convincing and I find in peritonsillar abscess cases, those who have been through it a great number of times do not believe that they get any relief from puncturing where no pus is obtained and are usually in favor of allowing the thing to break rather than puncturing, and that is confirmed by the experience of various men who have punctured and who find the relief is usually short and the soreness more than corresponds to the relief they get.

As regards resolution or the breaking of these abscesses, I have found in examining a good many of them for the opening that it was with the greatest difficulty that you could find an opening after the thing had broken, but when you did find it it was very small, the size of a pin hole, usually in the region of the anterior or posterior pillar and by squeezing it you get a little pus, but the opening is so small that you do not often see the pus. Hence it seems reasonable to suppose that where we do not see any pus leaking out it is really a question of the pus leaking out through a very small opening; so it seems probable that it is not resolution but a breaking in most or in all cases.

I do not know whether the etiology of peritonsillar abscesses is properly discussed in this connection; I do not know that it has been dwelt on at all.

The question of infection of the tonsils through the nose has been quite interesting to me. The infection of the tonsil, that is any operation in the nose which was not aseptic, or leaving packing in the nose too long and getting pus and so on, will frequently give you tonsillitis followed by peritonsillar abscess. I think perhaps infection of the tonsils from the nose has had too little attention. The idea is that the pus in the nose passes down over the tonsil and affects it in this way. In the last case the reader mentioned I could not help wondering whether the eye symptoms did not mean ethmoiditis which had pushed the eye forward and had secondarily affected the tonsils and caused peritonsillar abscess.

Dr. H. P. Mosher: When a physician opens his first peritonsillar abscess he worries about the internal carotid artery. His anxiety is natural but needless. The artery is nearly a half of an inch behind the posterior pillar, and when the palate is distended with pus the vessel is even further away. In such a case the cavity of the abscess may be an inch and a half deep.

There are two well-known fossæ about the tonsil, one on the outside of the superior constrictor and one on the inside. The first is the pharyngo-maxillary fossa and the second, the supratonsillar fossa. The tonsil is attached to but one muscle, the superior constrictor. This is a thin muscle and extends round the back and the sides of the upper part of the pharynx like a broad ribbon. The tonsil to the inner face of this is attached by means of its capsule like a stamp to an envelope.

The pharyngo-maxillary fossa lies to the outside of the tonsil. It is bounded on the inside by the outer face of the superior constrictor, on the outside by the internal pterygoid as it runs down the inner side of the ramus of the jaw mating the masseter on the other side of the ramus. Behind the fossa is bounded by the prevertebral muscles. Posteriorly the fossa reaches inward to the center of the pharynx. In the median line of the pharynx below the level of the soft palate there are two large glands placed symmetrically on either side of the median line on the body of the axis. Each gland is placed in the lower inner part of the corresponding pharyngo-maxillary fossa. These glands drain the nose and the pharynx and are the glands which suppurate in retro-pharyngeal abscess. The fossa extends outward and meets the inward or pharyngeal prolongation of the parotid gland. Over this prolongation the fascia of the parotid is wanting. Along this unprotected prolongation therefore pus from the parotid may gain the pharynx and pus from the pharyngo-maxillary fossa may reach the side of the neck. When a peritonsillar abscess points on the side of the neck a probe can be passed from the outside of the neck to the inside and be made to present in the throat above the tonsil in the supratonsillar fossa. I have had one case of this kind. As you know, a retropharyngeal abscess by many surgeons is opened through an incision behind the angle of the jaw and back of the great vessels and into the posterior part of the pharyngo-maxillary fossa. The body of the fossa is filled with fat so that it will hold a large amount of pus. In the posterior part of the fossa dividing it into unequal halves are two ribbon-like muscles from the styloid process. Behind these in the posterior and the smaller half of the fossa lie the great vessels and the great nerve of the neck, namely, the internal jugular vein, the carotid artery and the pneumogastric nerve. That the great vessels are but rarely opened by the necrosing action of pus in the fossa is explained by the fact that they are in the posterior part of the fossa and walled off and protected by the muscles from the styloid process.

It is possible to open the pharyngo-maxillary fossa in removing a tonsil if the tonsil is strongly pulled into the snare so that the superior constrictor is drawn into the snare as well. When this happens no harm, as a rule, results, but it gives one an uncomfortable feeling to probe such an opening in the superior constrictor and to have the probe apparently fail to touch bottom in the depths of the fossa.

THE SUPRATONSILLAR FOSSA.

At birth the tonsil is an appendage of the soft palate and lies practically horizontal. It is as much upside down and in a position favoring drainage as the pharyngeal tonsil. This fact has a bearing upon the infrequency of peritonsillar abscess in infancy. During this period the supratonsillar fossa is more open than it is when the tonsil has attained some growth. In addition a baby feeds every two or three hours and the movements of the tongue in sucking and swallowing mechanically strip the fossa of its contents. In the adult cadaver if the head is so cut that the tonsil is approached from behind it is found that the tonsil is still more a part of the soft palate than a part of the side wall of the pharynx. It becomes a part of the pharynx only when the depression of the tongue pulls it down from the palate. In the adult, therefore, the tonsil is partly upside down and its crypts tend to drain. The crypts which drain the poorest are those shut up in the supratonsillar fossa. In the adult the movements of the tongue must tend as in the infant to empty the fossa. The tongue empties the fossa by exerting pressure from before backward. It is much the same as squeezing vaseline from a collapsible tube. In the adult the tonsil is at an angle of 45° with the horizontal.

It follows from the position of the tonsil that a peritonsillar abscess is in most cases an abscess of the soft palate. When the pus extends into the anterior or the posterior pillar then the abscess is in reality a peritonsillar or circumtonsillar abscess.

The supratonsillar fossa is bounded on the outside by the superior constrictor muscle, anteriorly and on the inside by the anterior pillar and its extension, the plica-triangularis, and above by the soft palate. The under surface of the soft palate is the roof of the supratonsillar fossa. This point cannot be made too clear. Only thin mucous membrane separates the roof of the fossa from the palate. This is the chief reason why the soft palate is so readily infected from a non-draining supratonsillar fossa. At the roof of this fossa the pus of the usual circumtonsillar abscess is nearest to the surface. It can be reached from the summit of this fossa easier than by any other route and with the least pain because little if any muscular tissue is cut through. Clinical experience shows that pus can be reached through the top of the supratonsillar fossa oftener than by any other route.

The size of the supratonsillar fossa depends upon the size and shape of the plica-triangularis. And the size and form of the plica is dependent upon the behavior of the second visceral cleft at the point where the tonsil is developed. The supratonsillar fossa readily becomes a nondraining septic pocket and richly deserves the bad things said about it.

THE TRIANGULAR FOSSA OF THE SOFT PALATE.

As a teacher of anatomy I should be pleased, I suppose to add another fossa to the already ample supply about the tonsil, but as a clinician I am a bit sorry to do so. The knowledge of this additional fossa, however, explains one or two points about peritonsillar abscess. On this account I will describe it. Running obliquely downward and forward from the posterior side of the cartilage of the Eustachian tube to the center of the soft palate is the levator muscle. This muscle is of very considerable size. It is at least a quarter of an inch wide and thick. The tensor muscle of the palate lies flat against the inner side of the superior constrictor and runs directly downward until it reaches the hamular process, then turns at right angles, becomes horizontal and runs to the middle line of the soft palate below the levator. A potential fossa is thus formed, which becomes an actual fossa when the palate is filled with pus. This fossa is wedge-shaped with the apex forward and the base posterior. The apex is made by the coming together of the anterior edges of these two muscles. The apex of the fossa runs well forward so that the cartilage of the Eustachian tube forms a part of its inner anterior wall. The cartilage continues forward the plane of the levator muscle so that, to be exact, the apex of the fossa is formed on the inside by the outer surface of the Eustachian cartilage and on the outside by the inner surface of the perpendicular part of the tensor muscle. The complete boundaries of this fossa, therefore, are, on the outside, the tensor of the palate and behind this the superior constrictor; on the inside, first the cartilage of the Eustachian tube and then the levator of the palate, below the horizontal part of the tensor muscle anteriorly, then the palatal aponeurosis. The base of the fossa is made by the mucous membrane of the palate. The following clinical points are explained by this fossa. In a palatal abscess of moderate size the presence of the strong levator muscle pushes the pus downward and forward so that the root of the anterior pillar bulges. If the pus does not succeed in ballooning the tissues of the soft palate easily, this muscle forces the pus down the anterior pillar to the jaw or down the posterior pillar. In the ordinary case, the pus escapes from below the levator muscle and presents above the anterior pillar. On this account, the root of the anterior pillar has long been a successful place to evacuate a palatal abscess by incision. A better point anatomically and a point even more successful clinically is between the pillars through the roof of the supratonsillar fossa. If an incision is made more than a quarter of an inch above the root of the anterior pillar and parallel with the fibers of the levator muscle, that is obliquely downward and inward, unless there is pus in front of the levator muscle, the incision separates the fibers of the muscle, does not cut them, so that when the knife is withdrawn the incision closes and the abscess does not drain. In such cases the abscess often opens in another place of its own choosing, and when it does this it usually drains satisfactorily.

We do not usually realize what a sizable structure the soft palate is. It is as long as the hard palate, two inches, and it is a strong quarter of an inch thick. It is easily ballooned, especially posteriorly. It can be distended until it fills the whole vault. Sometimes cases of peritonsillar abscess by looking through the nose you can see the soft palate mounding up. In cases of large abscesses the nasal voice is due in part to the filling of the vault by the distended palate. I expect to find some day a peritonsillar abscess that I can open through the nose.

The palate, however, can contain a very considerable amount of pus without ballooning backward and upward to a marked extent. For instance, in the artificial peritonsillar abscess which I made on this wet specimen, there are two drams of paraffin, yet the swelling caused by it produces what we would call only a small peritonsillar abscess. This considerable amount of paraffin has neither pushed the uvula from the median line nor has it caused the palate to mound up into the vault. Just because an abscess contains a large amount of pus, therefore, the conclusion is not justified that the abscess has broken through the superior constrictor and that the pus has been accumulated in the pharyngo-maxillary fossa. Most abscesses, even if they do contain much pus, are confined to the soft palate.

The fact that the cartilage of the Eustachian forms the anterior wall of a peritonsillar abscess explains why any attempt to swallow causes so much pain in the ear. In an experimental peritonsillar abscess when the palate becomes well distended a finger-like prolongation runs upward to the cartilage of the Eustachian tube, pushes it forward and practically closes the mouth of the tube.

Dr. G. L. Richards: This specimen represents a tonsil which has been removed by a snare, but it shows extremely well the tonsillar capsule. It also illustrates, or can be made to illustrate, where there are failures in not getting by or through the capsule. I am quite in accord with Dr. Cobb and Dr. Mosher that the best point of collection is through the posterior pillar. I have written with reference to making the incision through the posterior pillar, up in the supratonsillar space going up to the apex of the triangle. The failure to open sometimes when there may be pus is from not going through the capsule itself. It is also a point in the anatomy of the capsule of the tonsil that it is really supplied by very small vessels. When the tonsil is removed there should be very little bleeding.

I know of a case which happened to one of my colleagues in Fall River. He plunged his knife into what he supposed was a peritonsillar abscess. There was such a flow of blood that he promptly put his thumb in to hold it and they took the patient to the City Hospital with the physician holding his thumb in the supposed peritonsillar abscess; when they got to the hospital they packed it with gauze and finally stopped it. The whole soft palate had been ballooned. As nearly as could be determined from the previous history, the man had injured himself with a pipe or some hard substance; he had injured the soft palate, and an aneurysm had formed and he died. It was a case where supposed peritonsillar abscess proved to be an aneurysm.

Dr. G. A. Leland: When we consider the etiology of some of these peritonsillar abscesses we must see that they come from the crypts of the tonsils. The face of the tonsil becoming inflamed the crypt of the tonsil becomes closed, so that most of these abscesses are tonsillar before they are peritonsillar. Pus follows the easiest path, and the easiest direction for the pus to go is outward through the superior constrictor to the pharynx and, perhaps, through the large fossa.

Some time ago I started to open these tonsils under ether. I became accustomed to slit the tonsil from top to bottom with a right-angled knife and then, using my digits as a director, finding the direction in which the pus went and passing a finger through the fissure which I had made, into the abscess cavity, through the capsule, through the muscle and into that large fossa. It has been my experience very frequently not only to go upward into the supratonsillar fossa but backward and upward into the large fossa filled with fat and downward until I had gone far below the lower edge of the tonsil and then make an opening large enough for pus to escape, passing the finger down and ripping it right through, which of course lays the tonsil open from top to bottom in pieces like folding doors, and then the abscess has an opportunity to drain through keeping it open so that the cavity can granulate from the bottom. It is my experience that if patients have one peritonsillar abscess they have another, it makes no difference how they are opened, or whether they open themselves.

In a paper I wrote some years ago I described a case of a woman who, for several years, had had a peritonsillar abscess every single May, and once she had one in October. I took it upon myself to tell her that if I could open the tonsil that way she would never have another one and she decided to do it to get over that suffering, as she would suffer from six weeks to three months with the abscess. I opened it in this way, passing the finger upward and then downward and ripped it through. I think it was in 1893 or 1894 and she did not have another until last year, when she had a small abscess again, but she had escaped about ten of them.

So I think that in opening in the conventional way, the way of the books, we open them through the top of the suppurating cavity. Then make an opening so it can drain from the bottom, no matter if you do it with a blunt instrument like your finger.

Dr. Jack: I should like to ask Dr. Leland if this is done under ether.

Dr. Leland: When I have a sensitive patient, or under certain circumstances, I give ether. Where I do it in the hospital I can't stop for ether, and we have often found that the more they yell the less it hurts; in this case the yelling is just as good as anesthesia.

I had a little Jewish paper boy come in one day. I knew he was going to jump so I had the young men disposed, ready to grasp his legs, arms, shoulders, etc. I opened it with a knife, and the boys came on at the right time and he let out a yell and a lot of pus all at once. Two days afterwards I was going down Boylston Street and I met him selling papers and he said: "I am all right, Doctor."

If you open them in the ordinary way through the anterior pillar with a little knife you have a little homeopathic incision and it takes them a week to get over it.

At the City Hospital we do not wait until the fourth day, we open them as soon as they come in whether they are ripe or not. If we open when tonsillar they do not become peritonsillar and they come out of the hospital in three days.

Dr. T. A. DeBlois: Long before Dr. Leland invented this little knife and is too modest to call the Leland knife, he used to use a stiff probe, and perhaps I picked the idea up from him, but I have frequently used a stiff probe and pushed it into the tonsil and up. If I did not touch bottom I kept on and ran in between the pillar and the tonsil, worked around and perhaps found pus. Otherwise I would get blood every time that I struck; and though it has been said that if you do not find pus it does not do any good, it certainly does this good, you can cut it or lance it or draw blood, and in five minutes you will greatly modify the congestion and do away with the ankylosis of the jaws which is one of the greatest difficulties. If you remember that the aperture between the teeth is only about an inch and a half, that little half inch helps us very much.

As to the matter of cutting too deeply, I used to use a little bistoury. After that I got up a knife with a little slide which screwed up and down on the knife and I could not get farther than the adjustment would let me and I need not cut any deeper than I wanted. It is a good thing, I think, to know how far in your knife is after you lose sight of it.

This point about the dangerous large vessels of the tonsil came up and Dr. Otis, at the school, made some very beautiful preparations in wax and clearly demonstrated the fact that the tonsil contained no vessels of large size, except under abnormal conditions. There had been large hemorrhages, but they were anomalous tonsils. The tonsil shows small vessels, and these specimens were almost convincing of the fact that it would be extremely difficult to reach a vessel behind the pillar in cutting anteriorly.

Dr. A. Coolidge, Jr.: I should like to speak for a minute only to say, that in two cases I have seen a foreign body the immediate cause of an abscess. These abscesses were opened and continued to discharge for days until the foreign body was discharged. In one case it was a beard of wheat such as can travel in only one direction and it could not get out. The abscess continued to discharge through a fistula for several days; finally this thing appeared, was pulled out and the abscess healed up immediately.

I think it is perfectly possible that a foreign body in the supratonsillar fossa may find its way into the palate and so cause an abscess.

Dr. F. C. Cobb: One speaker alluded to the closing of the mouth so that you could not get a knife into it at all. Of course it has been our practice to lance these things under cocaine. At the hospital they etherize in the surgical wards and the mouth immediately relaxing, we are able to lance through a wide aperture, whereas before, the mouth could not be gotten open more than half an inch.

Dr. ——: In a case in my experience, the patient had had quinsy before and I had great difficulty in getting his mouth open. He suggested that I could pry his mouth open and I used a gag and got his mouth open very well. Without that help he was unable to do it.

Dr. W. H. Merrill: There was a fatal case of peritonsillar abscess in our town a year ago. I did not see the case and I should not have spoken of it except for this suggestion of Dr. Cobb's about ether. The patient had peritonsillar abscess, was etherized and was asphyxiated. Here is a possible danger in the giving of ether.

The discussion to-night illustrates that the advance is still going on and that the members of the society are still contributing original things on this subject and I feel very grateful to those who have discussed it.

Dr. F. L. Jack (presentation of case): This very interesting case of angioma of a girl of fourteen came in from one of the State Farm schools. I have here a fairly good drawing of the condition and I have the patient for you to see. I think you will be able to see with this light.

I know nothing of the history except that the child has no discomfort from this angioma, no tickling in the throat, no reflexes, nausea, or anything of this nature. How it was discovered I do not know unless the child had sore throat and somebody looked into her throat and found this.

I have spoken to a number of men about the condition and they have all told me that they have never seen a similar condition in the throat. I have looked into the literature of the case and Bosworth has something to say about the condition and regarding the treatment. What I would like, personally, is to have the opinion of the society as to what can be done for her in an operative way.

This drawing looks something like the original except that the extreme end of the uvula is much broader and the color is deeper red, or bluish red. It is easily seen here.

It is strange that this child has no symptoms whatever with that thing hanging down in this way.

Dr. Webster saw it in the out-patient department from four to six weeks ago and says it has enlarged very much since that time.

The thing that I am most interested in at the present time is what to do for this condition and I should like very much to hear expressions of opinion from this society. There are two things that can be done: removing it with the cauterizing snare; or, as Dr. Mixter suggests, puncturing that in numerous places at different times with a needle and cauterizing it. I told Dr. Mixter that I thought this was a very difficult procedure to attempt after the first time. I would like very much to get your opinion as to what ought to be done. It is evidently increasing in size very rapidly and something will have to be done before long.

Dr. G. L. Richards: I had experience with a young child where after six or eight sittings a very extensive angioma was entirely destroyed by the method you speak of. It sort of dries up and disappears; the electrolysis destroys the region; does not produce any reaction, sloughing, or pus and you follow up one place after another and after a number of applications it seems to disappear. If you use a cautery snare you may have no hemorrhage. The uvula is not so very sensitive but that with a child as tolerant as that it seems as if you could use cocaine and then use the electric needle.

Dr. A. C. Getchell: I had an experience once with angioma in the region of the lingual tonsil; I am giving it now from memory. Its characteristics before operation and the report of the pathologist were the same. I removed it with a cold snare and there was no difficulty about the operation either with its removal or with trouble from undue hemorrhage.

Dr. Algernon Coolidge, Jr.: I have seen one case somewhat similar to this but on the inside of the mucous membrane, consequently easy to get off. It was simply resected out and the wound sewed up. There was a little recurrence on the edge of the wound after it healed which had to be again resected out.

It seems to me that electrolysis is the thing to try without any question, with the possible beginning by snaring off or tying off the uvula which is now an enormous mass which I should think could be tied and cut off. Then, on the rest of it I should use the electrolytic needle.

Dr. F. L. Jack: I had almost made up my mind to try that method and am very glad you are so unanimous in your opinions.

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ANNUAL MEETING OF THE BOSTON SOCIETY OF EXAMINING PHYSICIANS AND SURGEONS.

On the evening of April 1, 1908, the Boston Society of Examining Physicians and Surgeons held its first annual meeting, at the Hotel Epicure.

The Finance Committee met at 6.30, which was followed by a meeting of the Nominating Committee.

Dinner was served at 7 o'clock. Members were called to order for business at 8 o'clock. The Secretary proposed the following names for membership: A. Carleton Potter, M.D., 186 Commonwealth Ave., Boston; Wm. J. Daly, M.D., 64 Commonwealth Ave., Boston; Walter A. Harding, M.D., Everett, Mass.; John S. Phelps, M.D., 76 Commonwealth Ave., Boston; N. R. Perkins, M.D., Dorchester, Mass.; Florence A. Sullivan, M.D., 42 White St., Haverhill, Mass.; Timothy J. Reardon, M.D., 76 Commonwealth Ave., Boston.

The president stated that the Board of Government had convened twice during the month, for the purpose of discussing plans for the incorporation of the society, the advisability of changing the name from the Boston Society of Examining Physicians and Surgeons to the Massachusetts Society of Examining Physicians and Surgeons and to make arrangements for this dinner. It was moved and seconded that the matter of incorporating and of changing the name be left entirely with the Board of Government.

The necrologist reported one death, that of Dr. E. W. Mitchell, of Fall River, Mass. It was voted that the proper resolutions be drawn and sent to the family of the deceased.

Dr. George B. Magrath, Medical Examiner for Suffolk County, who was to address the society was unavoidably prevented.

The Nominating Committee, through its chairman, Dr. Lane, reported nominations for the official positions for the coming year, as follows:

President, Dr. Francis D. Donoghue; First Vice-President, Dr. Frank E. Allard; Second Vice-President, Dr. E. M. Greene; Third Vice-President, Dr. T. Leary; Treasurer, Dr. Chas. O. Kepler; Secretary, Dr. Chas. Theodore Cutting.

It was moved and seconded that the report of the Nominating Committee be accepted and the secretary cast one ballot for the election of same. It was so voted and the secretary cast one ballot.

Dr. Francis D. Donoghue, president of the society, then addressed the members. He spoke of the success which had attended the efforts of the few who had conceived the idea of forming a society for the benefit and improvement of all medical men interested in making physical examinations. "From twenty we have grown to ninety-four," said Dr. Donoghue, "and although the annual dues have been very low, we have had sufficient funds to meet all demands, as the report of our treasurer shows." He then briefly outlined the meetings held during the past year and stated that he had been well pleased with the interest shown and that he personally felt that this society was bound to become a power in the medico-legal and life insurance work in this state.

The president introduced as the first speaker a member of the society, Dr. T. Leary, Professor of Pathology, Tufts Medical School. Dr. Leary's subject was

NEW THINGS FROM THE LABORATORY.

He said that of late years these "new things" had become quite numerous, some, not in themselves practical, very often leading to practical ends. He spoke of the serious study that had been given to senility from the pathological standpoint; also to the study of phagocytosis and the late theory in regard to the large intestine being a storehouse for bacteria. He briefly mentioned the transfusion of blood and hemolysis; also the value and danger of using blood serum as a hemostatic agent, briefly touching upon the various serums used at the present time as diagnostic and therapeutic agents, and closed his remarks with an interesting talk on the vaccines.

The president next called upon another member, Dr. William H. Watters, Professor of Pathology, Boston University School of Medicine. Dr. Watters briefly spoke of the

DIAGNOSIS OF TUBERCULAR DISEASES BY MEANS OF SPUTUM EXAMINATION, INJECTIONS OF TUBERCULIN, ETC.

The so-called eye test-dropping of a solution of tuberculin in the eye causing a conjunctivitis, he thought, was fraught with many dangers. He emphasized the fact that in examining the sputum the severity of the disease was not necessarily in proportion to the number of bacilli found. His talk was very instructive.

The president appointed the following committees for the year:

Board of Government: Dr. Francis D. Donoghue, Boston, Mass.; Dr. Frank E. Allard, Boston, Mass.; Dr. E. M. Greene, Boston, Mass.; Dr. T. Leary, Boston, Mass.; Dr. Chas. O. Kepler, Boston, Mass.; Dr. Chas. Theo. Cutting, Boston, Mass.; Dr. F. M. Briggs, Boston, Mass.; Dr. W. P. Graves, Boston, Mass.; Dr. Benj. Tenney, Boston, Mass.; Dr. Geo. B. Magrath, Boston, Mass.

Executive Committee: Dr. F. M. Briggs, Boston, Mass.; Dr. W. P. Graves, Boston, Mass.; Dr. Benj. Tenney, Boston, Mass.; Dr. Geo. B. Magrath, Boston Mass.

Nominating Committee: Dr. E. B. Lane, Boston, Mass.; Dr. M. R. Donovan, Lynn, Mass.; Dr. W. H. Watters, Boston, Mass.; Dr. F. J. Hanley, Whitman, Mass.; Dr. H. J. Lee, Boston, Mass.

Finance Committee: Dr. F. J. Edgerly, Newtonville, Mass.; Dr. E. M. Murphy, Lowell, Mass.; Dr. A. K. Paine, Boston, Mass.; Dr. Arthur MacCabe, Gloucester, Mass.; Dr. C. B. Wormelle, Boston, Mass.

Membership Committee: Dr. F. E. Allard, Boston, Mass.; Dr. F. M. Briggs, Boston, Mass.; Dr. T. Leary, Boston, Mass.; Dr. Benj. Tenney, Boston, Mass.; Dr. J. L. Ames, Boston, Mass.

Committee on Resolutions: Dr. Francis D. Donoghue, Boston, Mass.; Dr. Frank E. Allard, Boston, Mass.; Dr. Chas. Theo. Cutting, Boston, Mass.

Committee on Ethics and Legislation: Dr. F. G. Wheatley, North Abington, Mass.; Dr. E. O. Otis, Boston, Mass.; Dr. F. C. Richardson, Boston, Mass.; Dr. N. R. Perkins, Dorchester, Mass.; Dr. T. J. Reardon, Boston, Mass.,

THE BOSTON

Medical and Surgical Journal.

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THE PROBLEM OF CANCER.

WE have frequently commented on the tendency everywhere observable in the medical sciences toward co-operative endeavor in the solution of the many problems of disease. It is, in fact, impossible in the present state of knowledge for any one man to compass the field in the attempt to reach conclusions regarding any great biological or pathological problem. In his address before the Section of Surgery of the American Medical Association held this week, Dr. George W. Crile, of Cleveland, devotes himself to a discussion of perhaps the most important medical problem before us for solution, namely, the cause and treatment of cancer. In spite of the fact that biologists, chemists, pathologists, clinicians and statisticians are enlisted in the work, the cause of cancer remains unknown. This, however, does not presuppose that much knowledge has not been gained in the exhaustive researches of the past few years. The phenomena of the disease have been most carefully studied, and the fact proved that it is unexpectedly widespread, not only among men, both savage and civilized, but also in many other forms of animal life, both high and low. It is not to be questioned, however discouraging the immediate outlook may be, that such investigation assiduously prosecuted in laboratories all over the world will ultimately result in the discovery of the cause of the disease, and, following this, of its prevention.

Dr. Crile draws a vivid and necessarily unpleasant picture of the destruction which the disease at present causes. As he puts it, "To die from an accident or an acute infection is a matter of days or weeks; to die from cancer is a matter of months or years, and this is a period not alone of suffering, but of suffering without hope — a horrible species of cellular cannibalism." The statistics quoted certainly do not add to the cheerfulness of the picture, but we confess that a certain skepticism, which no doubt Dr. Crile would share, must be entertained toward these depressing figures. It is, for example, stated that one woman in eight who reaches her thirty-fifth year dies of cancer; that cancer is found in one of twelve autopsies, and that there are possibly a million cases among the entire population of the world. The last statement would hardly seem to be consistent with those which precede it, but the death roll is sufficiently appalling whatever the actual figures may show. Dr. Crile discusses in a systematic and interesting fashion the various recent studies regarding transplantation of cancer and the immunity found in certain animals. In fact, we cordially recommend his address to those desirous of obtaining a complete modern account of the disease. We are not surprised to find that a part of the address is devoted to a vigorous appeal for early operation and for the increasing education of the people relative to its importance. A portion of the paper which will be read with interest is the experimental work relative to hemolysis and its significance in the cancer problem. Dr. Crile is of the opinion that although at present the hemolytic test for malignancy is not specific, it is already a diagnostic aid of value, and certainly offers a promising field for investigation. In general, he feels that the attainment of the limit of surgical possibilities is still far removed and that a study of immunity by experimental means is destined to throw still further light on treatment. The general conclusions to which all familiar with Dr. Crile's work, both as an experimenter and as a surgeon, will give much weight are as follows:

> "Cancer is widely distributed in nature; is slightly, if at all, communicable; is not yet proved to be increasing or hereditary, and is rarely transplantable. Its biologic characteristic is the power of endless division of its cells. The natural prognosis is death. Frequently there are well-defined predisposing causes and pre-cancer states. The pre-cancer stage is the preventable or curable stage. It is vastly better to prevent a cancer than to cure it. No specific therapeutic measure exists; the knife is still the most reliable means of treatment. In its beginning cancer is always local and is curable by complete excision. The chances of cure diminish in inverse geometric ratio to the lapse of time since its inception. There is evidence that a reliable blood test for cancer may be established; and there is a possibility of utilizing for cure the immunity principle through transfusion of blood.
>
> "If there is in many cases a recognizable and curable

pre-cancer stage, if the disease in its incipiency is local and curable by excision, if the magnitude of the necessary operation increases in a direct geometric ratio and the chance for cure diminishes in a reverse geometric ratio with the lapse of time since inception, what is the duty of the profession, especially in its organized function and in its altruistic aim, toward the hundreds of thousands of fellow-creatures who now, without suspicion of the dreadful truth, are in the pre-cancer or early curable stage of cancer? What is the duty of the profession towards hundreds of thousands who will be stricken next year and each year to follow? This duty is to undertake a campaign of cancer education. The public is entitled to receive from the profession all the enlightenment required for self-preservation. It may be difficult to persuade a man to change his political tenet or his religious creed. Sentiment here may bind him closely. There is no tie of sentiment between a man and his cancer. Enlightenment ought to be easy and effective.

"Finally, a careful consideration of the progress made in cancer research and in treatment should banish despair, give new hope, and urge all to put forth still greater endeavor to conquer in the end."

MEDICAL NOTES.

Officers of the American Gastro-Enterological Association. — At the Eleventh Annual Meeting of the American Gastro-Enterological Association, held at Chicago, Ill., June 1 and 2, 1908, the following officers were elected for the ensuing year: President, Julius Friedenwald, of Baltimore; First Vice-President, David L. Edsall, of Philadelphia; Second Vice-President, Dr. Wm. Gerry Morgan, of Washington, D. C. Councilor, John P. Sawyer, of Cleveland.

Officers of the American Neurological Association. — At the annual meeting of this association, which was held in Philadelphia on May 21, 22, and 23, the following officers were elected: President, Dr. S. Weir Mitchell, of Philadelphia; First Vice-President, Dr. Pearce Bailey, of New York; Second Vice-President, Dr. F. W. Langdon, of Cincinnati; Secretary and Treasurer, Dr. Graeme Hammond, of New York. Councilors, Dr. H. W. Thomas and Dr. Charles W. Burr, of Philadelphia.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 3, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 75, scarlatina 50, typhoid fever 30, measles 242, smallpox 0, tuberculosis 29.

The death-rate of the reported deaths for the week ending June 3, 1908, was 19.36.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, May 30, 1908, was 236 against 246 the corresponding week of last year, showing a decrease of 10 deaths and making the death-rate for the week 20.12. Of this number 116 were males and 120 were females; 229 were white and 7 colored; 156 were born in the United States, 73 in foreign countries and 7 unknown; 53 were of American parentage, 137 of foreign parentage and 46 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 60 cases and 3 deaths; scarlatina, 66 cases and 4 deaths; typhoid fever, 32 cases and 3 deaths; measles, 252 cases and 6 deaths; tuberculosis, 52 cases and 26 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 0, heart disease 31, bronchitis 2, and marasmus 13. There were 11 deaths from violent causes. The number of children who died under one year was 51; the number under five years 84. The number of persons who died over sixty years of age was 60. The deaths in public institutions were 87.

A Course in Psychotherapeutics at Tufts College Divinity School. — It is announced that Tufts College will next year provide a course in the Divinity School, designed to instruct in the art of healing through suggestion.

Tablet to Boston University Medical School. — A tablet of the founder of homeopathy in America has recently been presented by the president of the Massachusetts Homeopathic Society, Dr. N. R. Perkins, to the Medical School of Boston University. Dr. Perkins made the presentation speech.

Ingersoll Lecture. — The Ingersoll Lecture on "The Immortality of Man" was given by Dr. William Sturgis Bigelow, of Boston, on Thursday, May 28, in the New Lecture Hall, Cambridge. The special subject of the lecture was "Immortality as Conceived and Taught in Northern Buddhism." It proved to be one of the most interesting lectures yet given on this foundation, which is under the auspices of Harvard University.

NEW YORK.

Commencement at Columbia. — At the one hundred and fifty-fourth annual commencement of Columbia University, held on May 27, 1,140 degrees were conferred; 80 graduates were made doctors of medicine, 8 bachelors of science in chemistry, 3 doctors of pharmacy and 21 pharmaceutical chemists.

Free Dental Clinics. — Dr. John W. Brannan, president of the board of trustees of Bellevue and Allied Hospitals, has interested himself in a plan for the establishment of free dental clinics for indigent school children. With the aid of several others who have taken up the subject, he recently made an investigation in regard to the need for such clinics, and he reports that he was surprised to find that between 80% and 90% of the public school children have bad teeth.

Death from Atropine Poisoning. — At the inquest in the case of Eduardo Eraso, the Venezuelan coffee planter who died on May 19 of atropine poisoning at the Victoria Hotel, the coroner's jury rendered a verdict to the effect that the deceased came to his death by means of atropine poison, procured and administered in a manner unknown to the jury. The druggist, to whose mistake in filling a prescription it was alleged that the poisoning was due, and who had been held pending the result of the inquest, was discharged for lack of sufficient evidence, as no one saw Mr. Eraso take the poison, and there was no proof to show that he had taken it from the bottle procured at the drug store.

Registration of Tuberculosis Cases. — Among the bills passed by the legislature which Governor Hughes has signed are, one providing protection against infection from tuberculosis by a registration of all cases of the disease in New York State; a companion bill providing for the establishment of a fee of 25 cents for each case of tuberculosis reported by physicians, to be paid by the municipality or other district in which the case is reported, and the bill providing for the protection of the mineral springs of Saratoga. The Governor, unfortunately, has also signed the optometry bill which was passed by the legislature in spite of the protests of the State Medical Society, the New York County Medical Society and various other societies and of the profession at large. For some ten years the opticians have been endeavoring to secure this recognition. Last year their bill passed both houses of the legislature, but it was vetoed by Governor Hughes on the ground that the act, as then framed, did not give control of examinations to the Board of Regents of the State University.

City and Suburban Homes Company. — The twelfth annual meeting of the stockholders of the City and Suburban Homes Company was held on May 25. In the report submitted by the president, Dr. E. R. L. Gould called attention to the fact that the company had not only demonstrated its usefulness in providing model tenement accommodations in Manhattan for about 2,000 families, representing an investment of $4,314,450, and 236 houses at Homewood, the suburban estate in Brooklyn, representing an investment of $733,435, but that it had exercised a helpful influence in the community in fixing higher standards for the housing of the poor and in promoting improved tenement legislation. More than 4½%, the usual dividend, was earned upon the outstanding capital stock during the past year. In this connection it is interesting to note that under the direction of the Chamber of Commerce of the city of Rochester plans were recently invited for the construction of two thousand six-room model cottages for workingmen. It is stated that nearly a thousand architects in this country and Europe have submitted plans in the competition, and the building of the houses will be commenced as soon as the decision on these has been reached.

Additional Gift to Rockefeller Institute for Medical Research. — John D. Rockefeller has announced his intention of making an additional gift to the Rockefeller Institute for Medical Research, which will bring the aggregate of his donations to the institute up to $4,500,000. This was made known in a letter from his son addressed to Dr. Holt, secretary of the board of trustees, in which he says that, understanding that in the judgment of the board a hospital building is desirable, in order to facilitate the work of research for which the institute was founded, Mr. Rockefeller offers to provide for the purchase of land and the erection and equipment of a suitable building, at an expense of $500,000. His purpose is stated to be to enlarge the scope and practice of the institute, "in grateful recognition of the services of Dr. Simon Flexner, as director, rendered in those orderly and progressive scientific investigations which, sanctioned and inaugurated by the board and aided by his associates and assistants, led him at length to the discovery of a cure for cerebrospinal meningitis." The hospital will be situated a little south of the present building of the institute, and it is needless to say that its construction and equipment will include all the latest improvements available. Special attention will be given to the requirements of open-air treatment, and there will be departments for the most efficient hydro- and electro-therapy. While patients suffering from all classes of diseases, except contagious ones, will be received, it is especially desired that cases of the rarer forms of disease shall be sent to the hospital.

Obituary.

GASTAVUS HAY, M.D.

Gustavus Hay, A.M., B.S., M.D., M.M.S.S., died at Jamaica Plain, April 26, 1908, aet. 78.

He was the son of Mr. Joseph Hay, many years treasurer of the Sandwich Glass Company. He entered the Boston Public Latin School in 1840, graduated in 1845 and entered Harvard College, when, after completing his four years' course, he applied for permission to stay another year and so graduated with the Class of 1850. He often spoke of how delighted he was when informed by the Faculty that he could continue another year. Such action must have been very unusual, but seems a sensible one under certain conditions. On graduation he joined the Lawrence Scientific School and graduated with honors in 1853. He apparently had even then no leaning to medicine, and took position under Benjamin A. Gould, in the United States Coast Survey, for a year, serving in the South. In 1854 he decided for medicine and entered the Harvard Medical School, graduating in 1857.

He was for some time visiting physician of the Boston Dispensary. He was soon asked to assist in the Massachusetts Charitable Eye and Ear Infirmary, where he became especially interested in ophthalmology, which led him to go to Vienna to follow it up, together with other subjects. There he worked hard under Arlt and Jaeger, but not exclusively. He met his fellow medical townsmen, who had preceeded and followed him, and with them enjoyed the fellowship of some of the best of the medical students, by whom and his teachers he was always greatly respected. He brought home Jæger's ophthalmoscope and introduced its use in Boston.

For some seven or eight years with one of his Vienna co-workers, he followed up the study of Donders and the other ophthalmologists. They met nearly every afternoon during the year for one to three hours' work. He never tired of this, and his mathematical knowledge and experience served a most important part.

Dr. Hay had been through life devoted to mathematics, spending all his spare time and even encroaching on other work in the pursuit of the higher mathematics. He stood well with the mathematicians of this country, but was always far too modest to assert himself. His loss was felt by them and his fellow members of the Mathematical Society.

In ophthalmic surgery he felt the need of operative technic, and leaving his practice, went to Paris to follow up the operation courses. This became of great advantage to him in his hospital and private work. He was very skilful in the operations about the eye, as well as on the globe itself.

In 1861 he was appointed surgeon to the Infirmary and served through 1873. Then he was placed on the Consulting Ophthalmic Board and served through 1900.

Ill health from physical disability requiring operative interference broke him down during the last year of his life, but he retained his interest in the science of ophthalmology and the discussion of it with his friends, whilst not neglecting his favorite mathematics.

Dr. Hay was always very fond of music, his Vienna life giving him opportunity to indulge this taste. In mutual professional study with one of his friends he used to confess that he should not have followed medicine. Mathematics most attracted and absorbed his interest. He was better fitted to have been professor in this department at our Institute of Technology, but the Institute was not ready for him when he was ready for it. He was most attractive when standing at a blackboard and with his genial and interested manner explaining mathematically any problem that interested his listeners. He would have been a very valuable teacher in his favorite department of study.

Dr. Hay was a most pleasant, social companion during his forty years' membership in the well-known Vienna Club, and the first of its six to be removed by death.

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Current Literature.

Medical Record.

April 18, 1908.

1. Polk, W. M. *Constructive Surgery after Extensive Gunshot Wound of Abdomen.*
2. Thompson, W. G. *A Phenomenal Aortic Aneurism.*
3. Peabody, G. L. *A Case of Recurrent Jaundice; Death in Third Attack from Carcinoma of the Pancreas.*
4. Lerch, O. *Bright's Disease and its Treatment.*
5. Snow, W. B. *Electro-mechanical and Thermic Removal of Local Stasis.*
6. Gordon, A. *Integrity of Stereognostic Function and of All Forms of Sensation in a Case with a Lesion of the Left Parietal Lobe.*
7. Peckham, F. E. *Fractures of the Tip of the Olecranon Process.*

The Journal of the American Medical Association.

May 2, 1908.

1. Folin, O. *Chemical Problems in Hospital Practice.*
2. Senn, N. *The Scientific and Practical Value of Hospital Interneship.*
3. Ringer, P. H. *Tuberculin in Pulmonary Tuberculosis.*
4. Ludlum, S. D. *Relationship between the Spinal Cord, the Sympathetic System and Therapeutic Measures.*
5. Crossen, H. S. *The Treatment of Placenta Previa.*
6. Schalek, A. *Practical Value of Modern Conceptions of Syphilis.*
7. Moran, J. F. *Treatment of Eclampsia.*
8. Fry, F. R. *Some of the Motor Phenomena of Chorea Clinically Considered.*
9. Tyson, H. H., and Clark, L. P. *Eye Syndrome of Dementia Præcox.*

May 9, 1908.

1. *Smithies, F. *Paravertebral Triangle of Dulness (Grocco's Sign) in a Case of Abdominal Multilocular Cystadenoma.*
2. Rivas, D. *Differentiation of Bacillus Coli Communis from Allied Species in Water.*
3. Hinkle, B. M. *Psychotherapy with Some of Its Results.*

4. *Landis, J. H. *Typhoid Fever.*
5. Ingals, E. F. *Intranasal Drainage of the Frontal Sinus.*
6. Lewis, B. *Practical Cystoscopy; Its Scope and Limitations, with a Review of the Prominent Cystoscopes of the Present Day.*
7. Ferguson, A. H. *Harelip and Cleft Palate.*

1. Smithies reports a case of paravertebral dulness on the left due to the presence of a large cystic abdominal neoplasm. This dulness promptly disappeared after the extirpation of the tumor. This adds still another subphrenic condition in which the paravertebral triangle of dulness has been found to be present without a pleural effusion on the opposite side.

4. Landis has given a definite routine treatment to 303 cases of typhoid fever with a mortality of 2.3%. Milk is practically the only food used, and it is given in half pint meals only four times a day. It is of interest to note that he used cold sponging only at rare intervals, and in no cases was a patient placed in a cold bath. The routine treatment for the reduction of fever when it was over 103° was the administration of acetanilid in 2 gr. doses repeated often enough to bring the temperature below that point. He considers alcohol contra-indicated at all stages of the disease. He was favorably impressed with the value of the hypodermic injections of ergot in a number of cases of severe headache. [R. I. L.]

The Archives of Internal Medicine.

Vol. I, No. 3. April, 1908.

1. Calvert, W. J. *The Rôle of Venous Congestion in Compensation of Tricuspid Insufficiency.*
2. *Claytor, T. A., and Wilkinson, W. W. *Tuberculous Ulcer of the Stomach, with Report of a Case.*
3. *Chase, W. S., and Hunt, M. L. *Serotherapy of Epidemic Cerebro-Spinal Meningitis.*
4. *Wollstein, M., and Lamar, R. V. *The Presence of Antagonistic Substances in the Blood Serum in Early and Late Syphilis and in Poretics and Tabetics.*
5. *Halperin, G. *Clinical Manifestations of Hemorrhagic Renal Infarct. Review of Literature.*
6. *Brooks, H., and Kaplan, D. M. *Effects of Prolonged Adrenalin Medication on the Human Circulatory Organs, with Case Report.*
7. *Carter, H. S. *Metabolism Experiments in Artificial Nutrition, with Special Reference to the Hypodermic Method.*

2. Claytor and Wilkinson report a case of tuberculous ulcer of the stomach in a girl of eighteen, No lesions of the lungs could be demonstrated at autopsy, macroscopically or microscopically.

3. The authors report the results of the use of Flexner's serum in the epidemic of cerebrospinal meningitis which occurred in Akron, Ohio, in April, 1907. There were 22 cases in all. Of the 12 cases treated with the serum, 3 died and 9 recovered; of the 10 cases untreated 9 died.

4. Wollstein and Lamar have tried to confirm the work which has been done on the presence of antagonistic substances in the blood of early and late syphilitics, and in tabetics and paretics. A definite reaction has been claimed to appear when the blood of a patient with early syphilis was added to that of a tabetic or paretic, the reaction appearing as a delicate ring at the zone of contact. As the reaction was supposed to be a precipitin reaction between the precipitinogens of the early syphilitic blood with the precipitins of the tabetic, it may be presumed that binding of the complement would take place if added to these sera. The authors used this test of complement binding as a more delicate test for the presence of precipitins than the presence of a visible precipitate, but in every case the result was negative. In using the precipitin reaction their results were so uncertain that the authors believe that the presence of such antagonistic substances cannot be proved by either of these methods.

5. Halperin reports a case of hemorrhagic renal infarct. He gives a careful description of the clinical manifestations of the condition, and discusses its causes and the differential diagnosis. He includes a summary of the ten other cases reported.

6. Brooks and Kaplan report a case where adrenal solution was used in bronchial asthma for over three years, the drug being given daily, intramuscularly, in amounts varying from ten to one hundred and twenty minims a dose. At no time during treatment was the blood pressure affected to any marked extent by the enormous doses, and the patient showed clinically no effect of the drug on the heart or blood vessels. At autopsy the arteries showed moderate arteriosclerosis of the ordinary type, and also considerable focal necrosis, especially involving the media, similar in every way to the necrosis produced experimentally in animals by the use of adrenalin.

The authors argue from this case and from the summary of the literature, which they present, that the use of adrenalin, when necessary, should not be prohibited on account of its effect on the arteries, for even where such enormous doses were used, the changes were comparatively slight.

7. Carter has made a number of experiments to determine the results of artificial feeding by rectum and by subcutaneous injection. From three cases of rectal feeding where he determined the nitrogenous balance the patients being on nutrient enemata of peptonized milk and eggs, he concludes that it is practically impossible to nourish patients properly or to maintain nitrogenous equilibrium by nutrient enemata. From a number of experiments on dogs with subcutaneous injection, he concludes that the hypodermic use of meat peptones and alkali albuminates is not feasible for artificial nutrition on account of their great toxicity and tendency to cause local necrosis. He found that skimmed milk, peptonized one and one half to three hours, may prove fatal if given hypodermically, and that though it was possible in one case to furnish a dog with full nitrogenous requirements in the form of skimmed milk if it was injected in gradually increasing doses, for ordinary use milk peptone must be considered dangerous, and until some method of avoiding the natural toxicity of the product can be found, should not be used subcutaneously for nutritive purposes in man.

The Lancet.

April 11, 1908.

1. Lister. *Remarks on the Treatment of Fractures of the Patella of Long Standing.*
2. Shrubsall, F. C. *Hunterion Lectures on the Pygmy and Negro Races of Africa.*
3. *Walker, J. W. T. *Clinical Lecture on the Diagnosis and Treatment of Malignant Disease of the Prostate.*
4. *McGavin, L. H. *Report on Fifty Cases of Analgesia by the Intraspinal Injection of Stovaine.*
5. *MacNab, J. T. *Renal Hemorrhage in Chronic Interstitial Nephritis.*
6. Snowman, J. *The Treatment of Disease and Deformity Due to Scar Tissue.*
7. Cope, V. Z. *Labor in a Case of Triple Pregnancy, with Observations Thereon.*
8. Elder, E. A., and Postlethwaite. *Note on an Abnormality of the Liver Simulating a Thoracic Tumor.*
9. Bayly, H. W. *The Cell as a Factor in Phagocytosis.*
10. Whitling, H. T. M. *"Cures" for Asthma; Fatal Case from an Overdose of Oil of Sage.*
11. Hirsch, C. T. W. *Motoring Notes.*
12. Clayton, C. E. A. *Peter of Abano.*

3. Walker presents a study of 40 cases of malignant disease of the prostate, collected from the records of 6,732 cases of cancer in the Middlesex Hospital. He first takes up the symptomatology. Age is not of value in making a diagnosis. Difficult micturition, retention, is the cardinal symptom. Frequent micturition is the next most striking feature. Pain was present in 72% of the cases, and was the initial symptom in 10 cases. Strangely enough hematuria is not a common condition, nor is emaciation at all marked. He takes up the steps in the examination of the patient for this condition. In treatment he considers the various operations, suprapubic enucleation, perineal prostatectomy, and Young's operation, consisting in total extirpation of the prostate, prostatic urethra, seminal vesicles and base of bladder,

describing in detail a case in which he used this method. This operation is only for cases where the malignant disease has not spread beyond the limits of the prostate, and is the only one which holds out a strong probability of success. It depends upon early and accurate diagnosis, and it rests with those who are in charge at the first onset of symptoms to see that a diagnosis is made.

4. McGavin presents a paper on 50 cases of analgesia by the intraspinal injection of stovaine. He is convinced that this is a method of very great value; that in careful hands it is a perfectly safe procedure; that the opinion of patients as to this method is universally favorable, and that the analgesia provided is of the most perfect order. He gives the technic of the injection of this drug into the spinal canal.

5. MacNab speaks of the literature on the subject of renal hemorrhage in chronic interstitial nephritis and reports 2 cases in detail. In regard to the frequency of this condition, he believes that it is often not recognized, his cases showing it to occur once in seventy-two times which is probably far too low. He does not believe that this condition occurs late in granular kidney as was formerly thought to be the case, nor is it necessary for there to be extensive arteriosclerosis; it is commoner in men. As regards differential diagnosis, it is often mistaken for a subacute nephritis, as it may be weeks or months before the hemorrhage ceases. When it does cease the urine, of low specific gravity, with casts and a small trace of albumin, will show the real character of the condition. Renal tuberculosis, renal colic and malignant disease of the kidney must be ruled out. He believes that it is due to local infiltration set up by some toxin rather than to purely mechanical causes such as high arterial tension and deterioration of the vessel walls. Bleeding is rarely a cause of death. Rest in bed, purgatives, a milk, egg and bread diet, will as a rule be sufficient to stop the bleeding. Calcium lactate or calcium chloride are rarely necessary. Surgical treatment may be necessary in rare cases of severe hematuria occurring early in the disease.

[J. B. H.]

British Medical Journal.

March 21, 1908.

1. *Galloway, J. *Address on Visible Signs of Visceral Disease.*
2. *Bramwell, B. *An Analysis of Two Hundred Sixty-Three Cases of Tabes.*
3. Lane, J. E. *Remarks on the Treatment of Syphilis by Intramuscular Injections.*
4. Sutherland, H. G. *A Case of Syphilis, Phthisis and Locomotor Ataxia.*
5. Bayon, H. *On Extragenital Syphilitic Infection.*

1. Galloway in an interesting though somewhat diffuse article describes some visible signs of visceral disease. Among these he mentions certain cutaneous eruptions due to disorders of the alimentary tract, such as erythema exudativum occurring in diseases of the liver with portal obstruction and other similar conditions. He mentions the dilatation of superficial blood vessels as an indication of liver diseases, as well as dilatation along the course of the superficial lymphatic vessels, which go to show evidence of some internal disease. Certain forms of xanthoma are significant of malignant disease of the liver, and other anomalies of pigmentation he cites as external evidence of internal disorder.

2. Bramwell gives an analysis of 263 cases of tabes. In 73% the age of onset was between thirty and fifty years; 60% of the patients were married; 61% gave a definite syphilitic history; in 55% of these cases the first signs of tabes came on more than ten years after the original infection. He goes over, carefully, the other etiological factors, such as alcoholic excess, lead poisoning, etc. In 51% lightning pains were the initial symptom. He then proceeds to analyze the individual symptoms. Among these he mentions lightning pains, pains in the back, girdle sensation, paresthesiæ of various kinds, anesthesia, ataxia and the absence of the Achilles jerk. The knee jerks were absent in 87.8% and the Achilles jerks in 87.5% of the cases. He goes over in detail the other deep reflexes, the condition of the pupils and other ocular symptoms, describes the various forms of crises, the trophic lesions, mental symptoms and the impairment of the special senses. The immediate cause of death in the 70 cases which have proved fatal he shows in a table. Fifteen died from general paralysis of the insane. The average duration of the 70 fatal cases was 8.2 years; the shortest under one year, the longest twenty-two to twenty-three years. [J. B. H.]

March 28, 1908.

1. *Lucas-Championniere. *New Idea on Fractures, of the Utmost Importance to the Medical Profession and to the Lay Public in Connection with their Responsibilities and Possible Legal Liabilities.*
2. *Jones, R. *Address on Arthrodesis and Tendon Transplantation.*
3. *Smith, G. E. *The Most Ancient Splints.*
4. Jones, M. W. *Post-Mortem Staining of Bone Produced by the Ante-Mortem Shedding of Blood.*
5. *Jones, F. W. *Examination of the Bodies of One Hundred Men Executed in Nubia in Roman Times.*
6. *Rowlands, E. P. *Remarks upon Excision of the Body of the Scapula. With an Illustrative Case.*
7. Burrows, H. *Punch Fractures.*

1. The writer believes that the tendency of modern times to instruct the public in medical matters by public lectures, exhibitions, etc., in the case of fractures, at least, has a somewhat unfortunate tendency to give the laity to believe that they are in a position to judge in regard to this common cause of lawsuit as well as the medical profession itself. To obviate this he believes that the public must be made to understand the difficulties involved in the study of fractures. They should know that radiographs have to be interpreted by an expert in order to be rightly understood; that the reduction of fractures is not an absolute rule and is often not indispensable; that absolute rest is not the necessary test of every sound treatment for fractures; that the fracture is not a simple lesion but that it includes complications owing to displacement and rupture of tendons and muscles, and last, that there is no mathematical solution for the repair of fractures. He cites several interesting law cases decided against physicians, which, had the public been rightly instructed in these matters, could only have been decided in their favor.

2. Jones presents a careful article on arthrodesis and tendon transplantation. Arthrodesis should not be performed on children under eight years; it should not be performed until the surgeon is satisfied that the muscles are paralyzed beyond hope. All deformity should be corrected by the preliminary preparation of the foot, in operating on the ankle joint, by wrench and tenotome. The operation should be so planned that at its completion the bones are in an over-corrected position. The surgeon should know that paralysis is complete, and that it depends on the destruction and not on the temporary disorganization of the motor cells; that at least two years has elapsed in the case of muscles suspected to be completely paralyzed; that muscles apparently paralyzed but really merely over-stretched should have first undergone proper treatment. He presents the details of this operation. In regard to tendon transplantation he believes that this should be done for the following purposes: to fortify a weakened group of muscles; to supplant a completely paralyzed muscle or group of muscles; to obstruct an over-acting spastic group; to deviate tendon action when this is perverted, and as a help in partial arthrodesis. In tendon transplantation one must insist on the over-correction of deformity as a preliminary act; the removal of skin flaps to secure the uninterrupted continuity of the over-correction; the direct and not angular deflection of the tendon; the free tunnelling in one plane through the soft tissues; the firm suturing into periosteum or bony groove, the maintenance of the hypercorrected position until voluntary power is assured to the tendon.

3. Smith describes some ancient splints which he has found among bodies of Egyptians at an approximate date of about five thousand years ago.

5. Jones has examined the bodies of 100 men executed in Nubia in Roman times. There is a series of most excellent and interesting plates, and to any one interested in the kinds of wounds inflicted in ancient times, and the methods used in treating them, this article will be of great interest.

6. Rowlands describes his operation of excision of the scapula, and concludes that for suitable cases excision of the body of the scapula, with preservation of the processes and glenoid socket, is a much better operation than excision of the whole bone, because it leaves a limb far more perfect from the functional and artistic points of view. This operation is especially suitable for innocent growths, and it may be adopted in preference to complete excision of the scapula for some small and slow growing malignant growths without increasing the immediate risk of death from recurrence. The success of the operation largely depends upon careful asepsis, the sewing of some of the divided muscles together, and the early adoption of systematic active and passive movements of the shoulder. [J. B. H.]

THE PRACTITIONER.

APRIL, 1908.

1. *WEST, S. *The Treatment of Acute Pneumonia.*
2. *WEBER, F. P. *Polycythemia in Diseases of the Heart and Lungs and during Residence in High Altitudes.*
3. DREW, D. *Injuries to the Head in Young Children.*
4. FAGGE, C. H. *The Importance of Accurate Diagnosis and the Treatment of Fractures in the Vicinity of Joints.*
5. *BRUCE, W. I. *The Relation between Sciatica and Disease of the Hip-Joint.*
6. BURNET, J. *Some Important Points in Connection with Infant Feeding.*
7. *MUMMERY, P. L. *Chronic Colitis and its Surgical Treatment.*
8. BUCHANAN, G. B. *The Ambulatory Treatment of Fractures as Applied to Osteotomy.*
9. *POYNTON, F. J. *Some Recent Literature upon Arthritis; a Review and Commentary.*
10. LAKE, R. *A Review of Otology.*

1. West gives a clinical talk on the treatment of acute pneumonia. His paper, which presents nothing new, is discussed by various other well-known physicians.

2. Weber considers the entire subject of polycythemia in a careful and thorough article. He excludes relative polycythemia due to concentration of the blood which is caused by choleraic diarrhea, etc. Cases of absolute polycythemia may be divided into three classes: (1) Those due to imperfect oxygenation of the blood owing to circulatory disturbance in chronic cardiac and pulmonary diseases, which also include those cases following poisoning with certain gases. (2) Those cases connected with living at high altitudes and diminished oxygen-tension in the inspired air. (3) Those classed under the heading of "Splenomegalic polycythemia" or, as he has termed them, "myelopathic polycythemia." In all of these cases there is a remarkable increase in the number of reds. Even in cases of congenital heart disease, in which the count is the lowest, there may be a red count of 8,000,000 or 9,000,000. The carbon monoxide method of estimating the total volume of the blood, which was perfected by Lorrain Smith, has shown that there is not only an increase in the red cells, but a relative increase in proportion to the blood plasma, and a total increase in the amount of blood. This is true in all three classes of polycythemia. The cause of this condition, whatever it may be, lack of oxygen in the air, or a lack of power in the heart, lungs or circulatory apparatus, stimulates the red bone marrow to an increased formation of red cells. Practically every case of absolute polycythemia is associated with a condition of true plethora. The blood viscosity is always raised in these conditions. This condition of polycythemia is perfectly normal in all people who live in high altitudes, or who are healthy except for some pulmonary or cardiac affection, which mechanically hinders normal oxygenation of the blood and tissues.

5. Bruce gives an article on the relation between sciatica and disease of the hip-joint, which is illustrated with numerous excellent x-ray plates, and concludes that if systematic examination of the hip-joint by x-rays, in intractable cases of sciatica, were carried out, it would be found in many of the cases that the sciatica was present only as a symptom of disease of the hip-joint.

7. Mummery believes that mucous colitis is not a separate and distinct condition, but merely a symptom of some underlying cause, such as constipation or perhaps a pure neurosis. Medical treatment should be given a fair trial, but if unsuccessful, or if an obvious lesion which can only be cured by operation is found, surgical treatment should be resorted to. In many cases there is chronic involvement of the mucous membrane, but no removable lesion. The operation which seems to be most successful consists in bringing the end of the appendix out of the abdomen through a small incision in the abdominal wall and stitching it to the skin. Two days later, the end of the appendix which protrudes from the abdominal wound is cut off. A catheter is then passed into the cecum through the stump of the appendix and through this the whole of the large bowel can easily be washed out as often as is considered necessary. Patients can very soon learn to do the operation of washing out their colons themselves, without inconvenience. The treatment of chronic ulcerative colitis consists of rest in bed and local irrigation of the colon, at first with weak solutions of peroxide of hydrogen and then with olive oil. This must be in addition to constitutional building up. If this does not prove beneficial surgical measures should be advised without delay.

9. Poynton has collected the recent literature upon arthritis in orderly fashion, with résumés of various papers on this subject. The paper will prove of great value to those interested in this subject. [J. B. H.]

THE EDINBURGH MEDICAL JOURNAL.

APRIL, 1908.

1. *RITCHIE, L. C. P. *Observations on the Use of Inoculations of Bacterial Suspensions.*
2. *THOMSON, A. *Diverticula of the Alimentary Tract, with Particular Reference to those met with in the Ileum, Resulting from an Accessory Pancreas and from Tuberculosis.*
3. TURNER, D. *Electrolysis in Medicine and Surgery.*
4. WEBER, F. P. *A Case of Angina Pectoris with Aortitis.*
5. WALKER, A. *The Provision of Sanatoria for the Curative Treatment of Phthisis among the Poorer Classes.*
6. HARRIS, D. F. *The Chemical Aspect of the Absorption of Nitrogen.*
7. *DIGHTON, C. A. A. *Progressive Ossifying Myositis in a Boy of Eleven.*
8. STEWART, A. F. *Health Rhymes of the Seventeenth Century.*

1. Ritchie, in a general clinical article, gives some observations on the use of inoculations of bacterial suspensions in tuberculosis in its various forms, and in other infections. He believes that the prophylactic value of this treatment is very great. In certain septic operations in accidental wounds he injects mixed suspensions of the staphylococcus aureus and streptococcus pyogenes and bacterium coli, and has had very excellent results in warding off suppuration by this procedure.

2. Thomson contributes a paper on diverticula of the alimentary tract, going over the entire literature of diverticula of the pharynx and esophagus, of the stomach, duodenum and the small and large intestines. He quotes two cases in detail, one a case of acquired diverticulum of the lower ileum due to a localized tuberculosis of the wall of the bowel; another a case of acquired diverticulum of the lower ileum with accessory pancreas, causing symptoms mistaken for those of acute appendicitis. There was an accessory pancreas, consisting of two portions, the smaller included within the longitudinal muscular coat of the bowel, and retaining for the most part the characters of the normal pancreas, the other, much the larger, imbedded in subperitoneal fat, presenting changes of a complicated character.

7. Dighton describes a case of progressive ossifying myositis in a boy of eleven. In this case, the formation of

bone was found in practically all of the larger muscles of the body. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 13.

March 26, 1908.

1. *Kümmell, H. *Stone Formation in the Kidneys and Ureters.*
2. Schultze, E. *Hysterical Hemiplegia.*
3. *Port, F. *Mixed Infections in Typhoid.*
4. *Hunaeus, G. *Spontaneous Fractures in Children.*
5. Pick. *Canthoplasty.*
6. Levy-Dorn, M. *Instantaneous Roentgen Pictures.*

1. Kümmel remarks that there is no affection of the kidneys in which modern diagnostic methods have given greater aid than in the case of renal or ureteral stones. He also remarks that the results of early operative treatment are more brilliant than in almost any other field of surgery. In what he terms primarily aseptic stones of the kidney, without much disturbance or hemorrhage, he has frequently found a course of mineral waters successful, but in all except these very mild cases he strongly advises operation.

3. Port has examined the blood of 33 typhoid patients during life. In 2 the staphylococcus pyogenes aureus was found, in another the pneumococcus, and in a fourth the colon bacillus; all these being found in addition to the typhoid bacilli. Study of these 4 cases and 38 others of mixed infection collected from the literature shows, he thinks, that secondary infection in typhoid is more frequent than is generally recognized, and that it is responsible for part of the clinical picture in the worst cases. Severe brain symptoms, extremely high temperatures, jaundice, hemorrhages, chills, high leucocyte counts and endocarditis should suggest secondary infection. He does not think that this secondary infection occurs as a rule by way of the intestinal ulcerations. Patients with an old endocarditis or similar process are liable to have it flare up in the course of a typhoid infection and thus cause a mixed infection. In his 4 cases there was great incongruity between the severity of the clinical picture and the slight extent of the ulcerations in the intestines. In making bacteriological examinations of the blood in such cases one must recognize that the bile technic destroys germs other than typhoid, and consequently agar blood plates (Schottmüller) or the Castellani method is to be preferred. It is noteworthy that all his cases and all the reported cases of mixed infection in the literature have terminated fatally.

4. Hunaeus reports a case of spontaneous fractures in a child two and a half years old. An original compound fracture of the elbow became infected with staphylococci, with development of metastatic foci in the long bones. Even slight movements of the child were then able to induce spontaneous fractures at these points. Such fractures occurred in the left ulna, in both legs and in the metacarpal bones. All healed in the course of three months. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 11.

March 17, 1908.

1. Schirmer, O. *The Fluid Content of Healthy and Diseased Tissues.*
2. Bürker, K. *Blood Plate Destruction and Coagulation of Blood and Muscle.*
3. Bock, H. *A New Stethoscope for Measuring the Intensity of the Heart Sounds.*
4. Osterloh. *The Treatment of Eclampsio.*
5. Heinemann. *A Comparative Research with the Conjunctival and Percutaneous Tuberculin Reactions.*
6. Berker, G. *Chiroscter as a Disinfectant.*
7. Adam, C. *Treatment of Gonorrhea with Bleno-Lenecit Salve.*
8. Hahn, M. *Relation between Infant Mortality, Infant Feeding and Fitness for Military Service.*
9. Durlacher. *The Mortality of Infants with Large Umbilical Herniæ.*
10. Groedel, F. M., and Horn, C. *Instantaneous X-Ray Pictures.*
11. Harnack, E. *The Problem of Skin Electricity. (Treatment with High Frequency Currents.)*
12. Weisner, B. *Keating Hart's "Fulguration."*
13. Ahlfeld, F. *Lysol and Kresol Soap.*
14. Gebele. *Annual Report of the Surgical Out-Patient Department in Munich.*

Berliner Klinische Wochenschrift. No. 11.

March 16, 1908.

1. Kuttner, A. *The Indications for Operation in Inflammation of the Accessory Sinuses of the Nose.*
2. Brewitt, F. *The Operation for Acute Pancreatic Hemorrhage.*
3. Platnew, D. *The "A" Wave of the Phlebogram.*
4. Dessauer, F., and Krüger, M. *The After-Treatment of Operated Cancer by Homogeneous Rays.*
5. *Hirschfeld. *The Infectious Origin of Chronic Pancreatitis and Diabetes.*
6. Rosenstein, J. *The Pepsin Secretion in Normal and Diseased Infants.*
7. Wildbolz, H. *The Cutaneous and Conjunctival Tuberculin Reactions in Dogs.*
8. Biary, R. *The Value of the Cutaneous and Conjunctival Reactions in Childhood.*
9. Nagelschmidt, F. *The Therapeutic Value of Radium Rays.*

5. Hirschfeld has seen glycosuria develop in several cases after infectious diseases, particularly in persons with an hereditary predisposition to diabetes, with signs of a subacute pancreatic disease, usually accompanied by enlargement of the liver. In very many cases of cirrhosis of the liver, the pancreas is more or less affected, usually without glycosuria. The author believes that many cases of chronic pancreatitis, with or without glycosuria, are of infectious or, at least, of toxic origin. [R. D.]

Archiv für Klinische Chirurgie.

Band 83. Heft 4.

1. *Martina, A. *A Study of the Necrosis of Cartilage.*
2. *Sprengel. *Retroperitoneal Abscess in Connection with Diseases of the Bile Passages.*
3. Gaugele, K. *Bone Cysts and the Ostitis Fibrosa of Von Recklinghausen.*
4. *Kotzenberg. *Experiences in the Filling of Bone Cavities with Iodoform Plugs.*
5. Herhold. *Gunshot Injuries of Bones at Short Range.*
6. Manasse, P. *The Arterial Blood Supply of the Sigmoid Flexure.*
7. *Coenen, H. *The Plastic Treatment of False Joints of the Leg.*
8. König, F. *The Open Method of Treatment of Subcutaneous Fractures of the Thigh.*
9. Bircher, E. *A Modification of the Usual Operation of External Urethrotomy.*
10. *Haasler, F. *On Cholecystectomy.*
11. *Heineke, H. *Meteorism Following Abdominal Contusions.*
12. Ehrhardt, O. *The Pathological Anatomy and Clinical Picture of Gallstone Disease.*

1. Since until the third decade the cartilage of the ribs is without blood vessels, Martina points out that it can only become necrotic before this age through the extension of some process from the surrounding tissues. In the third decade there is some slight vascularization, while in the fourth and fifth there is a definite medullary and vascular system. In the necrosis of cartilage due to the typhoid bacillus, this organism may not always be found, it having been overgrown by secondary organisms. There are three degrees of necrosis of the costal cartilages following typhoid. In the first there is formed a hard thickening, painful on pressure, which disappears without leaving a trace. In the second, the swelling of the cartilage becomes soft, but is again absorbed; while in the third stage an abscess is formed which slowly breaks through to the surface, and forms a fistula. The healing process is wholly dependent on the amount of change in the cartilage, but this cannot be estimated with any degree of accuracy by inspection. Complete extirpation of the cartilage, together with its perichondrium and the chondrophytes which are always formed, is the only procedure which offers a speedy and definite cure. Occasionally a suspicious looking neighboring cartilage should also be removed, especially if it shows small areas of loss of substance filled with granulation tissue. Any treatment more conservative than the above is very unsure, and may be followed by a fistula lasting many months or even a year.

2. Sprengel reports the case of a woman forty-two years of age who had suffered for twelve or fifteen years from "stomach aches." The present attack began two weeks before admission, and consisted of severe, colicky pain in the upper abdomen, radiating to the back. Fever was present, jaundice absent. The urine was negative. On the right side of the abdomen was a dull resistant area, painful on pressure, which was not connected with the abdominal wall, and could not be differentiated from the liver dulness above. At operation, the gall bladder was found filled with stones, free at its fundus, but becoming lost at the neck in a mass of adhesions which also involved the pylorus and duodenum. Just below the entrance of the cystic duct into the common duct there was a perforation which led to a large abscess behind the parietal peritoneum. This was filled with bile stained detritus. The cause of the perforation is not clear. It might have been caused by the erosion of a stone at the junction of the cystic and common ducts, but in this case the stone must have passed the papilla, for the common duct was found free.

4. Kotzenberg reports success in the treatment of bone cavities with the iodoform mass of Mosettig-Moorhof. The results are dependent on the most painstaking asepsis and antisepsis.

7. Coenen reports two cases of false joint of the leg cured by the method advocated by Reichel. The operation consists in making a flap on the well leg, in thickness including skin, periosteum and a thin layer of bone, with its pedicle above. This flap is then adjusted to the exposed and refreshed false joint, and the legs held together by a plaster of Paris dressing. The pedicle is gradually severed during the next few days. In each instance prompt callus formation took place. A third case was cured by such a flap without the use of a pedicle. This was implanted directly into the defect, its ends being held in place by slots previously made in the ends of the bones. Four months later union was nearly complete.

10. Haasler discusses the indications for the three types of cholecystectomy. They are as follows: Simple cholecystectomy; cholecystectomy with resection of a portion of liver; and subserous cholecystectomy with hepatopexy, using the outer wall of the gall bladder to form a new suspensory ligament.

11. Heineke points out that following an abdominal contusion there frequently occurs a considerable distention in the first few hours. This primary meteorism is seen most often after trauma to the upper portion of the abdomen, and is apparently attributable to involvement of the retroperitoneal plexus of nerves. In cases of rupture of stomach or of intestines, or in those of internal hemorrhage, such primary meteorism practically never occurs. This is due to the fact that in such latter injuries spasm of the abdominal walls prevents accumulation of gas.

[W. C. Q.]

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Miscellany.

AMERICAN CLIMATOLOGICAL ASSOCIATION.

The twenty-ninth annual meeting of the American Climatological Association will be held at the Harvard Medical School in Boston on Tuesday and Wednesday, June 9 and 10. The medical sessions will last from 10 A.M. to 12.30 P.M., at which hour there will be a business meeting on each day. Luncheon will be served at one o'clock at the Harvard Medical School on Tuesday, with the Boston members of the association as hosts, and at the same hour at the House of the Good Samaritan, on Wednesday, with the managers of that hospital as hosts. The afternoon medical sessions will be held from 2.30 P.M. to 5 P.M. Tuesday evening there will be a reception to the members of the association by Dr. and Mrs. Harold Williams, and Wednesday evening the annual dinner will take place at 7 o'clock at Hotel Somerset. Arrangements have been made for trips on Thursday, June 11, to Rutland, the site of the Massachusetts State Sanatorium for Tuberculosis, and to Sharon, the site of the Sharon Sanatorium. It will not be possible for the same person to visit both institutions on the same day. The headquarters of the association will be at the Hotel Somerset. Dr. Frederick I. Knight, 195 Beacon Street, Boston, is the chairman of the Committee of Arrangements.

The president's address will be delivered by Dr. Thomas D. Coleman, of Augusta, Ga. A most interesting program, to which members from all over the country contribute, has been arranged. Among other articles will be a symposium on Tuesday afternoon, to which Dr. Thomas Darlington, of New York, contributes a paper on "Causes of the Mortality from Heart Disease in the United States"; Dr. J. N. Hall, of Denver, an article on "Cardiac Dangers in High Altitudes," and Dr. Beverley Robinson, of New York, "Some Observations on the Heart during the Early Periods of Convalescence from Acute Infectious Disease."

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FIFTH PAN-AMERICAN MEDICAL CONGRESS.

The fifth Pan-American Medical Congress will take place in Guatemala, Central America, this year from the 5th to the 10th of August, inclusive. The trip can be made from New York, New Orleans or San Francisco by steamer directly to Guatemala, returning by Mexico and Cuba to the Eastern States; Mexico and New Orleans to the Eastern States and Middle West; Mexico to the Middle States and Far West.

Any physician or surgeon of good standing desiring to participate in the Congress can send the title of their papers to the following secretaries: General Medicine, Dr. Judson Daland, Philadelphia. General Surgery, Dr. Emmett Rixford, San Francisco. Hygiene, Demography and Epidemiology, Dr. T. Darlington, New York. Nervous and Mental Diseases, Dr. Chas. Hughes, St. Louis. Tropical Medicine, Dr. John Swan, Philadelphia. Military Sanitation, Dr. L. L. Seaman, New York. Ophthalmology, Dr. Bert Ellis, Los Angeles, Cal. Nose, Throat and Ear, Dr. W. S. Bryant, New York. Pathology and Bacteriology, Dr. Walter Chase, Boston. Gynecology, Abdominal Surgery and Obstetrics, Dr. H. P. Newman, Chicago. Children's Diseases, Dr. C. G. Kerley, New York.

The itineraries of the trips have not been made yet, but will be included in the next notice.

RECORD OF MORTALITY

For the Week ending Saturday, May 23, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	7	2
Chicago	—	—	Waltham	5	—
Philadelphia	—	—	Pittsfield	4	1
St. Louis	—	—	Gloucester	9	2
Baltimore	160	40	Brookline	6	1
Cleveland	—	—	North Adams	11	4
Buffalo	—	—	Chicopee	3	2
Pittsburg	—	—	Northampton	4	—
Cincinnati	—	—	Medford	4	—
Milwaukee	—	—	Beverly	3	1
Washington	—	—	Leominster	2	—
Providence	49	14	Hyde Park	2	2
Boston	243	59	Melrose	3	1
Worcester	46	10	Newburyport	—	—
Fall River	36	16	Woburn	4	3
Cambridge	33	6	Westfield	3	—
Lowell	30	11	Marlboro	3	0
Lynn	23	8	Revere	4	—
New Bedford	23	10	Attleboro	1	—
Springfield	24	—	Peabody	—	—
Lawrence	22	9	Adams	2	2
Somerville	20	2	Clinton	5	1
Brockton	8	1	Gardner	4	2
Holyoke	17	7	Milford	2	1
Malden	15	2	Watertown	2	1
Chelsea	5	2	Plymouth	—	—
Newton	6	5	Weymouth	2	0
Salem	23	11	Framingham	4	—
Haverhill	3	—	Southbridge	—	—
Fitchburg	8	4	Wakefield	—	—
Everett	12	3	Webster	—	—
Taunton	13	0	Arlington	0	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED MAY 20, 1908.

Carrington, P. M., surgeon. Granted leave of absence for five days from May 19, 1908, under paragraph 189, Service Regulations.

Young, G. B., surgeon. Detailed to represent the Service at the meeting of the American Medical Association in Chicago, Ill., June 2–6, 1908. May 6, 1908.

Vogel, C. W., past assistant surgeon. Relieved from special temporary duty at San Francisco, Cal., and directed to proceed to San Juan and other quarantine stations in the island of Porto Rico, and also to certain places in Venezuela, for special temporary duty. May 16, 1908.

Burkhalter, J. T., past assistant surgeon. Granted leave of absence for one month from June 3, 1908. May 20, 1908.

Warren, B. S., past assistant surgeon. Granted leave of absence for two months from June 5, 1908. May 13, 1908.

Ashford, F. A., assistant surgeon. Granted leave of absence for four days from April 12, 1908, on account of sickness.

Frost, W. H., assistant surgeon. Granted leave of absence for two days, May 2 and 3, 1908, under paragraph 210, Service Regulations.

Lanza, A. J., assistant surgeon. Relieved from duty on the revenue cutter "Manning," and directed to proceed to Port Townsend, Wash., reporting to the commanding officer of the revenue cutter "Rush," for duty. May 16, 1908.

Bowie, R. I., sanitary inspector. Granted leave of absence for thirty days from July 1, 1908, and extension of leave without pay for fourteen days from Aug. 1, 1908. May 13, 1908.

Mason, W. C., acting assistant surgeon. Granted leave of absence for two days from May 28, 1908. May 18, 1908.

McLarty, A. A., acting assistant surgeon. Granted leave of absence for fourteen days from May 15, 1908. May 18, 1908.

Rosello, M. M., acting assistant surgeon. Granted leave of absence for four days from April 25, 1908. May 14, 1908.

BOARDS CONVENED.

A board of medical officers was convened to meet in New Orleans, La., for the purpose of making a physical examination of past assistant surgeon T. D. Berry, in accordance with paragraph 50 of the Service Regulations. Detail for the Board: Surgeon J. H. White, chairman; Passed Assistant Surgeon H. W. Wickes; Assistant Surgeon C. M. Fauntleroy, recorder. May 15, 1908.

A board of medical officers was convened to meet in Chicago, Ill., May 22, 1908, for the purpose of examining applicants for the position of cadetship in the Revenue-Cutter Service. Detail for the Board: Surgeon G. B. Young, chairman; Assistant Surgeon C. E. Wood, recorder.

A board of medical officers was convened to meet in St. Louis, Mo., May 23, 1908, for the purpose of examining an applicant for the position of cadetship in the Revenue-Cutter Service. Detail for the Board: Passed Assistant Surgeon B. S. Warren, chairman; Acting Assistant Surgeon H. C. Wakefield, recorder. May 20, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING MAY 30, 1908.

D. C. Cather, passed assistant surgeon. Commissioned passed assistant surgeon from July 8, 1908.

H. H. Lane, assistant surgeon. Appointed assistant surgeon from May 5, 1908.

G. M. Mayers, passed assistant surgeon. Ordered to continue treatment at the Naval Hospital, Mare Island, Cal.

E. U. Reed, assistant surgeon. Detached from the "Charleston," and ordered to the Navy Yard, Mare Island, Cal.

D. H. Casto, assistant surgeon. Detached from the "Maine," and ordered to the Naval Station, Guam, L. I.

C. B. Minger, assistant surgeon. Detached from the "Supply," and ordered to the "Maine."

C. J. Heleman, assistant surgeon. Detached from the Naval Training Station, San Franciso, Cal., and ordered to the "Charleston."

E. H. H. Old, assistant surgeon. Detached from the naval hospital, Canaceo, P. I., and ordered to Washington, D. C., for examination for promotion, and then to wait orders.

H. B. McMurdo, acting assistant surgeon. Ordered to the Naval Training Station, San Francisco, Cal.

R. A. Warner, passed assistant surgeon. Commissioned Passed Assistant Surgeon from May 8, 1908.

SOCIETY NOTICE.

Massachusetts Medico-Legal Society. — The annual meeting of the Massachusetts Medico-Legal Society will be held in Sprague Hall, Boston Medical Library, The Fenway, Boston, on Tuesday, June 9, 1908, at 1 p.m.

Oliver H. Howe, M.D., *Recording Secretary.*

APPOINTMENT.

Dr. DeSantos Saxe, of New York, has been appointed instructor in Genito-urinary Diseases at a recent meeting of the Faculty of the New York Post-Graduate Medical School and Hospital. Dr. Saxe will be attached to the clinic of Dr. Ramon Guitéras, and will deliver a course of lectures on genito-urinary diseases during the summer months. The appointment was made on the basis of a competition, each competing candidate presenting an original thesis.

RECENT DEATH.

John Carroll Irish, M.D., M.M.S.S., died in Lowell, May 28, 1908, aged sixty-five years.

BOOKS AND PAMPHLETS RECEIVED.

The Sexual Question. A Scientific, Psychological, Hygienic and Sociological Study for the Cultured Classes. By August Forel, M.D., Ph.D., LL.D. English adaptation by C. F. Marshall, M.D., F.R.C.S. Illustrated. New York: Rebman Co. 1908.

Righthandedness and Lefthandedness. With Chapters Treating of the Writing Posture, the Rule of the Road, Etc. By George M. Gould, M.D. Illustrated. Philadelphia and London: J. B. Lippincott Co. 1908.

Headache Caused by Pathologic Conditions of the Nose and Its Accessory Sinuses. By Gerhard H. Cocks, M.D., and John E. MacKenty, M.D. Reprint.

Our Duty to the Criminal. By Beverley Robinson, M.D. Reprint.

Why Worry? By George Lincoln Walton, M.D. Philadelphia and London: J. B. Lippincott Co. 1908.

Adenomyoma of the Uterus. By Thomas Stephen Cullen. Illustrated. Philadelphia and London: W. B. Saunders Co. 1908.

State Board Questions and Answers. By R. Max Goepp, M.D. Philadelphia and London: W. B. Saunders Co. 1908.

Seventh Annual Report of the Metropolitan Water and Sewerage Board for the Year 1907. Boston. 1908.

Address.

ON SOME RELATIONS OF THE PHYSICIAN TO THE PUBLIC. DUTIES AND OPPORTUNITIES.*

BY WILLIAM SYDNEY THAYER, M.D., BALTIMORE, MD.

When, a year ago, you honored me with the invitation to deliver this address, it was my intention to speak on some specific problem in medicine. On further reflection, however, it has seemed wiser to take advantage of this occasion to express a few thoughts on some of the public relations of the physician, — his duties and his opportunities.

The physician has always been and, from the very nature of his calling, must be more or less a public character. In the smaller community he is a public character in the sense that he is a common source to which the citizens repair for advice, not only concerning their physical and mental, but often also their material, well-being. In the larger centers of population he is a public character in that it is on his direction, on the results of his studies and research, that the community depends for the organization of those more general, broader sanitary measures which are demanded to meet the exigencies ever arising and multiplying with the growth of large urban communities.

In the early days of this country, when there were no large cities, the physician exercised this influence individually among his patients, as the family friend and adviser. With the growth and development of the nation, the great relative increase of the urban population, the multiplying complications of our life on the one hand, and on the other, with the enormous advances made in the knowledge of the nature and sources of disease, of the relations of physiology and pathology to other natural sciences, together with the rapid progress in the art of medicine and surgery — with all this growth, this expansion — yes, one may almost say, transformation, the functions of the physician have considerably broadened. In the old days the tree of medicine was a small affair; its roots ran wild and almost uncared for, and the physician gathered and used its fruits as they grew. The art which he sometimes showed in the employment of these fruits, such as they were, was, indeed, remarkable. Of the tree and its roots which contained the sciences of anatomy and physiology and pathology, he knew little. But through the years, patient students have gained wonderful knowledge of the nature of that tree; of the sources from which it draws its strength; of the extent and ramifications of its roots; of their intimate and intricate entanglement with those of almost all the other denizens of the garden of science. And with the multiplication of these researches and discoveries, the tree, nourished and cared for as never before, has undergone a great transformation; it has put forth new branches; new shoots have sprung up about it; and the fruits which it bears for the art of medicine and surgery surpass, almost, that which one might have imagined but a few years ago.

The development of hospitals, of laboratories, of institutions for the study of the ever increasing ramifications of anatomy, physiology and pathology — ramifications leading directly to botanical, physical, chemical and, indeed, even to mathematical problems — calls for an increasing body of students, physicians who accomplish their function, and a most important and radical function it is, in the study of special scientific problems, a life widely different from that of the country doctor of old.

Moreover, the advances and extension of the medical and surgical art are such that it has long been impossible for any one man to develop equal proficiency in all its branches. In all large centers of population, therefore, certain men have sought to devote themselves to special subjects, in order that they may in this manner acquire a greater proficiency, and do more perfect and thorough work. This is natural and proper; it is only by the labors of such special workers that any art can be perfected.

At the same time, the crowding together of the population into great cities, a tendency which is to-day especially striking, has brought with it new dangers. The poisoned well may affect one or two families at most. The poisoned water supply of a great city may affect thousands. Scarlet fever in the country town has few victims and may be more or less readily controlled. In congested tenements populated by ignorant and suspicious aliens who do not understand the language of the people among whom they live, it is a widely different problem. These new dangers involving the broad questions of public health and prophylaxis, questions of drainage, of water, of milk and food supply, of the care of contagious diseases, — these demand the individual attention of men who have had special training. The great questions of water supply and of drainage cannot be attended to properly by the engineer alone, nor can the protection of the city from epidemics of infectious disease safely be entrusted to boards of health consisting only of public-spirited citizens; both are dependent on the advice and assistance of the trained sanitarian.

In almost all large enterprises to-day the aid of the physician is sought, as, for instance, in the organization of the relief departments of great railways and corporations and in large department stores. The health and comfort of the employee and the profit and success of the employer are indissolubly interwoven. But the distinctly public duties of the physician are by no means confined to exigencies arising in large centers of population. There are, in the history of mankind, examples of the gradual or sudden desolation of extensive districts by the insidious influence of diseases which we now know to be in great part preventable.

A recent historian [1] has brought forward as an illustration of the possible influence of a preventable endemic disease, the history of the decadence of ancient Greece.

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* Oration on medicine at the fifty-ninth annual session of the American Medical Association, Chicago, June 2–5, 1908. Through the courtesy of the Jour. Am. Med. Asso.

[1] Jones, Ross and Ellett: Malaria. A Neglected Factor in the History of Greece and Rome. 12mo. McMillan and Bowers, Cambridge, 1907; Jones, Janus. Harlem, 1907, xii, 690.

To-day, as is known, malaria is the scourge of the Hellenic peninsular. Endemic throughout the land, it saps the vitality, the strength, the virility, of the people, carrying away, annually, its tribute of thousands of human lives.

Through the shadows of departed years the light of ancient Greece shines with undying luster. The language, the poetry, the art, the philosophy, the ideals, the spirit of beauty, have been for ages and are to-day the inspiration of mankind. The sounding hexameters of Homer, the breath of

> "Him Æschylus, ancient of days, whose word is perfect song,"[2]

the creative genius of Phidias, the eloquence of Demosthenes, the wisdom of Pythagoras, of Socrates, of Plato, of Aristotle, beckon across the centuries to remind us that all the wealth of modern worlds has given birth to no loftier thoughts, to no higher ideals of life and beauty, than those which sprang up by the waters of the blue Ægean. And to-day, as ever, Pallas Athene, "*née intelligente chez les Grecs heureux,*"[3] dominates the elect of the world. "The garners of Sicily are empty now, but the bees from all climes still fetch honey from the tiny garden plot of Theocritus."[4] There is no trace in the literature of the early days of ancient Greece of the scourge which has since laid waste the land. Malaria appears to have been introduced into Attica during the fifth century B.C. Although the conditions of the soil and the probable presence of anopheles must have been favorable for the spread of the disease in the greater part of the Peloponnesus, yet the first mention of its occurrence is, apparently, in the Wasps of Aristophanes (422 B.C.). But the writings of the fourth century B.C. give evidence that the disease had gradually spread until, finally, it became chronic and endemic, prevailing among the children, giving rise to cachexia, conquering of the peninsula. And step by step, with the spread of the disease, the historian traces the beginnings of that fatal degeneracy which mark the fall of the race. A spirit of criticism, of jealousy, of pessimism, arose; discord, disunion and civil strife followed, and in a few centuries the earthly abode of the gods was a mere tributary of the Roman Empire. Poisoned by the subtle influence of a preventable disease, the spirit which had produced the science, the beauty and the art of ancient Greece faded from the world.

True or fanciful as this suggestion may be, it is hardly an exaggeration of what a preventable infectious disease may do. And one can but ask himself, What might have been saved for the world had we known then what we know now?

To-day, with an educated and specially trained body of medical men, assisted by an enlightened government, the Italians have reduced the mortality in the fever-ridden parts of their neighboring peninsula two thirds in five years; and the task is but begun. Already in regions where agriculture was abandoned, work is being renewed and a fresh life is springing up.

There is a modern example which touches us closely, of a great undertaking — one of the greatest undertakings that man has ever essayed — which depends for its success largely on the labors of physicians. I refer to the digging of the Panama Canal. The French, with unexcelled mechanical skill and energy, had failed — failed largely because of the dreadful and continued mortality among the workmen. The United States took up the work. In the meantime there had come the great discoveries of Ross and Grassi and Bignami and Bastianelli, completing those of Laveran, concerning malaria, and the vital and illuminating contributions of our own Reed, Lazear, Carroll and Agramonte, with regard to yellow fever. And to-day the Panama Zone compares favorably as to sanitary conditions with the more healthy parts of this country. Yellow fever, though on all sides, is here unknown. It is the greatest triumph of preventive medicine that the world has ever known.

And to whom is this due? A few months ago I had the good fortune to listen to an account by a distinguished foreign physician, of the work at Panama, whence he had just returned. After speaking with warmth of the general conditions, he said impressively, "The successful completion of the Panama Canal *depends on one man.*" If the measures admirably planned and carefully carried out by Colonel Gorgas fail, if there is a moment's relaxation, if the old epidemics recur, it will be impossible to find laborers, and the work will fail again as it did before. And he did not exaggerate. It is on the success of these prophylactic measures which can be designed and carried out only by a specially trained sanitarian, that the completion of this great undertaking depends. It is to the lasting credit of our country that medical men should have urged and our President recognized the importance of the appointment of a physician on the Panama Commission.

There is yet another opportunity for public usefulness in this country, for which the training of the physician is peculiarly valuable. I refer to the career of the legislator. One has but to consider the few examples already mentioned of the various ways in which medical knowledge and skill are of value to the state, to realize how useful the education of a physician may be as a preparation for public life. The life of a physician not only prepares a man to treat wisely those more specific and practical questions of which we have just spoken; more than this, no career brings a man into closer connection with his fellow; no career gives him a more intimate knowledge of mankind; no career is more fitted to develop those qualities of charity and tolerance so vital in our best public servants. It is true that medicine and public life are equally jealous mistresses, and that few men can serve both as they would and should be served; but we have, in this country, hardly realized how valuable a preparation for public life is the training and career of the physician. One has but to look to the prime minister of our sister republic in Europe for a most brilliant example of what may be accomplished in modern political life by the man with a medical training.

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[2] Swinburne: The Altar of Righteousness.

[3] France, A.: Discours prononcé à l'inauguration de la statue d' Ernest Renan a Trêguier. 12mo, Paris, 1903. Calmann-Lévy, 40.

[4] Lowell: Harvard University. A Record of the Commemoration, etc., of the Founding of Harvard College. Cambridge: John Wilson & Son. 1887.

It is doubtless true that the development of the purely scientific branches of medicine, together with the multiplication of specialties, which is everywhere observable in our large centers of population, have resulted in a relative diminution of the number of family physicians in the old sense of the word, and have, in so far, limited the public influence which the old-fashioned general practitioner formerly exerted among his patients. But, on the other hand, there have developed many wholly new problems which are calling the physician more directly into public life. If, perhaps, the wholesome influence of the family doctor is less felt in the community than it once was, yet the opportunities for public service, which are to-day before the physician, nay, his public duties, have greatly increased.

The knowledge gained during the past forty years has taught us that we can accomplish far greater results by preventing disease than by attempting to promote recovery from that which has already started; it has taught us that a large proportion of the gravest maladies from which humanity suffers are acquired through our ignorance and carelessness and unclean habits; and with regard to many of these diseases, it has given us efficacious methods of prevention. Prophylaxis is the watchword of the day. We have in our hands the means, not only of delivering ourselves from dreaded epidemics of exotic pestilence, but of preventing largely the terrible yearly sacrifice to the contagious diseases which have for ages been endemic among us. But this deliverance can be brought about only through the united and conscientious efforts of the medical profession.

This is an age of combination and concentration and co-operation, of large associations and undertakings. The great growth of this association which we have known of recent years is but a feature of the times. Despite the increasing diversification of our interests, we physicians have been brought closer together than ever before, and to our lasting benefit. For wherever medical men come into social contact one with another they cannot fail to feel a warm pride in their calling; they cannot fail to be impressed with the earnestness, the simplicity, the honesty, of the character and aims of their fellows, with the realization that, despite differences in natural endowment, in advantages, in surroundings, in temperament; despite the fact that we are all human and possess our fair share of human frailties, we are, with singularly few exceptions, all working earnestly, as best we can, in the search of truth and for the good of humanity. Association and acquaintance deliver us from doubt and suspicion and jealousy, those all-pervading daughters of isolation. Our great association has further enabled us to distribute to all parts of the country an admirable journal, which is a monument to its honest, faithful, fearless editor, so that the practitioner in the distant rural community may reap at the earliest moment the benefits of the discoveries of the student of the urban laboratory. It enables us to lay with greater force before local and national legislatures necessary measures of sanitary reform. It helps us to combat more powerfully the many forces of evil which, from time immemorial, have battened on the credulousness and superstition of the invalid. It is helping us to teach the public with greater impressiveness the necessity of high and uniform standards of education for the physician and requirements for the license to practice medicine.

Here we are, then, a great body of medical men, united in an association, not for our personal, financial, political or social advancement, but solely in the cause of truth and for the benefit of humanity, the deliverance of the public from disease. Nevertheless, the work before us is unending, the obstacles great. But why should there be obstacles? Why have not the recommendations of this association the force of law? Why is it that, when laws themselves exist, all our strength is needed to secure their enforcement?

The main cause, I take it, of all this is the lack of comprehension on the part of the public of the nature and aims of medicine and of physicians. If the public had but a small part of the information which is ours, how many thousands of lives might be saved every year! The community as a whole has a very vague understanding of the nature of the medical sciences and arts. Under these circumstances can we expect such a public to sympathize with and blindly follow all our recommendations? Surely not.

In how many ways is this ignorance shown! To take but a few examples:

We know well enough that the one successful way to prevent the spread of many contagious diseases in the large community is the establishment of well-conducted hospitals in which the patients may be isolated as soon as possible after the breaking out of the malady. By providing for the early segregation of these patients in institutions, offering to the sufferer the most enlightened care, the community confers a blessing of incalculable value on the families of rich and poor alike. Such hospitals, moreover, afford the only opportunity for the proper instruction of students of medicine in the diagnosis of those contagious diseases, the early recognition of which is of such vital importance to the public. Furthermore, we know that such institutions are absolutely without danger to the neighborhood in which they are situated. The records of the city of Boston, which possesses a model hospital for contagious diseases, shows well what a blessing such an institution may be to the community.

But I know another great eastern city where there has been, until recently, no provision whatever for the care of contagious diseases. More than this, some years ago the state legislature passed a law forbidding the erection of a hospital for contagious diseases within the city limits without a two-thirds majority of each branch of the city council, that which rendered the erection of such a hospital almost impossible. To us this law seems wicked and brutal in the extreme — worthy only of savages. And yet the measure was passed by men who were not inhuman; they were simply ignorant. And it is difficult to remedy such ignorance by immediate argument. The vehemence which are we too apt to display only excites the sensitiveness of the legislator — and where passion enters in reason passes out of the door.

I know again a great city, the water supply of which is open to serious contamination. At a period during which extensive and radical public improvements were under consideration, a meeting was held of a committee appointed to take counsel as to those steps which should be taken to improve the water supply. Before this committee there appeared a number of medical men and sanitarians, including representatives of the state and city boards of health, men who had made a careful study of such matters. These men urged that steps be taken to provide ultimately for a proper system of filtration. After they had spoken, a gentleman connected with one of the city departments, an engineer, who had the last word, made a long address, in which he denied with passion that the water supply was or could be contaminated. He ridiculed the statements of the sanitarians and physicians, opposing to them the frequently repeated and wholly unfounded assertion that they were dealing with theories, he with facts. The committee, by an overwhelming majority, dismissed, for the time being, the question of filtration. The city, fortunately, has not yet suffered from the epidemic which may come at any time. The men on that committee were not unintelligent; they were simply ignorant of the medical aspect of the question at issue, and were utterly deceived by a plausible argument filled with pseudo-scientific statements which the orator himself appeared not wholly to understand.

A few years ago I happened to meet, on the railway, a high official of a large manufacturing concern situated in a most malarious district. At that time little had been done to protect the employees, who were nearly all victims of the disease. " This is a healthy enough place," said the official, who lived in a well-netted house in a dry part of the town. " The trouble with the people here is that they take too much quinine. If they would stop taking quinine they would stop having malaria." And this was a really intelligent citizen.

How often again do the trustees of large hospitals generously seek to " protect " the patient from what they regard as inconsiderate and unnecessary scientific zeal, by closing the wards to instruction and denying admission to student assistants, thereby blindly cutting off from the sufferer the greatest boon that they could offer him, — the most enlightened observation and care. How far are these good men from a comprehension of the true significance and value of the hospital to the patient and to the public!

There could be no more striking example of the ignorance of a well-meaning part of the community than the agitation of the so-called antivivisectionists, whose publications, shocking and wicked and brutal as they are misleading, are yet believed by some misguided people. But these dreadful publications, inspired for the most part by individuals who probably mean to be honest, are but the offspring of fancy and prejudice, born themselves of an utter ignorance and misconception of the aims and significance of medical science and of the character and ideals of the student.

These are but a few examples, but they are enough to show how little a considerable part of the general public — often individuals in whom we might, indeed, expect more enlightenment — understands the nature of medicine or sympathize with the generous efforts of the physician and the investigator. We can hardly expect people with ideas such as these to heed the advice of a body such as ours. These considerations should bring home to us the realization that the education of the public is a most vital duty, not only of medical schools and associations, but of each separate member of the medical profession. On each one of us there rest public duties of the gravest import. On the sum of our individual efforts depends the success of all the great sanitary reforms of the future.

On a few of the opportunities which come to the physician of to-day, in his intercourse with his patients and his friends, to perform some of these public duties, I would especially speak.

Many misconceptions concerning the nature of the healing art arise from that strange atmosphere of mystery which so often surrounds medicine. To physicians there is nothing mysterious or supernatural about medicine. We recognize that medicine is a practical art resting on a basis of scientifically proved facts; we realize that our knowledge amounts to an infinitely small part of that which we would know and hope some day to know. We know that there is an enormous field for study. We practice our art simply on the basis of what we have learned from the experience and study of those who have gone before us, and on what we acquire daily from our own study and experience and reason and common sense. But from time immemorial the art of medicine has been connected in the mind of man with the supernatural and the divine. Medicine has been regarded rather as a matter of faith than as an art resting on a scientific basis. People speak of their " belief " in this, that, or the other " system " of medicine, and on the basis of such " belief " recklessly hand over their bodies to some individual who asserts that his practice is based on a theory or system revealed as by inspiration to some fortunate mortal, perhaps yesterday, perhaps two hundred years ago.

This blind faith in systems is not so far removed from the faith of the savage in the magic of his medicine man, and when we turn to our friends who with such delicious innocence and ingenuousness have termed their medical faith a " science," when we see them, as we sometimes do, braving with fanatical contempt some dreadful infection only to find themselves in the end the prey of the fatal poison of reality, we seem almost to see the medicine man standing with a little group of determined warriors in the midst of the circle of fire, breathing defiance even as he falls, his "invulnerable" mantle pierced by a score of deadly bullets.[5]

Again, there is a very general idea among the public that the physician is by practice, if not by nature, disingenuous; that while he may be trusted to do his duty as he sees it, to his patient, truth is not to be expected of him. Scarcely a week goes by that I am not asked by the friends of a patient to tell a deliberate falsehood.

From these misconceptions we physicians cannot, I fear, be regarded as wholly guiltless. We know how few specifics there are in medicine. We know that by simple physical and mental means we accomplish our main results. But, alas, how easy it is to accomplish these ends by misleading means! How easy it is to write the prescription which we know is of itself of little value, which we should never dream of taking ourselves, and to allow the patient to believe that it is this that has "cured" him of the transitory, self-limited malady! How easy it is by assuming an impressive air — and if there be anything under the sun that we physicians should pray to be delivered from it is an impressive air — to make the patient feel that we possess that mysterious power which has, perhaps, come to us from a long line of medical ancestors, the power which enables us at a glance to divine that which might never be revealed to our uninspired colleague.

The same results can be achieved without misleading the patient one iota. It is perfectly possible to treat patients as we would be treated ourselves. It is scarcely likely that they would be treated otherwise. It takes a little longer; it involves a little more explanation; but how much safer and surer is the result!

The oracular method is easier, but I fear that some of us have forgotten that by a special decree of the Olympian Assembly, Asklepius was forbidden to trade in oracles.[6] That it is necessary for the physician to tell untruths is a myth founded on kindness of heart, pure and simple, but an unreasonable and a weak, a short-sighted and a misguided kindness of heart. Truth is as sacred a duty in medicine as anywhere else in life. As a matter of policy, as Cabot has pointed out, it is almost a necessity, for whatever may be true in other spheres of life, *the doctor's lie is always detected.*

It is, of course, obvious that truthfulness in medicine does not mean that it is always necessary to tell the patient that he has a fatal disease, if he does not ask you the direct question. Nor does it forbid the physician to seek and keep his eye fixed on the cranny of hope which may usually be found, as earnestly and sedulously as would the patient himself. Few events in human affairs are certain. A few years ago I had under my care a patient who had had one tuberculous kidney removed some years before. She had then bilateral pulmonary tuberculosis, tuberculous pleurisy, tuberculous peritonitis and tuberculosis of the remaining kidney. The temperature for weeks had been constantly elevated, the pulse rapid and feeble. She seemed *in extremis.* Had I been asked, I should have said that she had probably a few weeks to live. She asked me calmly if she were going to die or whether there was any chance of recovery. I answered her truly that she was very ill, that the outlook was not good, but that there was always a chance for an arrest of the disease, and that it would be wrong even to think of giving up the fight. For two years that patient has been free from fever, to all outward appearances well, and to-day she is actually working for her living.

Few patients ask a physician the direct question, but when they do they should be told the truth, as we should tell the truth in every other sphere of life.

I believe sincerely that most physicians do so, and that the annoying general suspicion of the doctor's statements is ill-founded; but I know a number of good men who too often allow their kindness of heart to get the better of their good judgment. I know nothing sadder, nothing more hopelessly demoralizing, nothing surer to upset the mutual confidence of a family than the entrance of the "white lie" into the household or the sick-room. Few of us are unfamiliar with the hopeless uncertainty of the invalid who comes finally to realize that a tissue of falsehood has been spun about him; that on no one can he rely. The affection of those about him he may not doubt, but of their sincerity how can he again be sure? There is no more pathetic picture in the experience of the practitioner of medicine.

The physician has no higher public duties than *the duty of simplicity, the duty of the avoidance of mystery in medicine* and *the duty of truthfulness.* Toward his patient I know of no more vital duty than *the duty of optimism.*

There is another widespread misconception to combat which is an important public duty. I refer to the too common feeling of the public that, with many of us, the practice of medicine is purely and simply a trade. Viewed in this light, the practitioner can but be often an object of suspicion. His methods and his word are doubted. The best part of his influence is gone. There are few, if any, physicians who practice medicine as amateurs. The inconveniences which every earnest doctor must endure are always considerable. Most physicians are obliged to depend on their fees, as most clergymen are obliged to depend on their salaries, for their daily bread. They must provide, not only for themselves, but often for their families. There are many men to whom, for more reasons than one, the material gains from practice are an important, a highly important, element in life. There are many men, teachers, scientific workers, men who desire to limit their practical activities, as well as men who have achieved such a position that they are obliged to restrict or select from the overwhelming practice which seeks them, who, for these very reasons, rightly demand large fees. If the public insists on having their services rather than those of the many other good men in the profession, they should and do understand that they must pay a larger honorarium. This is perfectly right and proper. But there are very few physicians who enter into the practice of medicine with the idea of laying up wealth. There are happily exceedingly few to whom medicine is a trade. The man to whom the scientific and humanitarian aspects of medicine mean nothing; the man who practices solely for what he can make; the man who finds no interest in medicine outside of that which he puts in his pocket, — that man is on a level with the conscienceless quack, and the sooner he leaves the profession the better for it and for the public.

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[5] I have seen in the possession of a friend the "invulnerable" mantle of an Indian medicine man who with a small group of warriors fought until the last man had fallen, although completely surrounded by troops; the garment was pierced by many bullets.

[6] Lucian: Lucian's Dialogues, translated by Howard Williams. London: Geo. Bell & Sons. 1893.

There exists, however, a tendency among some of us — men who are, for the most part, honest and honorable — which is, it seems to me, below the dignity of our calling. I refer to the tendency to regulate one's fees according to the means of his patient. It is well that a man should have a more or less definite estimate of the value of his services, a fixed maximal charge for work of a certain character, a charge which, in justice to himself, he should always make, unless he has reason to believe that the patient is not in condition to meet it. He will often, with a large proportion of his patients, perhaps, be obliged to accept less than the value of his services. But that he should speculate on the wealth of the rich, that he should demand exceptional recompense from the millionaire because of his wealth, is to make medicine a trade; is to bring distrust and suspicion and discredit on his profession; is to put a serious obstacle in the way of all the great reforms which we as physicians and sanitarians hope to accomplish.

Another duty, the grave public import of which comes to us with much force to-day, is the instruction of the public with regard to the necessary measures of prophylaxis in connection with infectious diseases. As has been demonstrated again and again, general laws and sweeping public measures are of themselves insufficient to prevent the spread of such diseases as malaria, yellow fever, plague, cholera and typhoid fever. It is only through the cordial and general co-operation of the practicing physician with an enlightened public that efficient prophylaxis can be established. It is impossible here to enter into particulars as one would. We can consider but a few examples. The great accomplishment of the medical department of our army in eradicating yellow fever from Havana is fresh in our minds. This work was rendered possible by the recognition of the fact that the causal element of yellow fever exists only in the body of the patient suffering from the disease and in the mosquito (*Stegomeia fasciata*) which has fed on the blood of the sufferer. The mosquito can acquire the infectious agent only from an individual affected with the disease, and the human being can acquire the disease only through the bite of an infected mosquito. Though a great deal can be accomplished by general measures directed toward the destruction of mosquitoes and the removal of breeding places, it is impossible, by these measures alone, to overcome an epidemic. The problem, it was realized, could be met satisfactorily only by sterilizing, as it were, each individual case of the disease. If each case of yellow fever could be successfully protected from mosquitoes, one might be sure that, from this case, at least, there could be no spread of the disease. And so, by the co-operation of local physicians with the efficient medical corps of the army, every suspected case of yellow fever was reported. The houses of patients, together with those in the immediate neighborhood, were promptly netted and the mosquitoes already there were killed. In seven months the disease was banished from the city. Almost equally brilliant was the work in New Orleans, where a dreadful epidemic, already well under way, was eradicated by a period at which otherwise it would probably have been at the summit of its ravages. This problem, it is true, was an essentially simple one, once the fundamental knowledge of the manner of entrance and spread of the infection had been acquired. In its broader lines, however, the problem is the same in connection with many of the gravest and commonest affections with which humanity suffers. In malaria the task of prophylaxis is more difficult because the disease is so widespread, and for the reason that, because of its very mildness, many cases pass unnoticed. And yet how much can be done, and is being done in some parts of the world, has already been mentioned. In typhoid fever the problem is yet more difficult; in tuberculosis more so again.

But in all these diseases, as soon as the physician, the public and the government unite and work hand in hand to prevent, so far as possible, the spread of the infection from the individual case, enormous inroads can be made into the mortality. In all these conditions the infectious agent dies sooner or later outside of the animal body and is disseminated primarily by the infected human being and, in the case of tuberculosis, to some extent, by cattle.

To properly combat the spread of preventable infectious diseases we need: (1) An enlightened public; (2) a conscientious and united medical profession ready to do its duty as individuals and especially to work in a spirit of cordial co-operation; with (3) central and local boards of health which are under the direction of trained sanitarians.

The organization of all these measures depends, in the end, on the results of our individual efforts as physicians. The education of the public can be accomplished only by us; and it is our duty privately, publicly, day in and day out, to explain to the people the rules of self-protection. The faithful performance by us, as physicians, of the necessary measures of prophylaxis in every individual case is almost the corner stone of the edifice. These duties, it is true, greatly complicate the life of the physician. The measures which we ought to carry out, and which can perfectly well be carried out in every case of typhoid fever, are tedious and annoying, but they are no more so than the aseptic and antiseptic precautions employed daily by the surgeon. They are duties which we must recognize unless we are content to lose, as we do every year, thousands of the very flower of our youth through the preventable diseases; unless we are content to remain as we are now, one of the few nations in which the disgraceful prevalence of typhoid fever, a filth disease, is a byword throughout the civilized world. Isolated, individual effort, however, goes but a short way of itself. We must co-operate with one another and with our boards of health; we must work in unison and see to it that as in the case of scarlet fever and measles and diphtheria so every case of typhoid fever and tuberculosis is reported and the proper measures of prophylaxis taken.

And lastly, the character of our state and local boards of health, that most vital point, depends largely on the attitude and efforts of the medical profession. After what has been said it is hardly necessary to refer to the increasing importance to the community of local and central boards of health. It is on these bodies that we depend for the organization and direction of the more comprehensive measures of prophylaxis, the need of which is increasing daily with the greater complications of our life and the advances in medical knowledge. Moreover, in recent years, departments of health have assumed a wholly new significance with the establishment of diagnostic laboratories. Modern methods of diagnosis, microscopical examinations of sputa and of the blood, bacteriological examinations of smears and cultures from the throat, tests for specific agglutinins in the blood in fevers are too complicated and time-absorbing for the busy practitioner. Much of this work is done in private laboratories by specially trained men. There are, however, many who cannot afford the additional expense of such examinations, people who are not objects of charity and who can and do bear the ordinary expenses incident to their medical attention, as well as many who must always be cared for by the benevolence of the physician or at the public expense. But it is absolutely necessary, not only for the sake of the patient, but also for the protection of the public, that these more precise measures of diagnosis be carried out so far as possible in all suspicious cases. If they are not carried out, a vitally important link is removed from the chain of our public measures of prophylaxis. And so it has come to pass that state and county and city boards of health are everywhere wisely establishing laboratories in which such examinations are made at the request of the attending physician. Now it is clear enough to any mind that the direction of such boards should be in the hands of men with a special training as public sanitarians, pathologists and bacteriologists. That these facts are not wholly appreciated by the general public, that the pernicious influence of political favoritism now and then plays a part in the selection of such bodies, need not be mentioned. But I wish to assert and assert emphatically my conviction that, as a people, we are too fond of using the word "political" with a smile of contempt; we are too fond of speaking lightly of the conscience and honesty of the politician. Few politicians would voluntarily prostitute a branch of the public service which is so vitally concerned with the welfare and safety of the community. I have rarely met men in political life who did not pay considerate attention to the judicious and tactfully offered advice of conscientious physicians. It is for us physicians to set them an example. We know — every one in this hall knows — the kind of man who should preside over a department of health. And yet, what a spectacle do we see with changes of administration, in almost any of our cities. Applications from busy practitioners; from men who, perhaps, from age or infirmity, desire to retire from active work; from men who have been unsuccessful in practice and are in need of money! How is the politician to know what to do if we behave in this manner? We physicians do not always realize the responsibilities which rest on us in this connection. We ought to act and speak fearlessly and frankly, so that men obviously unfitted shall be ashamed to offer themselves publicly for such positions. We ought to see to it that the representatives of our profession on such bodies are capable and well-trained men; men who can give to their work all their time, all their thought, all their energy. This again is a public responsibility, a public duty which falls upon each one of us as a practicing physician.

Another opportunity which comes to us as individuals is the opportunity to help forward the movement, now happily started, for better instruction in our schools of medicine by increasing the opportunities for practical clinical experience. We all know that we improve in the art of medicine only by the actual study of disease and the observation of the effects of treatment. Rule and precept may help; they cannot make the physician. Where, in our country, has this practical experience been offered? In but a very few of our schools have the students had an opportunity to follow at the bedside the course of the more serious diseases with which they are to meet in after life. I myself was never offered the occasion of following a case of pneumonia or diphtheria or typhoid fever from beginning to end. Where then were the students of my day expected to gain this experience? Where? Why, on the unfortunate human beings who might fall into their hands during their early years of practice. And why was this so? Simply because students were not allowed in the wards of the hospital, except as they followed an occasional visit. Now, in this country there are hospitals enough and more than enough to supply valuable clinical experience to all physicians while they are yet in their undergraduate days. This opportunity is lost because the public does not understand. "What," says the hospital trustee, "do you fancy that I want students to attend me or the sick men and women under my protection?" "Student" to them suggests an irresponsible youth who is conducting perilous experiments. And the student is excluded from the wards. They do not understand that the student, as a clinical clerk in the ward, is nothing more than a trained assistant. They do not realize that the presence of such students is not an experiment; that the system of clinical clerks has been in existence for years in England to the great advantage of physicians and community. The student is excluded from the wards; and what is the result? The "protected" patient enters the hospital, where he is under the direct charge of an interne, a recent graduate from a school where he has been denied the clinical advantages which he is now for the first time enjoying. He is, however, now in a position of considerable responsibility, for his busy chief can spare at the most an hour or two for his daily visit. He has many patients to care for, and little help in emergencies. He does his best, and in the midst of his multifarious duties the early symptoms of the typhoid perforation are perhaps unobserved, or probably, as he has never seen a case before, unrecognized. The dreadful reality comes upon him when it is too late. The young physician has learned something that he will never forget; but the patient? The patient is dead — his one chance, that of an early operation, lost; sacrificed to the well-meaning charitable ignorance of the public. Suppose, on the other hand, that the patient enters a ward in which there are a number of medical students on duty as clinical clerks and presided over by a similar young physician, a recent graduate, but one who, in his school days, has had some months of practical experience at the bedside. Under the watchful eye of the student who has but a few patients to follow, who is, as has been said, but an extra assistant, a trained assistant, the first suspicious symptoms are noted. The attention of the interne is excited. The blood is carefully examined from hour to hour. The surgeon, early notified, joins in watching every change, and, by a timely operation, the patient is saved. What a different picture! "Fancy," one may say? No. Experience; personal experience. How, under these circumstances, can the public object to the presence of the student? Solely because of a word, because of the word "student," which means to them an irresponsible observer. As a busy, active assistant under the direction and orders of a trained superior officer, would the public object to his presence? The question is too absurd to ask.

In these matters we as physicians must teach our non-medical friends. When they realize that the hospitals *need* medical students as trained assistants, as a part, really, of the staff; when they realize that the students *need* hospital experience to make them capable physicians; when they realize that they *owe* this training to the physician in order to protect themselves and the public,— then and only then will the old opposition to the instruction of students in the wards of hospitals disappear. The prejudice against ward teaching is largely a matter of words, of one word, the awful word, "student," in its absurdly perverted popular meaning. And while, incidentally praying to be ourselves delivered from the tyranny of words, let us strive, each one as he can, to educate the public in this important matter, to help forward the movement which has already begun toward the more complete utilization of school by hospital and hospital by school.

The mention of these few opportunities for public service, opportunities which come to us all as physicians, should but impress on our minds the thought with which these remarks opened, namely, that the physician is, from the very nature of his calling, essentially a public character. And however modest may be our field of work, our responsibility should always be before us. On our learning, on our progressiveness, on our alertness, on our honesty, on our fearlessness, on our perseverance, hang not only our own welfare, but that of the general public; in other words, that of our country, in much higher degree than we often realize. It is a heavy responsibility. Of much in the past we may be proud. There is much in the present on which we could improve. And the future? What shall that be? The answer lies with us.

Original Articles.

MODERN MEDICINE AND SURGERY IN THE ORIENT.*

BY J. EWING MEARS, M.D., PHILADELPHIA.

A recent visit to the Orient has afforded me the opportunity to study modern, scientific medicine as it exists there to-day. Through the courtesy of members of the medical profession and others, I was permitted to make extended observations of the conditions which are present, and which have exerted a dominating influence in the development and growth of scientific medicine in the East. I have chosen to speak of modern, scientific medicine in the Orient and not of ancient, empiric medicine, as the history of medicine tells us it existed from the earliest recorded period of time. In a paper which I read before the American Surgical Association, at the meeting at St. Louis in 1904, on the "Evolution of Surgery," I directed attention to the practice of the art of surgery at that time when it existed as an art and not as a science; and in considering the evolution, or the unfolding, of surgery, I endeavored to show that this was accomplished by a gradual ingrafting of the science, influenced greatly by important controlling factors, most importantly by the cultivation of human anatomy, so auspiciously begun in the great school of

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* Read by title at the meeting of the American Surgical Association, held in Richmond, Va., May 4, 1908.

Alexandria three hundred years before the Christian era, inspired by the instruction of Herophilus and Erasistratus, the first anatomists who dissected and described parts of the human body. Following in order, comparative anatomy, physiology, pathology, chemistry and therapeutics were brought to make their contributions to the growing science, broadening the fields of investigation and determining its scope.

In the beginning, the art of surgery was advanced to quite a high degree in some parts of the Orient, notably among the Hindus, where such important surgical operations as lithotomy, herniotomy, abdominal section, with intestinal excision and suture, Cesarean section, extraction of cataract, plastic operations for restoration of the nose were undertaken; fractures and dislocations were treated and differential diagnosis elaborated; constitutional treatment was instituted in surgical cases; numerous surgical instruments were designed and manufactured, most of which are in use to-day.

From this beginning in the East, medicine came into the West; was developed by teaching and authorship, and as well by individual attainment, by the systematic courses of instruction in the school of Alexandria, and the genius of Galen, of Celsus and of Paulus of Egina; elaborated as it stepped upon the continent of Europe by the erudite Hippocrates, whose treatises in the "Hippocratic Collection" were encyclopedic in character, perfect models in descriptive precision, giving evidence of original investigation, of accurate observation, of knowledge and of skill gathered in fields of wide experience; expounded in the great universities of Salerno, of Padua, of Naples and of Bologna, that of Padua giving to the world William Harvey, the discoverer of the circulation of the blood, a student in anatomy under the illustrious Fabricius. Progressing across the continent it found exposition in the universities of Paris and of Lyons, and crossing the channel, reached the portals of the University of Edinburgh, where clinical medicine and surgery came into existence — methods in teaching which, in their far-reaching influence, were the most important contributions which had been made up to that time, and which have determined, to this day, the character of medical instruction the world over.

To our country the University of Edinburgh gave instruction in medicine, through Dr. John Morgan, a graduate, who in 1765 founded the Medical College of Philadelphia. This college, continued in direct succession, is, in full development, the medical department of the University of Pennsylvania.

As a science, medicine returns to-day to the Orient, expanded, purified, refined, made what it is by the genius of Virchow, of Pasteur, of Koch and of Lister, who, as illustrious disciples of their noble profession, have made such eminent and valuable contributions, whereby suffering humanity finds relief. Into the hands of the intelligent physician they have placed goodly weapons with which to wage the never-ending warfare against disease and pestilence; have made it possible for enlightened communities to anticipate the impending contagion, and by the timely adoption of well-defined measures and the use of agents, the value of which has been accurately determined, render harmless its attacks.

To the efforts of these great promoters of modern medical science should be added the results obtained by the patient and painstaking labors of the original investigator in the laboratory and in the institute for research, who, unmindful of the luxurious rewards of wealth, with self-sacrificing zeal and well-trained intellection, spends his life in unremitting toil, — to extract truth from refractory nature, to contribute knowledge to the common stock, and to make good the statement that in the fifty years past "the world has learned more of truth available for the improvement of man's stay on earth than was known in the thousands of years between the dawn of creation and the Middle Ages." And thus the science of medicine, with other sciences which in this fleeting half century have so profoundly influenced the life conditions of the world, has passed on to the ancient and crumbling civilizations of the East, following closely in the wake of the trader, seeking commercial opportunities, and, hand in hand with the devoted missionary, bearing messages of love, of faith and of hope inculcated by the Great Physician and Healer. Together they have penetrated the innermost parts, have quickened the stagnant thought and awakened the dormant energies of China, have regenerated Japan, engrafting upon conditions of life engendered by the feudal state, intellectual, social and political, the energizing influences of western civilization. In India they have torn asunder the time-honored, self-satisfying tenets which controlled their schools of philosophy, and uncovered to the gaze of the world the mystic elements of their cults.

To comprehend the position of modern scientific medicine in the Orient we must have knowledge of the institutions engaged in teaching the science, the methods of instruction employed in theory and practice, their equipment with all of the appliances for the successful conduct of laboratory and research work, the provision for extended clinical instruction, the attainments of the teachers and the place they occupy in the world of science. In Japan, the country I visited first, this knowledge was not very difficult to obtain. Education in medicine is there a part of the general system, which is as complete in its development as may be found in any country of the world. The educational center is Tokyo, the seat of government since 1590, and the residence of the Mikado or Emperor since 1868, when he left Kyoto — where he had been a virtual prisoner and deprived of his imperial rights and privileges by the Shogunate — the head of which was the Shogun who, with his great feudatories, his armed retainers and well-filled exchequer, had ruled the empire. The act of interference by the United States government in 1853, when Commodore Perry with his fleet sailed into the harbor of Yokohama and demanded on the part of his government the abandonment of the policy of isolation practiced by Japan, gave the final blow to the Shogunate and restored the Mikado to the absolute power which had belonged to his ancestors centuries before.

In Tokyo one of the two great universities of Japan is located; the other is in Kyoto. That in Tokyo consists of six colleges of law, medicine; engineering, literature, science and agriculture. Students come to the university not only from all parts of Japan, but also in great numbers from China. At the time of my visit I was told that there were some fifteen thousand Chinese students in attendance in the educational institutions of Tokyo. This fact is significant when considered in connection with the increasing influence exerted by Japan in the affairs of China and of the possible effect this may have upon her future.

Of the one hundred and thirty-one professors in the university, the College of Medicine has twenty-four, with four to five hundred students, who pay a tuition fee each year of fifty yen — twenty-five dollars. The prescribed course of instruction covers a period of four years, and the students are divided into four classes. The curriculum includes all of the branches of medicine; those fundamental being assigned, as is usual and necessary, to the first years, and the practical courses coming in the last, with instruction in hospital wards and in the clinical laboratories. There are two hospitals connected with the work of the college, having a total capacity of five hundred and seventy-one beds. The material for clinical instruction is very large, and the two operating rooms, which seat three hundred students each, are examples of the most modern methods of construction, supplied with all of the requirements for perfect aseptic operative procedures.

As the early instructors in medicine were Germans, the teaching is German in character; some of the lectures are delivered in the German language and the textbooks are largely German or translations from that language. The library is large and supplied with volumes on all of the subjects of medicine, many in the English language, among them a number of American textbooks.

In addition to the College of Medicine of the university there are in Japan eight other medical colleges. These institutions do not possess the authority to grant licenses to practice; the graduates are required to pass a satisfactory examination before a special board of medical examiners before they receive permission to practice. In these institutions the standard of instruction is of the best character, equal in every respect to that of the university medical college. Foreign physicians who are graduates of medical colleges having a reputable standing will, on application, be granted a license to practice.

There are a number of hospitals in Tokyo outside of those connected with the medical colleges. Most if not all of them have a training school for nurses, the courses in instruction of which extend over a period of two years. The outdoor clinics or dispensary services are crowded each day by the poor who are in need of medical treatment. In the Tokyo Charity Hospital, with 150 beds, there is a training school for nurses with 85 pupils. The Army Hospital is the largest in Tokyo, having 500 beds; in this hospital the nursing is done by the soldiers, who receive special training for this service.

The hospital considered the best in Tokyo is that of the Red Cross Society, with a capacity of 250 beds, a staff composed of the best physicians in the city, and a corps of 260 nurses, more than one nurse for every patient. This excess in the number of well-trained nurses insures effective service and gives a deserved reputation to the hospital.

My friend, the late Dr. Senn, to whom I was greatly indebted for cards of introduction to the prominent medical men of Japan, and from the account of whose investigations I learned much of the condition of scientific medicine in the East, has spoken in this way of the Japanese nurse: "The Japanese women by birth, nature and training are admirably adapted for the care of the sick. Their graceful stature, the innocent, sympathizing expression of their eyes, their small delicate hands and their light noiseless gait are qualities which go far to make them ideal nurses. Each candidate for the training school connected with the Red Cross Hospital must have a good elementary education, and is subjected to a thorough physical examination. The age limits are from eighteen to thirty years, and for military service from twenty to forty years. The nurses in the Red Cross Hospital receive the most practical kind of instruction by lectures and demonstrations. They are made nurses and not half doctors, as is the case with many of our training schools. They serve an apprenticeship of three years, and on passing a satisfactory, rigorous examination, receive the necessary credentials, which entitle them to enter private practice. A graduated nurse in private practice receives from one yen (fifty cents) to a yen and a half (seventy-five cents) a day — quite in contrast with what our nurses are accustomed to charge for their services when on duty. A gilt maple leaf is the insignia of a graduate nurse from this institution, while the small red cross on the front of the high white cap is common to the graduate and undergraduate nurse. In the operating room the anesthetic, usually chloroform, is administered by the drop method by a graduate nurse, supervised by one of the surgical assistants. The nurses make the necessary preparations for the operation and handle the instruments and dressing material. The gauze sponges are sterilized in a tube-like tin box with a closely fitting cover. The nurse opens this box, grasps the sponge with an aseptic forceps, and with this instrument hands it to the operator. As soon as a Japanese young woman is accepted as a pupil, she leaves behind her native dress, which is exchanged for a white dress, and the wooden sandal or clog gives way to the noiseless straw sandal. In case of war, the Red Cross nurse when ordered to duty wears a black dress and a white cap."

This is, indeed, a pleasing picture of the attractive qualities of the Japanese women which would make them ideal nurses, and I hesitate to say aught which would cloud its coloring or disturb the harmonious blending of its tints. I think, however, that it has not been so painted by some who have gone amongst the Japanese people, have observed their characteristics and become acquainted with their social conditions. There are no people in the world who claim a civilization above that of the barbarian, so bereft of emotions as are the Japanese; they are trained in a school of rigid repression of such attributes of the mind and heart. The obeisance of recognition which, when made to a superior in social position, brings the woman to the floor, on bended knees and with cringing body, does not express any sentiment save that of abject servility. Between father and mother, husband and wife, sister and brother, there is no conduct which betokens parental, conjugal or filial love and affection; wifely respect and homage to the husband and father and filial obedience are so unyielding that with joy and gladness, encouraged and supported by the hearty approval of family, relatives and friends, the young daughter, budding into womanhood, consigns herself to a life of shame at the behest of the father to relieve him of financial embarrassment. Obedience to the command of the father and of his male descendant and his successor, the oldest son, as the unchangeable head of the family, is regarded and classed as a cardinal virtue, and has been cultivated as such from time immemorial. So incomprehensible is the conception of morality by these people, and so much at variance with that entertained by people imbued with the principles of a Christian civilization, that no disgrace attaches to any violation of the moral law. To such extent does this exert a controlling influence that the inmate of the Yoshiwara, the quarter of the city inhabited by the licensed prostitutes, may be taken out to become the respected wife of one in her social class. This fact was told to me by a lady who, in her missionary experience, knew of such instances, and inspired by the highest motives of duty to a fellow-being, who could claim forgiveness, because "she knew not what she was doing," had assisted in the work of reclamation.

In no other part of the world is the Red Cross Society so perfectly organized or so efficiently equipped for rendering service to the sick and wounded of the army and navy in the time of war, and in the time of public calamity to the people, as when earthquakes, eruptions, inundations, hurricanes, shipwrecks, railway disasters, etc., occur. The society owns two hospital ships, which are placed in service to take care of the sailors, and are also used for transportation of the sick and wounded of both systems of the military service,—army and navy. During times of peace these ships are leased to a transportation company, subject to immediate release from this service when needed. The revenue received in this way contributes to the building of other hospital ships. The store-rooms of the society are filled with articles and appliances which may be needed in the performance of the most important duties of those in charge of the work of the society in the field or on board of the hospital ship.

An Imperial prince is the honorary president of the society, and the membership is 900,000, making it the largest in membership in the world and, as well, the richest. The income in 1903 was over 2,965,300 yen or $1,482,650. A large corps of surgeons and trained nurses are ready to report at short notice, and when they are on duty are under military control.

A card of introduction to Baron Hashimoto, one of the retired surgeon-generals of the Imperial Japanese army, and very active in promoting the work of the society, opened the doors of the hospital to me and gave me the pleasure of meeting him. A lady friend, Miss Annie West, a missionary of twenty-five years' noble service in the calling she had chosen for her life's work, who, during the Russo-Japanese war, had rendered such faithful and useful services in the hospital as to commend her to the Empress as worthy of an imperial decoration, which she received, was my guide through the hospital, in company with members of the staff of resident and visiting surgeons.

Japan has a well-equipped school for the instruction of its military medical officers. Young graduates in medicine, who desire to enter the military service are received after passing the physical examination required, into this school. They are placed under military discipline and are instructed in their duties as officers of the medical service. At stated times all of the surgeons in the military service must take post-graduate courses, covering a period of four months, in laboratory instruction and in clinical demonstrations.

Massage, the practice of which is of such value in medical and surgical conditions, is not only employed in the hospitals, where it is given by the trained nurses, but is practiced generally among the Japanese people. During the night, blind masseurs and masseuses, feeling their way through the streets of the towns and cities, with their staves striking upon the stones in rhythmical movements, accompanied by the sounds made by their wooden clogs, attract the attention of the residents by a plaintive call or a peculiar whistle. Called into the houses they administer massage, charging a trifling fee for the service rendered, thus making it possible for the poorest class of people to enjoy the benefits of a "rubbing." The "riksha" puller, after a day's labor, equal to that performed by a horse, indulges regularly in this method of treating stiffened joints and exhausted muscles. So with the coolie whose labor is so arduous and unremitting. The opulent merchant uses it as a luxury, and needful frequently as a stimulating fillip to a sluggish condition of the superficial blood movement of the trunk and extremities.

It is interesting to know that massage was brought into Japan by the Malays at the time of predatory invasions, when they left not only some of their peculiar customs, but gave, it is believed, by racial intermingling, ethnologic types.

Bathing is universally indulged in by the Japanese in water, the temperature of which is from 110° to 125° Fahrenheit. The bathtub is usually built in the form of a tank made of wood, varying in size according to its uses in the home, inn, or public bath house. The water is heated in a very primitive way by the introduction at one end of the tank of a small stove. Formerly in cities, as well as in villages in the provinces, promiscuous bathing of the sexes, devoid of bathing suits, was the custom; lately it has been forbidden in the cities, but is still practiced in the country districts. In the villages the tank may be placed on the sidewalk in front of the houses, on the porch, or in the open space about the house. In the absence largely of running water, the tank when once filled does duty for indefinite periods and to large and small numbers of persons. Soap is not used in the public baths, but is applied outside. Owing to the continuous use of the public bath, the charge, at all times very small, is decreased in proportion to the use and the condition of foulness of the water.

While the labor of the barber in Japan is not so arduous and constant as that of his colleague in China, owing to the custom which prevails there of shaving the head and arranging for the queue, it is possibly more varied in that he is called upon to render service to the female sex as well who have, when married, their eyebrows and superfluous hairs on different parts of the body removed by the razor, and their teeth blackened with the juice of the persimmon tree. In the barber shops the employees are dressed in loose, white gowns, and have placed over the mouth close-fitting pieces of gauze, which protect the occupant of the chair from exhalations which are sometimes very offensive and, possibly, dangerous.

The conditions which accompany the much-vaunted custom of bathing, whereby the Japanese claim credit for habits of cleanliness not practiced by other races of the Orient, would seem to indicate an absence of consistency in the practice, which is hostile to faithful adherence to hygienic principles and sanitary regulations.

I feel I cannot better conclude the account I have given of what scientific medicine has achieved in Japan, as is manifested in the institutions organized and conducted for the education of students in medicine, equal if not superior to many of those existing in parts of the world the people of which are disposed to boast of the great advantages they enjoy from the conditions which belong to the civilization of the West — in the great results obtained in the relief of human suffering in their well-equipped and well-managed hospitals, in their military medical schools and hospitals, in the perfect organization and conduct of the Red Cross Society — than to speak briefly of what is being done in promoting the conservation of the public health, and of the work of the Tokyo Imperial Hygienic Institute, an institution which has been designated "the crowning point and pride of medical science in Japan." A card of introduction gave me admission and permitted me to spend several hours in the company of the founder and director in charge — Professor Kitasato, a most accomplished scientist, — and his assistants, who afforded me every opportunity to inspect the institution and learn of its work. After graduation in Tokyo, Professor Kitasato went to Germany, where he became a pupil of Professor Koch, and gave seven years and a half to work in his laboratory. Endowed with a gifted mind, and an untiring worker, he soon gave evidence of his scientific attainments, accomplishing discoveries in bacteriology which had escaped the efforts of his learned master, notably the discovery and elaboration of a method by which he obtained a pure culture of the tetanus bacillus. Soon after his return to Tokyo, on the completion of his studies in Germany, he visited Hong Kong, China, where, at the time, the plague prevailed. His study of the disease enabled him to make a great contribution to medical science in the discovery of the bacillus pestis, or plague microbe. The Hygienic Institute is a government school of instruction and is supported by an Imperial appropriation. A small tuition fee is received from the students, some eighty in number, who are graduates in medicine and physicians engaged in practice throughout Japan. The course of instruction extends over a period of four months and is devoted entirely to laboratory and research work. It is essentially a school of preventive medicine. Associated with the work of the institute, and under the direct control of Professor Kitasato, is a laboratory for the preparation of serums and anti-toxins for infectious diseases, including a long list, a station for the manufacture of vaccine lymph, a hospital for the treatment of patients suffering from acute infectious diseases, and a farm on which there is a colony of lepers. A large number of animals of various kinds are kept to assist in the preparation of the serums and in the research work of the laboratories, among them two hundred horses, and a number of heifers, dogs, monkeys, rabbits, guinea pigs, etc. I witnessed the operation of venesection performed upon a horse which had been infected with the plague bacillus, the blood being used for the purpose of making the prophylactic serum. The leper colony is established on a farm a few miles distant in the country, and contains about fifty patients, men and women, suffering from the two forms of leprosy, the anesthetic and tubercular, in various stages of development. Professor Kitasato hopes, by the opportunity thus afforded him in the collection of patients, to study the disease and discover a remedy for its cure.

In the Orient, Japan takes the first place in all that relates to the adoption and cultivation of modern scientific methods in medicine. That this is so, and that it has been done, is, I think, easily understood when the character of the people and their conditions of life, which have existed for ages under the feudal system, are taken into consideration. From under this system the continent of Europe emerged and gradually acquired the conditions of life, social, intellectual and political, which founded and have given character to Western civilization. It is not so with China, with the many ages of her civilization and modes of government, nor with India under her former or present mode of government. Of all the countries of the Orient, Japan has the most perfect and extended system of education, from the kindergarten through the grammar and high school to the college and university. Education is compulsory, and the school and college training is such as to fit her citizens for diversified callings and professions. In Japan, religion does not exert the all-absorbing control as in China, and especially in India.

On completing my sojourn in Japan, I journeyed to China, stopping *en route* at Kyoto, Kobe and Nagasaki, in Japan. Hong Kong, China, was my destination, and there, through the courtesy of friends in providing me with letters of introduction, I was enabled to visit the hospitals and obtain some knowledge of medical matters. It was not a very fertile field for observation, as the city is a British concession, and is given over almost entirely to the purposes of trade. Hospitals and health offices are in the hands of English physicians and are conducted in the same manner as in the mother country. I soon learned there, as in other cities of China I visited, that outside of the few hospitals and fewer medical colleges connected with them, under British or American control, modern medical science did not have a very firm foothold in China. In the empire, to a large extent, it did not exist. For some years there has been associated with the work of the missionaries medical care and treatment of the sick among the natives. In Canton I had the opportunity, as a guest of Dr. Mary Fulton, who has founded a medical college for the instruction of Chinese women, and a hospital for women in connection with it, to learn of what has been done in this direction. The college and hospital are conducted in harmony with the work of her brother, the Rev. Dr. Fulton, a missionary of twenty-five years' experience in this field. There is great need for educated foreign and native women physicians in China, and Dr. Mary Fulton is to be highly commended for the important work she has undertaken. In the interior the conditions of life are such as to make the practice of medicine a very difficult and arduous task, attended in some instances by danger, as was made manifest in an experience related to me by Dr. Fulton. On this occasion she was in attendance upon a case in a miserable hut, the single room of which contained not only the human family, but all of the domestic animals. The pigs, for convenience and supposed safety, were placed upon an elevated platform occupying a corner of the apartment. At midnight, during her lonely watch by the bedside, a large tiger gaining admission through the entrance, leaped upon the platform, seized an unwilling pig and escaped with it into the jungle.

Chinese girls are in constant danger of kidnapping for the purpose of subjection to immoral lives, to prevent which they are carefully guarded in their homes and in the schools which they may attend. These buildings are placed in a compound, as it is called, a place of varying size, surrounded by a high wall, and the entrances are protected by strong gates, with a watchman to guard them. Married women are not exposed to the danger of kidnapping, and in some cases the girls contract marriage at early age so that they may obtain their education unmolested.

Mrs. Butler's School for Girls, in which there are some two hundred, is an institution which is doing excellent work in the education of Chinese girls, some of whom take up work in the missionary fields when they have acquired a medical education. I found also much interest in a visit to the Canton Hospital, which was opened, I think, in 1835 by Dr. Kerr, a missionary. This hospital has had a place in the records of surgery for many years by reason of the large number of cases of vesical calculi operated upon by Dr. Kerr. The collection of calculi in the museum contains hundreds of specimens, and they present many points of interest in character and size.

On the day of my visit I witnessed two operations by Dr. Todd, in charge of the hospital, and Dr. Peck, United States Navy, in which calculi of large size were removed by the lateral method. Chloroform was the anesthetic agent used, and I was told that it was given freely to Chinese patients without danger. Also that recovery from operation was the rule, Chinese patients not being very susceptible to shock from operations or septic conditions. In the wards I saw patients lying on boards without mattresses, and simply a blanket for covering, which formed part of the ancient wooden bedsteads, with openings to permit the urine to pass to a receptacle on the floor. On all sides there were evidences of the lack of the employment of modern methods in hospital conduct, owing probably to the want of sufficient means.

In the hospital I had the opportunity of examining the small feet of a woman upon whom abdominal section had been performed. The small feet are produced by the process of "binding" the feet with tight bandages and in this way preventing their growth. It is a cruel operation and is now forbidden by edict. It was done by the rich families who regarded it as a mark of distinction, indicating their position in the social world. In the examination I made, I found it very difficult to trace the outline of the bones of the tarsal and metatarsal regions, while the phalanges appeared to have undergone such atrophic changes as to make them quite indistinguishable. I was glad to learn of the recent establishment of an Insane Hospital in Canton, accomplished largely through efforts of the missionaries. Heretofore, I was informed, those suffering with insanity were put to death. The organization of a hospital for their care and treatment is a gratifying evidence of progress, and of the proper appreciation of scientific medicine.

In Canton, sanitary regulations are not enforced and the foul air and filthy streets are a constant menace to the public health. The smells are rank, and make a lasting impression upon travelers who visit the city.

In marked contrast to the conditions which exist in Canton, the traveler sees much in Shanghai which gives evidence of the influence of Western civilization, in the palatial modern buildings, hotels, clubs, hospitals and many charitable institutions. It must be said, however, that the Chinese part of the city, containing within the ancient walls over one million inhabitants, still preserves the characteristic features and conditions of a Chinese community, undisturbed to any great extent by its juxtaposition to the foreign part of the city, which is occupied by the representatives from every part of the civilized world, — official, commercial and religious, — numbering some six thousand people. There are four hospitals, one, the Shanghai General Hospital, is the largest and has a capacity of 130 beds. It is conducted exclusively for the treatment of foreigners and is in charge of the Sisters of Charity of the Order of Saint Vincent de Paul. It was opened in 1867, and contains private rooms and wards which may be occupied by patients who can pay a small charge and receive medical treatment free. In the private rooms, the charge is one " tael " (one Mexican dollar) per day. A generous patronage makes the hospital self-supporting and gives each year a very satisfactory surplus. The remaining three hospitals are Chinese, two being in the charge of missionaries; one was established forty years ago and has on its staff foreign and Chinese physicians and surgeons. In this hospital, Dr. N. Macleod, a graduate of the University of Edinburgh, one of the most prominent foreign physicians in Shanghai, introduced in 1877 aseptic methods in surgery. Through the efforts of Dr. Macleod and the foreign physicians, much has been done to develop scientific medicine and promote the conservation of the public health in Shanghai, the influence of which is felt in some directions in the middle and northern parts of the empire. A municipal health officer was appointed thirty years ago. Over five years ago a bacteriologist was chosen and the manufacture of calf lymph begun. Vaccine lymph is sent from this station to the interior of China and is distributed to foreigners and natives. The establishment of a Pasteur prophylactic laboratory for the treatment of cases of hydrophobia gives gratifying evidence of progress. For a number of years a lock hospital has been in operation where Chinese prostitutes undergo weekly examination and treatment. Within a few years this has been incorporated with an isolation hospital for the Chinese. An insane and isolation hospital have been built for the treatment exclusively of foreigners; laundries, dairies and cattle; meat, fish and game shops are under municipal supervision. The slaughter of cattle, except in the public " abattoir," is forbidden. All night soil is removed daily and used for fertilizing purposes. Some of it, Dr. Macleod thinks, through the agency of myriads of flies which exist, returns to the kitchen and taints the food, producing a large proportion of the alimentary canal disorders, and possibly some of the cases of enteric fevers. Among the epidemic diseases, beri-beri and cholera occur quite regularly in the late summer and autumn. Amongst the Chinese it is thought tuberculosis does not prevail to the same extent as in the white races in other parts of the world. With the exception of acupuncture, which has been very generally practiced among the Chinese for ages, the native physician does not undertake surgical operations. As a result, the hospitals in charge of foreign medical men receive a large number of surgical cases. To the Canton Hospital, stone cases come from very distant parts of the empire, the hospital having for many years enjoyed a reputation for the successful treatment of these cases. The same may be said with regard to tumors involving various organs, and parts of the body, some of them attaining great size. In considering the state of modern medicine in China, it is necessary to bear in mind that it has reached its highest development in those cities in which there is a large foreign population, comparatively speaking, which demands its practice, among other conditions of Western civilization. In order that it shall permeate the interior of the empire and have a recognized position throughout the country, it is necessary that the system of education shall be changed so as to be in harmony with that in Europe and America, or even that of Japan. Already an educational movement has been started in this direction, which will eventually accomplish the desired result. Throughout the Orient, education has been the great lever, with which countries have been raised to the appreciation of their great, but dormant power. Japan has come to its full realization. China is awakening, and India, restless under foreign dominion, is cherishing, through its educational system, aspirations of nationalization.

(To be continued.)

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MODES OF INFECTION IN TUBERCULOSIS.

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Before entering into consideration of the modes in which the tubercle bacillus gains access to the body, a brief review of the essentials of our knowledge of its source and distribution may not be out of place. This bacterium is not ubiquitous, as some would have us believe, but, on the contrary, owing to its vital characteristics and necessities, cannot in nature multiply outside the bodies of man or animals, where only it finds the conditions of soil, temperature, etc., requisite for its growth and development.

In the vast majority of instances of human infection the bacillus has also a human origin, being derived from the various organs or parts of the body, which may be the seat of tuberculous disease. In consequence of the relatively much greater prevalence of pulmonary tuberculosis and the large amounts of sputum discharged in such cases, sputum is the chief source of the infecting material. In comparison other discharges containing tubercle bacilli, such as those from tuberculous affections of the skin, open tuberculosis of bones and joints, or from the intestinal or genito-urinary tract, while not to be ignored from the standpoint of prophylaxis, are of much less importance as regards the communication of the disease to others.

As concerns the tuberculosis of animals as a source of infection, it is with food products that we have chiefly to deal, especially with meat and milk. The possibility of such infection has at no time been denied, but the question of its frequency has given rise to varied opinions, and in recent years has become of renewed interest as the result of Professor Koch's announcement, at the London Congress, of the non-identity of the human and bovine type of bacillus, and of his conviction that the tuberculosis of these respective species is not readily communicated from the one to the other. In a former publication,[1] I have critically reviewed the then already voluminous evidence both in support of and against Koch's position, and any comprehensive consideration of this question is not the purpose of the present paper. Here, it is sufficient to point out the difficulty of arriving at any definite solution of the problem, until more accurate study in the isolation of cultures and experimental proof of their respective virulence affords reliable data.

Since 1902 such investigations at Koch's suggestion have been vigorously prosecuted at the German Imperial Health Bureau and also by others. Up to the present time the cases in which bovine infection has been proved to have occurred in man are but 33 in number, 18 of which have been examined at the Imperial Health Bureau, while 15 are reported by other observers.

With the exception of 4 cases of tuberculosis of the cervical glands and 1 of tuberculosis of a bone of the hand, all were instances of primary intestinal or mesenteric gland tuberculosis, and, excluding the case of tuberculosis of the hand, the evidence points to food infection and particularly to milk. When considered in relation to the well-known rarity of primary intestinal tuberculosis, and when, further, we remember that the occurrence of the latter is frequently due to infection from human sources, these facts can lead only to one conclusion, viz., that the rôle actually played by infection from animal sources in the causation of tuberculosis in man is of minor importance.

Turning, now, to the modes of infection, these may be distinguished in three groups: infections of directly accessible surfaces which may be termed local or contact infection; infection through the air by inhalation; and infection through food by ingestion.

To the group of local infections belong all cases of skin tuberculosis and the majority of the primary cases of tuberculosis of the mucosa of the several orifices of the body. In numerous instances in which contact infections could be traced to their source, the infecting material was known, or was afterwards shown, to have had a tuberculous origin, and, as a rule, there was an abrasion or solution of continuity, either already present or occurring at the time of infection. In these cases the tendency is for the disease to remain localized unless in young children, in whom the contrary is true as is shown by cases of tuberculous infection during ritual circumcision, when generalization appears to be frequent. Thus, of 10 such cases reported by Lehmann,[2] 6 of the children died of basilar meningitis, 3 became scrofulous and 1 died of diphtheria.

With the occasional cases of accidental infection of the hands at autopsies of tuberculous subjects all physicians are familiar. The classic case of Laennec, who died of phthisis, has been thought to have had some relation to such a local infection acquired twenty years before. Spitzer[3] records the case of a man employed in the pathological institute at Vienna, who presented first a local infection on the hand and later apical catarrh which the author considers an extension by blood or lymph paths from the local process.

That one may too hastily accept an actual relation between a local infection of this kind and the subsequent manifestation of pulmonary tuberculosis appears from the following case which came to the notice of the writer. The patient, a physician, wounded his finger while dissecting, after which a small tumor developed at the point of injury. The corresponding axillary glands became involved. No histological examination was made, but in the cases of two other students, who cut themselves while dissecting the same body, like lesions developed in which tubercle bacilli were found.

Two years later there occurred for a time occasional bloody expectoration. It was not until nearly ten years after the local infection that symptoms again appeared, at which time there were a few tubercle bacilli in the sputum and evidences of moderate infiltration of the pulmonary apices. The patient was of good physique and robust development and the evidence in favor of extension of the local infection to the lung would seem complete, were there not a history in childhood of known exposure to infection from his mother, who died of tuberculosis.

Cases of local infection after piercing the lobule of the ear for earrings, after the use of an infected hypodermic syringe, after tattooing and after similar slight wounds are to be found in the literature. Bruns[4] cites the instance of a consumptive, who used injections of morphine upon himself, who soiled the needle and also the point of injection with his saliva and who was known to have tubercle bacilli in his sputum. Kœnig[5] reports the case of a physician who used morphine and cocaine habitually, and who carelessly employed upon himself, without cleansing, the same syringe which he had used upon a tuberculous patient.

Occasional tuberculous infection of surgical wounds occurs. Instances are recorded by Legg[6] after tracheotomy; by Czerny[7] after skin grafting; by Schuett[8] after injury to the prostate during catherization; and by Collins[9] and Knapp[10] after iridectomy and operation for squint.

It has frequently been both asserted and denied that tuberculosis may be conveyed by vaccination, but vaccine, the lymph from tuberculous cattle, and the contents of vesicles in the arms of human subjects have been repeatedly examined for the presence of tubercle bacilli with negative results. The examinations and opinions of Meyer,[11] Acker,[12] Biedert,[13] Peiper,[14] Cornet[15] and many others contradict the occurrence of the transmission of tuberculosis in this manner. The few seemingly positive cases which have been published, like those of Howe[16] and the recent case of Binswanger,[17] may have been due to infection from relatives, in one case a phthisical mother and in the other a brother. Such accidental infection may follow any slight wound when the environment is dangerous, because of the presence of virulent tubercle bacilli. Even in arm to arm vaccination, if the person furnishing the lymph were tuberculous, the tubercle bacilli must be present in the blood before they can pass into the contents of the vaccine pustule, and even then the probabilities would still be against infection, unless present in considerable numbers.

The mode of infection by inhalation is the one in which all the older authors believed, who held consumption to be contagious.

It would be of historical interest to review the numerous opinions advanced from the time of Aristotle to more recent times, but this is impossible for lack of space. Here the subject may be taken up with the introduction of experimental methods by Villemin and others whose work demonstrated that the disease could be communicated by inoculation, but did not at once show the ordinary modes of infection for animals or man. The corpuscular nature of the virus, while suspected, lacked the basis of proof, these earlier experiments showing only that the virus was a living one, that it was contained in the diseased tissues, in the products of their disintegration, and in secretions and excretions from tuberculous surfaces. The examinations of Traube,[18] Zenker[19] Kussmaul and Schmidt[20] and others which had been made up to this time had left no doubt of the penetrability of the pulmonary tissues by fine particles of coal, stone, iron and ordinary dust.

Hoffmann[21] and Schweninger[22] appear to have been among the first to produce tubercle in the lung by inhalation, the former using a suspension of caseous material and the latter a spray of a solution of phthisical sputum.

About ten years later Tappeiner[23] exposed dogs to sprayed sputa and found tubercles in the lungs in as short a time as three weeks after the first inhalation. His results were confirmed by Bertheau[24] in 1880, and Cohnheim[25] likewise insisted that infection occurred by inhalation. Further confirmation by still others was soon forthcoming, and meanwhile Slavjansky[26] and von Ins[27] had again shown that the pulmonary mucosa and alveolar surfaces were permeable and allowed the passage of corpuscular elements to the bronchial glands. This fact was firmly established by the extensive experimental studies of Arnold,[28] and Orth[29] states that Soyka confirmed the claim of Slavjansky that coal dust could even pass the lymph glands and reach the general circulation.

With the discovery of the tubercle bacillus, the presence in sputum of a corpuscular element was shown to exist, but its presence in the dust of the air and its deposition when inhaled in the air-passages remained still to be proven.

Concerning the place of deposit of inhaled dust Hesse[30] has shown that when dust is passed with an air current through a tube it is chiefly deposited at the proximal end, and that the deposit decreases in amount according to increase of the distance, and this the more so when the passages are divided, tortuous, crooked or angular, while also the amount deposited corresponds with the volume and course of the air current, as shown by Paulsen and especially by Kayser.[31] The latter studied the deposit of inhaled dust with great care and found it chiefly upon the anterior portions of the nasal septum, and when the inhalation was continued for longer time, also along the superior divisions of the nasal cavities, while the floor of the nose, the inferior meatus and lower edges of the inferior turbinated bones remain nearly free. In the oro-pharynx he found that a deposit may occur on the posterior wall, if the amount of dust inhaled is large.

Kayser's experiments show, as one would naturally expect, that a short exposure to the inhalation of dust may not be sufficient to cause its deposit in the lungs, while with prolonged exposure in a dust-laden atmosphere, this could be the case.

The early experiments by Williams, who demonstrated tubercle bacilli in the air of a ventilating shaft of a ward occupied by phthisical patients, speak for inhalation infection and for dust as the medium of conveyance. However, Cornet[32] was the first to supply unobjectionable proof of the presence of tubercle bacilli in dust of wards and rooms occupied by consumptives. He obtained specimens of the dust from surfaces where it collected slowly, and which were not directly exposed to soiling with the patient's sputa, using sterile sponges for the purpose. The sponges were then washed in sterile broth and with this intraperitoneal inoculations were made. Infectious dust was found in 15 of 21 hospital wards, and in about half of the number of specimens from the private rooms of consumptive patients. Of 388 animals inoculated with the dust from suspicious places, 59 became tuberculous, and in every positive result it can be shown that the room had been occupied by phthisical persons.

Cornet's experiments have been confirmed by almost all others and more particularly so when the consumptive occupants were more or less careless with their expectoration. When ample precautions had been employed no tubercle bacilli were found, as shown by Hance,[33] who examined the dust from 17 rooms of the Adirondack Cottage Sanitarium, and by similar experiments made on two occasions at the Winyah Sanitarium.

Direct inhalation of tubercle bacilli suspended in fine spray or droplets was again brought to prominent notice by Fluegge,[34] these droplets being projected from the mouths of consumptives by coughing and also by speaking, and remaining suspended in the air for hours.

Waldenburg [35] called attention to this danger in 1869 and so also did Koch in connection with his original communication on the discovery of the tubercle bacillus.

In 1888 Buchner and Enderlen [36] demonstrated the danger experimentally, having succeeded in causing infection by inhalation in rabbits and guinea pigs, without direct exposure to the spray. It was, however, Fluegge who caused a more careful study of the subject, and, on the whole, the work done under his direction in the Hygienic Institution in Breslau has been confirmed.

Not all consumptives project droplets of an infectious nature; nor has this been claimed by Fluegge and others, who have written on the subject. There was at first a tendency to attach the chief importance to droplet infection and this caused Cornet [37] in 1898 to repeat his experiments with dust. On this occasion he exposed 48 animals to its inhalation by the sweeping of a carpet, upon which tuberculous sputum had been allowed to dry, thus exactly imitating what could happen under ordinary conditions. The animals were exposed at varying heights above the carpet, and infection occurred in all but two, a percentage much greater than has been shown by any one for droplets.

Cornet [38] also made two series of experiments with reference to droplet infection, one with 18 patients who had tubercle bacilli in their sputa, by coughing with a petri dish held before the mouth. Infection of a corresponding number of guinea pigs with the washings from the dishes showed positive results in two. In the second series of 15 patients, all in an advanced stage, the results were all negative.

Similar experiments have been made by Ziesche,[39] who claims to have been able to show tubercle bacilli in droplets in as high as 78.9% of patients on repeated examination, though in his first examinations his results were positive in only 12.5%. · Boston [40] also thus found tubercle bacilli in the sputum droplets in 38 of 50 patients.

The distance to which such droplets are projected is usually stated to be about three feet, although Engelmann [41] found it one and a half meters, while Bing found bacilli at a distance as great as 3 meters and Fluegge found that under artificial conditions they could be projected even as far as 10 meters.

The degree of danger attaching to droplet infection has thus been variously estimated. but the writer is not inclined to consider suspended droplets as the most important source of infection. Such droplets do not remain suspended indefinitely, and most of them must gravitate immediately. It is when deposited in the form of dust or from dust containing tubercle bacilli that the greatest danger exists, as is evident from Cornet's numerous and complete experiments.

On the other hand, the danger is not to be minimized, as, for instance, by Jousset who, according to Baumgarten,[42] believes that droplet infection is not of practical importance, and by Baumgarten himself,[43] who not only says that he has not been able to convince himself that tuberculosis can be communicated by inhalation of droplets, but, as is well known, doubts the occurrence of infection by inhalation altogether.

The foregoing general consideration of infection by inhalation has been intended to show that the tubercle bacillus is liable to be inhaled with air contaminated by infectious dust or minute sputum droplets.

There remains still to be dealt with infection of the digestive tract by ingestion of tubercle bacilli.

In referring to the sources of infection in the introductory pages of this paper mention has been made of that which is actually known at present of the danger from food products derived from tuberculous cattle. It may be repeated at this juncture that the few cases of human tuberculosis definitely proven as of bovine origin, with a single exception, were instances of localization in the digestive tract, or in regional lymph-nodes, and it should further be remarked that in only one of them had the disease become generalized.

When Professor Koch presented his communication before the London Congress in 1901, he was inclined to accept practically all cases of primary intestinal tuberculosis as evidence of bovine infection. But the subsequent studies of the subject have shown that in the majority of such primary cases, the tubercle bacillus isolated from the intestine or from the mesenteric glands was of the human type. The access of the latter to the digestive organs becomes, therefore, of equal or greater importance, especially on account of its greater virulence for man and the consequently greater danger of generalization.

It is, of course, possible that food may serve as a medium for infection with the bacillus of human type, but the probability that enough bacilli are introduced by its contamination with infectious dust or droplets in its preparation by consumptives, or that flies are likely to play an important part by transferring tubercle bacilli from sputum to food, would seem slight, and especially so if alimentary infection of the human subject conforms to the experience we have with the lower animals, in which enormous quantities of tubercle bacilli must be fed to produce a positive result.

That the human subject is not an exception in this respect is indicated by the infrequency of primary infections of the intestine, and, moreover, by the clinical fact that auto-infection of the digestive tract is, as a rule, an occurrence deferred to the advanced stages of pulmonary phthisis, whereas it is inconceivable that tubercle bacilli should not be swallowed almost continuously over long periods of time, from the first appearance of sputum, and in comparatively large numbers.

Such clinical and experimental observations show that there is normally a marked resistance on the part of the digestive tract to tuberculous infection.

Of greater importance for primary infection of the digestive tract appears the inhalation of infectious dust and its deposit in the pharynx or the mouth, whence it is swallowed with mucus and saliva, and with food and drink. If, as Kayser and others have shown, the deposit of dust or of bacteria in the air passages diminishes with the distance from the point of entrance of the air, then we cannot avoid the conclusion that the number of tubercle bacilli which can reach the lower digestive tract by swallowing must be greatly in excess of that number which can pass below the epiglottis, and that, therefore, but for the difference between the respiratory and digestive organs in the number of tubercle bacilli required for, or the greater resistance which the latter oppose to, successful infection, we should find the digestive tract the most frequent port of entry and consequently the most frequent seat of primary infection.

The actual frequency of primary infection through the digestive tract is in fact rather difficult of determination and the figures available from hospitals and pathological institutes must be taken with caution, if general deductions are to be made from them. Such caution is essential because of the different interpretations of autopsy findings as to what should be accepted as a primary case, and also as to what degree of evidence one should require in ascribing to tuberculosis alterations found, for example, when there is merely a cicatrix in the mucosa or calcareous or fibroid changes in a mesenteric gland or both. Such cases are rejected by some authors, inasmuch as other causes could have produced them. Even caseation without demonstrable tubercle bacilli is considered insufficient proof by others who demand the presence of histological tubercle or caseation with bacteriologic or experimental confirmation.

These varying interpretations naturally influence the statistics of frequency, but under all circumstances we must still look upon primary intestinal tuberculosis as a very rare autopsy finding.

Fuerst,[44] two years ago, tabulated all the undoubted cases which he found recorded in German literature and finds their number 147, representing 100 children and 47 adults.

In British and American literature, inclusive of all the more important journals and publications, the writer finds 86 instances with autopsy in which the infection appears to have been primary.

The few hundred authentic cases, with addition of the few undoubted cases of primary tuberculosis of the stomach, do not represent the frequency of infection through the digestive tract, any more than do the cases of undoubted primary localization in the lung represent the frequency of infection by inhalation. However, if it is fair to include with ingestion tuberculosis the localizations in the mesenteric glands, it is equally fair to credit the localizations in the bronchial glands to infection by inhalation, although either group of glands may be reached by way of the blood, and may represent a localization, secondary to a tuberculous infection in the opposite system.

As the matter stands at present, it seems impossible to arrive at even an approximate determination of the frequency of primary infection through the digestive tract. The only conclusions consistent are that it undoubtedly occurs, that it is more frequent in children than in adults, and that the origin of tuberculosis in the abdominal cavity appears to be less frequent than it is in that of the chest.

Before leaving the consideration of infection by ingestion, reference must be made to the unique contention of Behring[45] that practically all tuberculous infections in man are due to feeding the milk of tuberculous cows to nurslings as a substitute for the mother's milk. Behring has even gone so far as to announce that not a single case of epidemiologic human infection has been proved. Although he holds the bovine tubercle bacillus to be more virulent for man than that of human origin, he apparently contradicts himself by asserting that having passed through the infantile intestinal mucosa, the bovine bacillus lies dormant in the mesenteric glands, in most instances without even causing tissue alterations, until with the physiologic changes of puberty or after intercurrent affections it is in later years awakened to destructive activity.

The relative frequency of human infection from bovine sources in the light of our present more exact knowledge, I have already outlined. It will suffice to add here that Behring's theory has found but scant support and by practical observers is generally considered to be wholly untenable.

It is fortunate for practical prophylaxis or treatment that the relative frequency of the different modes of infection is not of great importance.

Regardless of the manner in which the bacillus has gained access, so long as there is no evidence of other localizations in the path taken, the physician can but treat the local affection. If other parts and organs are likewise the seat of tuberculous disease, he must include them in his plan of procedure, and this he does irrespective of their secondary or primary nature, or of their being independent infections. As for the surgeon who deals entirely with local processes which are accessible to his interference, he, like the physician, can take into consideration only such other localizations as are manifest or recognizable by diagnostic methods, apart from the mode of infection by one or the other route. The presence and stage of advancement of tuberculous affections of other parts may determine him in his prognosis and in the methods he adopts, but when dealing with localized disease, it is of the greatest importance for him to understand the paths of extension from one system to the other, as, for example, in the genito-urinary organs.

While the writer is inclined to attach the greatest significance to inhalation as a mode of infection, a contrary view that the digestive route is the more frequent alters nothing. We have the evidence before us, much of it unquestionably proven, to guide us in our efforts, both in treatment and in that which is of greatest importance — prevention.

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COMPOSITION OF LARGE CURDS IN INFANTS' STOOLS.

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It is generally admitted that curds in infants' stools vary in composition; there has been much discussion as to whether they are composed of casein or soaps. Knöpfelmacher [1] published in 1899 an analysis of curds, but did not state whether they were collected from a single case or not. Selter [2] (1906) reported the analysis of a curd from a single case. In neither analysis was an attempt made to estimate the neutral fats, fatty acids and soaps. In Knöpfelmacher's curd the albumin was lower and the fats higher than in that of Selter. Nothnagel [3] believes curds to be casein; Leiner [4] believes them closely related to casein, while Marfan,[5] Heubner and Knöpfelmacher [6] believe the ground substance to be neither casein or paracasein, but a substance of different origin.

The author has been for some time making a study of the chemistry of curds in infants' stools. This work has demonstrated that curds found in infants' stools belong to two classes: large curds which contain a large per cent of nitrogen and a low per cent of soaps; and small curds, which have a low per cent of nitrogen and large per cent of soap. This paper is a record of the study of large curds.

The curds under consideration are large masses, weighing from ¼ gm. to 1.5 gm., from the size of a bean to that of a peanut, round or oval, with a smooth or indented surface, and of firm, tough consistency. On cross section they are at times stained by the intestinal secretions on the outside only, and at other times stained more or less uniformly throughout. The color varies from white to dark yellow. When broken up and shaken in water they sink to the bottom, and in this way they can be differentiated from ordinary fecal matter and mucus which float suspended in the liquid. Under the microscope a curd consists of a fine, white, shiny network, in which may be seen fat drops of various sizes. These fat drops take on a beautiful reddish color when stained with Sudan III. On pressing the cover glass down these drops move, but return to their original position when pressure is removed, suggesting that they are bound by the shiny network. Some curds show very many large fat drops, while others show only very minute ones. In some curds very few bacteria, practically no calcium soap or bile coloring matter, are to be seen, while in others there are moderate amounts. The striking part of the picture is the clear white network. This may be easily confused with the magnesium soaps unless one is familiar with its appearance. It may be differentiated, however, by warming with acetic acid, which causes the soaps to turn into fat drops, and does not change the appearance of the former.

METHODS.

Material was obtained at the Infants' Hospital; through the kindness and aid of Dr. John Lovett Morse and the nurses of the hospital, this work was made possible. The curds were collected in individual glass bottles. Each curd was washed in cold water weakly acidulated with acetic acid. It was shaken up and freed mechanically from intestinal secretions and mucus. It was weighed and then broken up in a mortar with 95% alcohol and transferred to an evaporating dish, dried at a temperature of 43° C. to 45° C., and transferred to a dessicator, where it was dried to constant weight. The per cent of nitrogen was determined by the Kjeldahl method (.5 gm. being used for each determination when possible). The method of determination of the total fat, and of the total neutral fat, fatty acid and soap is practically the adaptation of Fr. Müller's method, used by Drs. Hewes and Adler.[7] Five-tenths gram of dried residue is placed in a paper capsule and boiled for one half hour in absolute alcohol, using a reflux condenser. The capsule is then transferred to a Soxhlet tube and extracted eighteen hours with chloroform. The combined absolute alcohol and chloroform extracts are evaporated to dryness, and the residue from each extracted with petroleum ether. The petroleum ether is then filtered and the filter paper thoroughly washed with warm petroleum ether until the wash ether shows no trace of fat, by evaporation on paper. The filtrate is evaporated to constant weight. This weight is recorded as representing the quantity of neutral fat and fatty acid in ½ gm. of dried stool.

The dishes used for the evaporation of the alcohol and chloroform extracts from the first extraction are washed with hot 3% hydrochloric acid alcohol. The filter paper, used for filtering the petroleum ether in the first step, is added to the capsule, from which the neutral fat and fatty acid have been extracted, and boiled one-half hour under a reflux condenser in a 3% HCl alcohol mixture, to which the HCl alcohol washing from the dishes of the first step is added. Next, it is boiled one half hour with absolute alcohol, under the reflux condenser; the combined capsule and filter paper is then transferred to a Soxhlet and extracted for eighteen hours. The hydrochloric acid, absolute alcohol and chloroform extracts are evaporated separately, the residue in each is taken up with warm petroleum ether, and the combined petroleum ether extract is filtered. The filtrate is evaporated to constant weight, and the weight obtained represents the amount of soap in .5 gm. of the dried stool.

Neutral fat and fatty acids present are dissolved in about 5 ccm. each of sulphuric ether and absolute alcohol. The acidity of the mixture is determined by titration against decinormal alcoholic sodium hydrate solution, using phenolphthalein as an indicator. The amount of fatty acid is determined by multiplying the number of cubic centimeters of the decinormal sodium hydrate solution used by 0.0284 (1 ccm. $\frac{n}{10}$ sodium hydrate = .0284 gm. stearic acid.[8] By subtracting the quantity of fatty acid thus determined from the fatty acid plus neutral fat previously determined, the quantity of neutral fat is estimated. I should like here to express my thanks to Dr. Henry Hewes and Dr. Carl Alsberg for valuable suggestions in this work.

A record of the nitrogen, total fat, neutral fat, fatty acid and soaps may be seen in the table below.

The curds examined in the table below were usually those obtained from one stool. The curds of Killoway 1 and 2, were obtained two days apart, and those of Kimmel 1, 3 and 5, were obtained respectively on Feb. 23, Feb. 26 and March 6, from the same child. These figures show a low fatty acid and soap content and large variation in the neutral fats. The fat-free milk used in the Infants' Hospital contains only traces of fat. The per cent of fat in skimmed milk varies; whole milk is reckoned as containing 4% of fat. The striking point in these figures is the fact that the neutral fat in the curd increases with the fat in the milk. This would seem to indicate that when a curd is formed in the stomach the coagulated casein entangles the milk fat as neutral fat. As this curd passes through the digestive canal, only a limited portion of it, probably the outside, is acted upon. Thus, only a small part of the fats are changed into fatty acids and soaps.

TABLE I — Natural Curds.

	Per cent of fat in food.	Total moist curd.	Total dry curd.	Per cent of total fat in dry curd.	Per cent of neutral fat in dry curd.	Per cent of fatty acid in dry curd	Per cent of soap in dry curd.	Per cent nitrogen in dry curd.
Killoway No. 1	Fat-free milk	1.488 gm.	.744 gm.	8.4	2.2	.8	5.4	12.0
,, No. 2	,,	5.0 gm.	1.247 gm.	7.6	4.4	.2	3.0	10.4
Harahan	,,	2.684 gm.	1.290 gm.	18.0	10.6	2.0	5.4	10.6
Kimmel No. 5	Skimmed milk	10.0 gm.	3.759 gm.	9.2	6.0	3.2	1.0	12.0
,, No. 3	,,	3.8 gm.	1.138 gm.	25.6	15.4	6.0	4.2	10.9
,, No. 1	,,	2.0 gm.	.612 gm.	29.0	21.2	5.4	2.4	10.4
Goodrean	2% fat Whole milk Barley water	5.0 gm.	.986 gm.	28.4	21.6	1.2	5.6	9.8
Robertson	3½% fat Whole milk 210 Lime water 30	5.0 gm.	1.713 gm.	46.8	36.4	4.6	5.8	7.2

With this in view, an attempt was made to imitate these curds artificially, and to determine whether there is a definite relation between the neutral fat in the curd and the fat in the milk. Five quarts of milk were furnished by the kindness of the manager of the Walker-Gordon Laboratory, comprising fat-free milk, and milk containing 1%, 2%, 3% and 4% of fat. These were coagulated with rennet, strained through cheese cloth, and the resulting curds were broken up into smaller curds, as near to the size of those found in the stools as possible. These were digested for one hour at a temperature of 98.6° F. in pepsin and .2% hydrochloric acid. The pepsin hydrochloric acid was then poured off and the curds were digested one and one-half hours with a fresh

25% alcoholic extract of pigs' pancreas, in .5% of carbonate of soda. This was then poured off and these artificial curds treated in the same manner as the natural curds from the feces.

The following table shows analysis of these artificial curds:

TABLE II — Artificial Curds.

Curds from	Total moist curd.	Total dry curd.	Per cent total fat in dry curd.	Per cent neutral fat in dry curd.	Per cent fatty acid in dry curd.	Per cent soap in dry curd.	Per cent nitrogen in dry curd.
"Fat-free milk"	40 gm.	16.988 gm.	4.0	2.8	0.8	0.4	12.2
Milk fat 1%	40 gm.	18.901 gm.	21.6	18.2	1.6	1.8	9.5
,, ,, 2%	40 gm.	11.133 gm.	33.2	30.6	1.8	0.8	8.3
,, ,, 3%	15 gm.	3.574 gm.	42.4	39.4	2.2	0.8	7.2
,, ,, 4%	40 gm.	13.694 gm.	51.0	47.6	1.6	1.8	6.0

Table II shows that there is an intimate relation between the neutral fat in the artificial curds and the amount of fat in the milk. The fatty acid and soap remain low, as in the natural curds, in spite of the lipolytic activity of the pancreatic extract used. Another fact worthy of note is that as the fat in the curd increases the nitrogen decreases. This is also true in the natural curds, and is due to the dilution of the nitrogen containing bodies of the curd by the increased amount of fat.

The statement has been frequently made that as the coagulated casein comes in contact with the hydrochloric acid of the stomach, it may form an insoluble paracasein hydrochloride on the outside.[9] To determine whether this supposed covering on the outside would retard or modify pancreatic digestion and to what extent, the following experiment was done. A quart of skimmed milk was coagulated with rennet and equal portions treated with various strengths of hydrochloric acid, both with and without the addition of pepsin. After the acid had acted for one hour at body temperature, the curds were transferred to a pancreatic extract and the rate of digestion noted.

TABLE III.

	Curd 4 gm. + Water + Pepsin.	Curd 4 gm. + 0.1% HCl + Pepsin.	Curd 4 gm. + 0.2% HCl + Pepsin.	Curd 4 gm. + 0.5% HCl + Pepsin.	Curd 4 gm. + 1% HCl + Pepsin.	Curd Size of Pea + Water.	Curd Size of Pea + 0.1% HCl.	Curd Size of Pea + 0.2% HCl.	Curd Size of Pea + 0.5% HCl.	Curd Size of Pea + 1% HCl.
After 1° digestion at 98.6°	Cube unchanged. Liquid clear.	Cube swollen. Part digested. Liquid cloudy.	Cube swollen. Liquid cloudy.	Cube same. Liquid sl. cloudy.	Cube hard, shrunken, clear.	No change.	Curd swollen. Milky fluid.	Curd swollen. Milky fluid.	Curd same. Clear fluid.	Curd shrunken, tough, firm. Clear fluid.
After 1° digestion with fresh ext. of pancreas + sod. carbonate 1%	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.	Slight digestion.
Same after two hours.	Slight digestion.	Partly digested.	Partly digested.	Nearly digested.	Digestion* complete.	Slight digestion.	Partly digested.	Partly digested.	Partly digested.	Partly digested.
Same after three hours.	Nearly digested.	Nearly digested.	Nearly digested.	Digestion complete.		Partly digested.	Nearly digested.	Nearly digested.	Nearly digested.	Digestion complete.
Same after four hours.	Digestion practically complete.	Digestion practically complete.	Digestion practically complete.			Partly digested.	Nearly digested.	Digestion nearly complete.	Digestion complete.	
Same after twenty hours.	Complete.	Complete.	Complete.			½ of original curd undigested.	Complete.	Complete.		

* By "complete digestion" is meant, the curd is completely broken up, and only a small amount of flocculent material floats around in the digesting fluid.

Instead of retarding digestion, the increase in strength of hydrochloric acid hastens it. This is contrary to what one would expect, if an insoluble coating surrounded the curds. The curd treated with water only withstood pancreatic digestion longest, and was still partly undigested after twenty-four hours, while all the other curds were completely broken up. It is well known that it is rare to find free hydrochloric acid in an infant's stomach, and that the total combined acid rarely goes over .2% (Marfan).[5] It is also known that normally the pouring of hydrochloric acid from the stomach into the duodenum calls forth a flow of pancreatic juice.[10] It is conceivable, as Dr. Cannon suggests, that the temporary absence of hydrochloric acid from the stomach withdraws this stimulus to pancreatic digestion, and thus a curd may go through the intestinal canal without sufficient pancreatic juice to digest it.

CONCLUSIONS.

Large curds in infants' stools are composed of some proteid (probably casein or one of its derivatives), which on coagulating entangles the milk fat in its meshes. The amount of fat in the curds depends on the amount of fat in the milk, and as this fat increases it replaces the proteid in the curd. The presence of large curds, which has been taken by some investigators to indicate an increase of gastric HCl, can with as great probability be interpreted as indicating a lack of HCl.

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CAMPHORIC ACID, ITS ACTION AND USES.*

BY MAURICE VEJUX TYRODE, M.D.,
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WITH the knowledge that camphor possesses a marked pharmacological action, i. e., a powerful stimulant effect on the respiratory and vasomotor centers and on the heart itself, considerable interest has been shown in some of its derivatives. One of the best known is the oxidation product, camphoric acid. For many years the latter has been considered to possess an action analogous to camphor on respiration and circulation; but besides it was reputed as an excellent remedy against pathological sweats, as those occurring in pulmonary tuberculosis.

Various theories were entertained concerning the antihydrotic action, but strangely enough practically no serious experimental work was performed to settle the question. Most authorities assumed that it paralyzed the sweat glands like atropine, but Kobert, the eminent pharmacologist, devised the ingenious theory that its action was due to a stimulant effect on the medulla, that excessive sweating in phthisis was the result of improper aëration of the blood, and as camphoric acid increases the function of the respiratory center, it overcame the partial asphyxia.

Until last year the only work upon the influence of this acid upon respiration was done by Wagener in 1886. It consisted of only one experiment, from which the conclusions were erroneous.

Fujitani performed a research on camphoric acid in 1906 and also came to the conclusion that it stimulates respiration. When examining his protocol it is easy to see that he misinterpreted his own experiments. He used the Marey tambour and drew his conclusions from the rise in the respiratory curve, which he obtained for a few seconds during and after the injections of the drug, in spite of the fact that within a minute or so, the respiration fell as low or even lower than normal. His transient rise was obviously the result of reflex stimulation.

The writer's work on respiration was performed with a gasometer connected with the trachea, and the actual amount of air respired in a given space of time was measured. From these experiments he was unable to observe any constant, significant rise in the respiratory capacity, even with the use of enormous doses. In fact, as much as eight grams failed to produce any effect in several rabbits.

The work on the circulation and isolated heart was also negative. Warm-blooded animals failed to show any symptoms and did not die after very large doses given both subcutaneously and intravenously in the form of the sodium salt of camphoric acid. Administered internally in large amounts this acid causes death from gastroenteritis and if unneutralized in herbivora, it produces acid intoxication.

In experiments where the flow of urine was observed, the latter was found increased as after any neutral salts injected intravenously.

When administered in the dose of one gram per day, rabbits weighing about two pounds showed no changes in their metabolism for periods of months.

The action on the sweat glands was studied on the paws of young cats with completely negative results.

No action was seen on frogs unless these animals received from 1-20 to 1-10 of their body weight of the drug and death occurred from general paralysis, as would happen after most neutral salts in such concentration, from the changes in the osmotic tension of the tissues.

Upon inquiry, the writer found that camphoric acid had been used by several of his colleagues [1] in the clinics for the night sweats of consumption without beneficial results. He invited some of them to test the substance again, but the results were, as a rule, unfavorable.

Since it had been employed abroad as a urinary antiseptic, he requested a surgeon [1] of genito-urinary diseases to try its efficacy. The latter obtained good results in a number of cases of cystitis with an acid urine, but no amelioration in those with an alkaline secretion.

After having performed over one hundred experiments upon animals, the author is forced to the conclusion that camphoric acid as such acts in the same order as the other organic acids, which are not decomposed in the body; that in combination as a sodium salt, which is formed in the intestines, it acts like any neutral salt, such as sodium sulphate, i. e., its ions have so little activity that it possesses only the action derived from its physical properties, "salt action." He further sees no justification in its use as a respiratory and heart stimulant nor as an antihydrotic in the tubercular night sweats. Yet it may be of some utility as a urinary antiseptic, because it may have, in common with many other free organic acids, slight antiseptic power.

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Medical Progress.

RECENT PROGRESS IN DERMATOLOGY.

BY JOHN T. BOWEN, M.D.,
AND
HARVEY P. TOWLE, M.D.

(Concluded from No. 23, p. 871.)

TEN CASES OF MYCOSIS FUNGOIDES HERXHEIMER AND HÜBNER.—(Continued.)

IN cases like one of those reported, in which almost the entire surface of the body, with the exception of the face, is affected, it will be difficult to direct the rays in sufficient quantity on every part affected.

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* A detailed report of the experiments will be published later in a pharmacological journal.

[1] The writer is indebted to Dr. John Cunningham for the clinical observations in cystitis and to Dr. Frederick Lord, of the Channing Hospital, and Dr. Holmes, of the Long Island Hospital, for clinical observations of the night sweats of phthisis.

In a case in which there is not a diffuse pruritic infiltration, but distinct tumors, these tumors should alone be exposed to the rays, protecting the sound skin in the vicinity.

In these treatments with the x-rays, the writers continually gave arsenic as well, and think that this combination of external and internal treatment was responsible for some of the quick results. The writers conclude with the statement that although evidence of the lasting effect of combined arsenic and x-ray treatment is not yet at hand, it may yet be said that this method shows a great advance in the treatment of this disease; so that we now know of a method of treating mycosis fungoides, which, when used at the proper time, will often clear up the lesions and stop the spread of the process, and which permits us to make a far more favorable prognosis than was hitherto possible.

UNIVERSAL DERMATITIS OF NURSING INFANTS.

Leiner,[12] formerly assistant in the Children's Hospital in Vienna, describes what he considers a new, peculiar dermatosis of nursing infants, which has hitherto never been described, or has not been properly interpreted. This affection is especially characterized by its occurrence solely in infants at the breast.

The observations upon which this paper is founded extend over a period of five years. Forty-three cases in all were observed, which were seen when the disease had reached its height, as a rule.

The scalp is covered with a more or less thick layer of scales, which are especially pronounced and thick near the forehead and crown of the head. The underlying skin is pretty intensely reddened. The hair is sparse, often quite wanting near the forehead and on the crown. On the forehead at the edge of the normal skin, papules covered with thin white scales may frequently be seen, as well as larger rounded plaques, which may often have arisen from a coalescence of the single papules. The face is diffusely reddened, covered with smaller and larger scales. The region of the eyebrows is especially affected. The whole trunk is evenly affected, diffusely reddened and covered with large, thick or thin white scales, which are often rolled up at the edges, which are easily detached, and then expose a dry, shiny epidermis below, which never exhibits a pronounced moisture nor vesicles and papules. There is very little infiltration of the skin. The hands and feet are not spared, the feet being more intensely affected than the hands.

The flexures offer a somewhat different picture. The skin in these places is moist, dark red, without scales, covered with a moist secretion. The glands are somewhat swollen, the mucous membranes normal.

At the height of the illness, the children are always affected with diarrhea. Somewhat less frequently there are symptoms of gastric disturbance, which are shown by vomiting shortly after food is given. The general condition of the child is not especially lowered, and there is no fever. It was noted that the eruption had its beginning in different parts of the body, but most frequently on the scalp or on the body in the neighborhood of the inguinal glands.

Of the 45 cases observed, 15 died. Why there should be this fatal ending in a certain proportion of the cases was not apparent. The intense symptoms became continually more pronounced, and the infants wasted away. In some cases, at the end, there was some rise of temperature, convulsions, and the picture of an intoxication.

Histologically, there was found to be a chronic inflammatory process, shown by an enlargement of the papillary vessels and an exudation of fluid, which was poured forth into the papillæ and the epidermis, and was followed by a parakeratosis. There was also an increased cell production in the papillary body and about the glands, and a collecting of cells in the epidermis between the horny layers. No bacteria could be found in the sections.

The whole appearance of the affection, its beginning as well as its course, points to its being an idiopathic affection of the skin, which comes nearest to an auto-toxic erythema. It seemed evident that breast-feeding had a particularly causative rôle in the production of the dermatosis.

SKIN DISEASES IN THE NEGRO.

In this paper, which was read at the sixth International Congress in September, Dr. Fox[13] presents some very interesting statistics on the subject of skin diseases in the negro. His sources of information are from all parts of the South, by correspondence with the local physicians. His statistics are partly from the Dispensary at Washington and partly from Johns Hopkins Hospital in Baltimore. The writer concedes that his work would have been of greater scientific value had it been confined solely to full-blooded negroes, which it was impossible to do.

While it is a fact that the American negro suffers more from diseases in general than does the white man, the mortality in the registration area for the negro was found to be 30.2%, while that of the whites was only 27.3%. Furthermore, it is conceded that the mortality among the negroes is increasing, while that of the whites is diminishing.

The negro's skin is not characteristically pigmented at birth, but in cases where both parents are true blacks, the deepening of color is seen within a few hours and attains its full development in about two months. The entire skin of the negro, together with the subcutaneous tissue, is thicker than that of the white, and the glandular system is more highly developed. The greater production of sweat accounts for the suppleness of the negro's skin, and enables him to endure intense heat.

The short, kinky hair of the negro is one of his characteristics, and it is accounted a fact that the negro is decidedly less susceptible to pain than the whites.

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[12] Arch. der Dermat. und Syph., lxxxix, Bd., 1 Heft.

[13] George Howard Fox: Jour. of Cut. Dis., Feb., 1908.

The negro's skin is decidedly less susceptible to most forms of external irritation. A hot sun which may severely burn the white man will not affect the negro's skin. It is said to be very difficult to blister a true negro. Fox's statistics also show a lessened susceptibility to vegetable irritants, such as poison ivy on the part of the negro race. Cases of ivy poisoning in negroes are very rare, to say the least.

It was strikingly shown by his statistics that heat eruptions are less common in the negro and that frost-bite and chilblains are more common. He considers, however, that one reason why chilblains are more prevalent in the negro is that the negroes are more exposed and more poorly clad than the white man of the South.

The statistics with regard to the susceptibility of the two races to the ordinary pus germs would show that blacks are not more subject, and probably less so, to acute circumscribed and pyogenic infections.

With regard to acne, he considers it certain that it is a milder affection in the negro than in the white, and it is also much less common.

Eczema is extremely common, although a majority of his Southern correspondents consider it to be less frequent in the negro. It is probably less severe.

All are agreed that psoriasis is a very uncommon affection in the negro. Many of the practitioners living in the South or in the tropics have never seen a case.

With regard to tuberculosis, he thinks that the negro's skin is less susceptible than the white's, although it can be shown that pulmonary tuberculosis and, to a less extent, other forms of tuberculosis are more frequent in the negro than in the white race.

With regard to syphilis, the majority of writers agree that it is more common in the black race than in the white. The question of the relative severity of the disease in the two races he finds a more difficult one to answer. He is inclined to think that acquired syphilis is not more virulent in the negro, and possibly less so. Negroes are careless as to treatment and unwilling usually to continue it after the visible signs have disappeared. He thinks the disease responds more readily to treatment than in the white race. A greater tendency to pustulation in so-called secondary syphilis is admitted. With regard to hereditary syphilis, he considers that it is more virulent in the negro. There can be no question that a general enlargement of the lymphatic glands is more common in the negro. He considers the annular form of syphilis the most striking peculiarity of the negro's skin. This eruption is one of the early periods of syphilis, and occurs most often about the nose and mouth and neck. Sometimes it assumes very fantastic designs resembling scroll work.

The frequency of keloid in the negro is well known. The writer's figures give a total of 3 cases of keloid in the white to 76 cases in the black. It was noted that the lobule of the ear was a very favorite site for keloid, as in 24 cases it was found in this location. The so-called keloid acne of the back of the neck is also very common in the negro.

In the case of epithelioma, there is undoubtedly a lessened susceptibility on the part of the negro. Some experts declare they have never seen an epithelioma of the face of a negro. Hyde considers that the physiological pigmentation of the skin of the negro seems to furnish immunity against epithelioma, and that this is an example of the influence of light in the production of cancer of the skin.

The writer believes that itching is a more or less characteristic feature of skin diseases in the negro. The visible results of scratching, however, are much more marked in whites.

Vitiligo appears more frequently among the blacks, while chloasma is twice as common in the white as in the blacks, although the writer thinks these figures do not represent the actual condition, since vitiligo in the negro is such a striking affection that patients would be much more likely to seek medical aid for it than in the case of chloasma.

There is evidence that the mucous membrane of the negro shares with the skin a lessened susceptibiltiy to disease. It has been stated that syphilis of the mucous membrane is less common in the negro.

Finally, the writer states his opinion that, in general, the mulatto is more susceptible to disease of the skin than the full-blooded negro, and that this is especially true of acute inflammatory diseases, chloasma and cutaneous tuberculosis.

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Reports of Societies.

ASSOCIATION OF AMERICAN PHYSICIANS.

TWENTY-THIRD ANNUAL MEETING HELD AT WASHINGTON, D. C., MAY 12, 1908.

The first session was called to order at 10 A.M., Tuesday, May 12, by the President, Dr. James Tyson, Philadelphia, who delivered the annual presidential address. Dr. Tyson recalled the first meeting of the association in the old Amory building and other early meetings held in the Surgeon-General's laboratory. In Washington twenty-three years ago there had been delivered to the association by the profession the talents which it was expected it would return with interest. The first president, Dr. Delafield, had then said: "We all know why we are assembled here to-day: because we want an association in which there will be no politics; in which no one will care who are the officers: in which no one will care from what part of the country a man comes, but will simply ask if he has done good work and if he will do more. We want members who will contribute something real and of value to a discriminating audience; we want a society in which we can learn something." How had these talents been used? For answer he asked the members to look at the twenty-two volumes of transactions of the association which he had arranged on the desk and which included, he said, 10,456 pages and 746 titles. They included much of the best work of the past twenty-two years in the laboratories and clinics of the United States and Canada. Death had dealt gently during the past year, only two of the members having died, Dr. Folsom and

Dr. Carroll, to the memories of both of whom he paid tribute. The program, he said, had been limited so that it might be carried out comfortably in the two days' session; it had been impossible to reduce it further.

PRELIMINARY REPORT ON THE RESULTS OF LIGATION OF THE CORONARY ARTERIES IN DOGS.

Drs. **Joseph L. Miller** and **A. S. Matthews**, Chicago, read this paper. They referred to the clinical bearing of the subject and previous experimental work on dogs which dated back many years, but concerning which the literature had not been extensive, one of the best pieces of work on the subject being that of Porter, of America, some years ago. More recent work was that of Spalteholz, who attempted to prove that the coronary arteries were end arteries. After ligating the descending branch of the left coronary and killing the dogs at the end of two to four weeks, it had been found that the area of necrosis in the ventricle was very small compared to the area supplied by the ligated vessel, the conclusion being drawn that the arteries were not end arteries. It had been attempted also to produce lesions similar to those that occurred in man in an attack of angina pectoris. They attempted to prevent stoppage of the heart by means of vaso-dilators of the digitalis group. It was found that one animal suffered intense dyspnea, and after death there was enormous dilatation of the left ventricle; in the other animals the results were similar. Nitroglycerin, adrenalin and morphin were also employed. Nitroglycerin failed to do any particular good.

Dr. **W. H. Welch**, Baltimore, asked if the investigations shed any light on the question of whether the intramuscular branches are terminal. In closure of the intramuscular branches he thought necrosis practically constant.

Dr. **S. Solis Cohen**, Philadelphia, thought Dr. Miller had properly employed a judicious reserve in employing the results of these experiments in the treatment of angina, for it was by no means sure that the results found post-mortem were the same as those when the disease is first manifested. A great difference between these experiments and the paroxysm of angina was that here a permanent disturbance of the circulation was established, whereas in the paroxysm of angina we have a temporary and not a permanent disturbance. Results with nitroglycerin could not, of course, be expected where there was permanent occlusion of the artery. He thought nothing was better established than that the nitrates exert a beneficial effect in arresting the paroxysms of angina.

Dr. **R. H. Babcock**, Chicago, suggested that perhaps the state of the blood pressure would have much to do with the question of whether nitrates would relieve or not.

Dr. **Alexander McPhedran**, Toronto, reported a case of a patient with blood pressure of 270 in whom large doses of nitroglycerin produced slight toxic symptoms without reducing blood pressure more than about 20 mm. and without giving any relief.

Dr. **Joseph L. Miller**, Chicago, said, in closing, it might be of interest to know that the left ventricle stopped first of all in the animals. Referring to Dr. Cohen's remarks, it seemed to him that the fact that in angina pectoris we were dealing with a transitory attack did not necessarily mean that we were not dealing with permanent occlusion. Most of the work had been done before the use of the instruments for recording blood pressure. What actually occurred was an incomplete systole; what was needed was to make the heart muscle work better rather than to relieve pressure.

SOME LESIONS OF EXPERIMENTAL NEPHRITIS.

Dr. **H. A. Christian**, Boston, demonstrated three lesions produced in experimental nephritis in animals, a glomeruli lesion consisting in the appearance of fine droplets; they occurred in the walls of the capillary tufts and were well shown in the photographs which were passed around; this lesion occurred in eleven of thirteen successive animals which had received uranium nitrate; two failed to show the lesion. Of twelve other animals, four were given potassium bichromate; two of them showed none of these granules; two showed slight lesions. Others received potassium bichromate and mercuric chloride; they did not show the lesion. Another group received Japan red; two showed lesions in a very mild degree. As far as the urine was concerned it was apparently as toxic as those that did show the lesions. Another lesion, somewhat similar in structure, occurred within the tubular epithelium — small hyaline droplets; this occurred in a considerable number of the animals. A third lesion was a thickening of the hyaline layer, the tubule lined by a hyaline material, loss of nuclei and granules.

REVIEW OF THEORETIC CONSIDERATIONS AND EXPERIMENTAL WORK RELATIVE TO OPSONINS, WITH OBSERVATIONS AT THE SARANAC LABORATORY.

Dr. **Edwin R. Baldwin**, Saranac Lake, N. Y., said the original conception of opsonic activity as due to distinct substance with independent functions had been modified by recent studies. Normal sera had been shown independently by Dean and Cowie and Chapin to exhibit a close parallel between opsonic functions and the reactions of normal amboceptor and complement to heat and absorption by bacteria. If not identical they are indistinguishable except in function. The phenomenon of phagocytosis was a physiochemic one. Immune opsonic activity was also closely related to immune amboceptors of bacteriologic or cytolytic sera. Lack of correspondence in some particulars was not necessary proof that opsonins is a distinct substance. Opsonic properties were also allied to agglutinative powers of sera, but were weakened more by loss of complement. Weight of evidence was in favor of opsonins as amboceptor-complement in nature. Opsonic function as a measure of specific resistance was subject to limitations, but applicable to mild infections. He referred to the recognition of specific opsonins in diagnosis of tuberculosis as practiced by C. P. Ritchie. Studies on the technic for the estimation of the index during the past year had not increased confidence in its accuracy. Work at the Saranac Laboratory with inoculations of immune-serum-opsonized tubercle bacilli had been continued and the results recorded last year on rabbits confirmed. Protective inoculations of weak virulent opsonized bacilli in guinea pigs were considered.

A CLASSIFICATION OF ACIDOSES.

Dr. **James Ewing**, New York, said that acid intoxication, or acidosis, occurs in diabetes, starvation, phosphorous poison, toxemia of pregnancy, cyclic vomiting of children, delayed chloroform poisoning, and many other diseases, in each of which the abstraction of fixed alkalies or the direct toxic action of salts of the acid compounds are supposed to contribute to or dominate the symptoms. The study of the pathological anatomy and the chemistry of these diseases showed that there were two distinct classes of acidosis following two experimental prototypes: (1) Type, hydrochloric acid poisoning. Clinical forms, diabetes, starvation. Chemistry, acetone compounds. Pathological anatomy, no lesions. (2) Type, extirpation of the liver, or Eck fistula. Clinical forms, phosphorous poisoning, toxemia of pregnancy, cyclic vomiting, chloroform poisoning. Chemistry, lactic acid prominent. Ammonia in excess of any acetone compounds present. Pathological anatomy, extensive fatty degeneration. Evidence is reviewed to show that these two types of acidosis are antagonistic in symptoms, origin and pathogenesis, although combined forms exist. The urinary ammonia was accepted as the measure of acidosis, but there was reason to believe that its significance is quite different in the two conditions. The marked difference in the pathological anatomy of the two types was believed to still further justify their separation.

Dr. L. F. Barker, Baltimore, asked if the writer had observed any case in which there was high organic acidity of the urine without acetone bodies or lactic acid. He said it was conceivable that further analysis might lead to a greater differentiation in the acidoses.

Dr. J. P. Crozer Griffith had reported two years two fatal cases of this kind. He called attention to the fact that the French observers had described an acetonemic vomiting, but he had not confirmed this.

Dr. D. L. Esdall, Philadelphia, agreed with the essayist that there were at least two types of acidoses. He thought it hardly possible, however, to attempt as yet to indicate that one of these types is associated directly with lactic acid or any other particular acid. In the recurrent vomiting of children he thought we could say nothing much more definite than that there is an acid intoxication associated with it as a part of the general disturbance. Sometimes the correction of the acid intoxication had no effect upon the condition; in others it entirely overcame it. It was simply a symptom which at times might become a very important one. He considered studies like these of Dr. Ewing's of the greatest importance.

Dr. S. Solis Cohen, Philadelphia, asked what basis there was for estimating the amount or degree of acid or alkaline intoxication by the urine alone. He thought we might just as easily have an acid intoxication resulting from excessive neutralization of alkali as an original acid or alkaline intoxication.

Dr. James Ewing, New York, in closing, said in regard to Dr. Barker's inquiry he had not been able to find such a type of case as he referred to in which acids were present without the existence of acetone compounds. He placed considerable importance on the presence of lactic acid. In eclampsia there were cases in which the ammonia was high, lactic acid moderate, and acetone compounds absent. As to acetonemic vomiting, he thought Dr. Griffith was right, that there was a question as to whether it could be sufficient in amount in the blood to cause that condition. He agreed with Dr. Edsall as to the uncertainty of the progress made in the work, but thought the pathological work had not thrown much light upon the subject, and in the minds of physiological chemists there was also much doubt. But the clinical and pathological indications were so clear that he considered the classification justified. In regard to Dr. Cohen's remark, he had hit upon the crux of the matter in one sense; they measured it by the amount of ammonia in the urine; by the amount of ammonia taken to neutralize the acids, so that it must be admitted that it was an unreliable method.

EXPERIMENTS WITH AN ASH-FREE DIET.

Drs. Elliott P. Joslin and Harry W. Goodall, Boston, presented this paper. Two healthy men were fed on Taylor's ash-free diet (whites of 18 eggs, 200 gm. crystallized sugar, 120 gm. olive oil freed from salts) until the daily excretion of chlorine was less than 0.3 gm. No symptoms of acid intoxication appeared, and at no time was acetone detected in the breath or urine. Marked loss of weight occurred, which was regained, in the first experiment, within four days after a return to an ordinary diet. In the second experiment the weight was nearly all recovered in three days, with the individual remaining on the same ash-free diet, plus 12 gm. of salt daily. The assimilation of food was excellent. Marked diuresis — 4,090 ccm. urine—occurred in the first case four days after a return to a regular diet. A third observation was made upon a case of diabetes with a minus carbohydrate balance of over 50 gm. The chlorine in the urine gradually fell to less than 0.3 gm. in twenty-four hours, but the change in acidosis was insignificant, and the condition of the patient was better than for some days. They concluded that the withdrawal of salts from the body does cause removal of the accessory salts which are present therein, but they give no support to the idea of the acetone form of acid intoxication being caused by the withdrawal of salts, and clinical experience did not support that opinion.

Dr. D. L. Edsall, Philadelphia, felt convinced that Dr. Taylor's intentions concerning his experiment had been misunderstood; he thought he did not mean to have it considered as having any bearing on the diabetic condition; he considered it as indicative merely of the fact that there are at least two types of acidoses, due to two different causes.

Dr. James Ewing, New York, had drawn the same conclusions from Dr. Taylor's observation that Dr. Joslin had. He thought it did have a distinct bearing upon the acidosis of diabetes and that he had thrown a new light upon the subject by the withdrawal of alkalies from the food. He asked Dr. Joslin to go more into detail as to symptoms.

Dr. E. P. Joslin, Boston, said the symptoms were not striking; there was considerable nausea in one case; as soon as the salt is given the gastric symptoms disappear, but the patient knew that as soon as he received the salt the experiment would be at an end in three days, which may have had some bearing. He agreed with Dr. Ewing that Dr. Taylor meant the experiment to further this theory, but that was not the point of the matter; the point was that Dr. Taylor inaugurated a new form of diet that had led to interesting results and in that had contributed a great deal to medicine.

ON THE RELATION OF THE PARATHYROID GLANDS TO CALCIUM METABOLISM AND THE NATURE OF TETANY.

Drs. W. G. MacCallum and Carl Voegtlin, Baltimore, said the convulsive and other symptoms of tetany which result from the extirpation of the parathyroid glands may be rapidly made to disappear by the administration of a soluble salt of calcium. This result was most quickly attained by the intravenous injection of the salt, but also followed its administration by mouth. Studies of the metabolism of dogs in tetany show an excessive output of calcium, and the blood and tissues are found to contain a diminished amount of that substance. It seemed probable that the parathyroid glands exercise a control over the calcium metabolism, and that the loss of calcium from the brain and other tissues results in the phenomena of tetany. They assumed that the parathyroids in some way control the calcium metabolism. Dr. MacCallum referred to a case of tetany due to extensive operation on the thyroid which Dr. Musser had shown him.

Dr. John H. Musser, Philadelphia, said the case referred to by Dr. MacCallum was one of adeno-carcinoma involving the thyroid and lymphatic glands and other structures of the neck, and operation by necessity was required in order to relieve strangulation. The parathyroids were removed, and five days after operation tetany set in and pursued a course very like that which Dr. MacCallum found in the experimental cases. The patient was given large doses of calcium lactate and the symptoms were relieved; they were compelled to give morphia for a time also. The calcium was withdrawn and at the end of forty-eight hours symptoms returned, when the calcium was again administered with relief.

Dr. S. J. Meltzer, New York, referred to a case of tetany following operation in which the symptoms were not so striking in which calcium lactate was given and in a day or two all the symptoms subsided. It was then omitted and in two days the symptoms returned, when on administration again the symptoms disappeared. Calcium was in some way capable of controlling the condition. He called attention to the fact that with magnesium we could cause paralysis and then by the administration of calcium the animal would in a short time get up and walk around. It is one of the four substances that keep up the equilibrium of the inorganic metabolism.

Dr. D. L. Edsall, Philadelphia, said in myasthenia gravis there was often a very considerable excess of calcium in the urine; he had also observed it in other conditions, such as acromegalia. Because of these disturbances calcium was given with improvement; whether due to the calcium or not it is not sure.

Dr. W. G. MacCallum, Baltimore, in closing, said they had also observed that the administration of calcium cuts short the tetany and it reappeared after a very short time and had to be recombated by other doses, but the effect of the calcium in stopping the condition was very definite. He thought there might be some relation between the condition and acidosis because of increase in the ammonia content in the blood.

AN UNUSUAL PAROXYSMAL SYNDROME, PROBABLY ALLIED TO RECURRENT VOMITING, WITH A STUDY OF THE NITROGEN METABOLISM.

Drs. Theodore Janeway and H. O. Mosenthal, New York, reported the case of a schoolgirl of sixteen, with no neurotic inheritance, who had been subject to recurring attacks of a peculiar nature since infancy. These attacks formerly came every one to four months, but for a year increased to once a week for three months with absolute periodicity. Description of previous attacks tallied absolutely with those observed. Attacks began with epigastric discomfort, increasing to real pain in four to six hours, and severe abdominal pain with pain in shoulder, hips, etc., in eight to twelve hours. Loss of appetite and salivation from onset. In six to twelve hours temperature began to rise and pulse to become rapid, reaching their maximum in about four hours. As much as 104° and 140 pulse had been noticed. Nausea, retching and usually vomiting once or twice occurred at height of attack. Tongue was thickly coated and breath heavy, but not sweet. Abdomen rigid and tender, most to right of umbilicus. The whole febrile period was eighteen to twenty-four hours, and, as a rule, in less than thirty-six hours she feels well and ravenously hungry. Marked polymorphonuclear leucocytosis accompanied each paroxysm observed, with subsequent leucopenia for a few days. Weight rapidly regained after attacks. Saliva always acid. Vomitus contained abundant free HCl. Stomach contents between attacks somewhat excessive HCl. Urine usually showed a trace of acetone, unrelated to the attacks, otherwise nothing. Metabolism study on a purin free diet showed very little deviation from normal, but uric acid was markedly decreased and ammonia somewhat increased with two attacks. Purgation, lavage of stomach, diet, all were without influence on attacks. Marked decrease in number and severity after a period of observation with use of alkalies, but renewed severity later. The condition seemed most probably a toxemia allied to the recurrent vomiting of children.

Dr. E. P. Joslin, Boston, had a complete analogue of this case under his care within the last six weeks; a servant who had had these attacks for some years; operated on for kidney trouble which did not stop the attacks; had fever, pain and leucocytosis of 18,000; patient still under observation.

Dr. D. L. Edsall, Philadelphia, had under observation a patient of this kind, a trained nurse, who has had attacks similar to these for the past ten years, with increased severity. He mentioned it because he had eliminated fats from her diet, with the effect of temporarily, at least, stopping the attacks.

Dr. Theodore Janeway, New York, understood from Dr. Edsall that his case had had an exploratory laparotomy, and he thought that an important point as the occurrence of these attacks with marked leucocytosis and abdominal tenderness in the hands of many surgeons would lead to laparotomy.

SOME CASES PRESENTING A RECURRENT SYNDROME APPARENTLY DUE TO EXPOSURE TO HEAT.

Dr. D. L. Edsall, Philadelphia, reported some cases having a type of peculiar disturbance consisting almost entirely of very severe cramps, affecting the extremities chiefly and also the abdomen, from being subjected to excessive heat; some to intense atmospheric heat, others to artificial heat, as firemen and iron workers. Several were firemen of stationary engines. He found that it was extremely common among firemen and others exposed to intense degrees of heat. In the navy it was a common trouble among the recruits in the firing room. Deaths had occurred within an hour or two hours after the onset of the symptoms. He thought from some observations made upon the blood pressure and examinations of the urine that the condition was probably toxic. It might be due to direct nervous irritation from intense heat or to some vascular change. He referred to one case where the man had intense left-sided headache and pain in the left arm, who had been subjected to intense heat on the left side, and with change of occupation his symptoms disappeared, only to return again when he took up the same occupation. He thought this subject of heat was of greater interest than it had ordinarily been supposed to be.

Tuesday, May 12, 1908, Afternoon Session.

NON-FATAL COMA IN THE COURSE OF A DIABETES.

Dr. C. N. B. Camac, New York: The report was of a case of diabetes in an adult, observed for three and one-half months, after which there was onset of coma, with marked urinary changes; coma (not Kussmaul type) fully developed; alkaline treatment instituted; small doses only required to alkaline the urine; duration of symptoms, one week; recovery from coma; urine findings as before coma; hemiplegia (without coma) four months after coma; death. The quantity of urine remained about the same as before the coma; diacetic acid lasted three days and then disappeared; when patient began to come out of coma there was very definite increase of ammonia. The blood pressure chart never reached 200 during the early stage, but at final stage went definitely up and remained up during the time of hemiplegia. It was rare to find a case of non-fatal diabetic coma followed later by death and autopsy. In view of the subdivisions of acid intoxication, the writer considered the findings in this case of interest. During the comatose condition patient never had more than a trace of albumin.

Dr. S. Solis Cohen, Philadelphia, had had a similar experience. The first occurred in early practice, a woman who had had diabetes fifteen years before coming under his observation and who died twenty years later, after having recovered years before from diabetic coma, and whose sugar disappeared entirely from the urine five or six years before death, being replaced by albumin. The first time he saw her she was in a condition of diabetic coma, which had been going on for several days. A second case had equally marked symptoms and recovery; one of two sisters who were under his care for diabetes; one had had symptoms of diabetes but a short time before coming under his care; sugar disappeared under treatment. She became careless about diet and other matters and a condition of diabetic coma developed; she was sent to Florida and died on the way. The other sister never had disappearance of the sugar from the urine; both were gouty; the second one had also a stone in the bladder which it had never been deemed advisable to remove. In one case during coma the ammonia content of the urine ran up after recovery. It would seem as though there was a retention of the ammonia product as well as the acid itself and not a failure of the ammonia production.

Dr. James Ewing, New York, thought there might be some question as to whether the doctor was dealing with a case of true diabetes; that if we could conceive of coma in diabetes robbed of the acid element, it would be such a case.

Dr. Theodore Janeway, New York, took issue with Dr. Ewing; the patient had been under his care for a while and had impressed him as a case in which it was somewhat difficult to judge whether one was dealing with coma due to diabetes — which she undoubtedly had — or coma due to cerebral disease. She had slight hemiplegia when he first saw her and she had a well-marked chronic nephritis.

Dr. C. N. B. Camac, New York, in closing, said, in regard to nephritis, that question was carefully weighed, and the point was, Are we in a position to differentiate uremia in the course of a diabetes or acidoses from the forms that do occur in the other conditions? He did not see that it would help any to simply say that this was a case of uremic coma; we were without any definite evidence with which to differentiate.

A SHORT CONTRIBUTION TO THE STUDY OF THE ATRIO-VENTRICULAR BUNDLE, WITH REPORT OF A CASE AND PRESENTATION OF SPECIMENS SHOWING AN ACUTE ULCER ON THE INTERVENTRICULAR SEPTUM.

Dr. Walter B. James, New York, presented a specimen showing an ulcer on the interventricular septum, completely cutting across the atrio-ventricular bundle, with complete dissociation of auricles and ventricles. The patient, a little over sixty, had had chronic mitral disease for several years and came to him with malignant endocarditis. There was evident complete dissociation between auricles and ventricles. There was at no time the Stokes-Adams syndrome; there was absolute heart-block without this syndrome. In this connection he thought we had gotten into the habit of using the term carelessly, and suggested a more definite definition and limitation of the term, and discussed a number of cases simulating and often wrongly diagnosed as heart-block, and suggested possible atrio-ventricular delay as early evidence of acute myocarditis. He thought there were at least three forms of Stokes-Adams syndrome depending on entirely different physiological origins,

THE INTRAVENTRICULAR SYSTOLE.

Dr. H. A. Stewart, Baltimore, said the development of pulmonary insufficiency when there is an increase of the pulmonic pressure, and its disappearance with a readjustment of the pulmonary circulation, had pointed to the important action which the pulmonary musculature must have in maintaining the competency of the valves of the artery. Similarly, in the case of the aortic orifice, while it is not common, it is by no means rare to note the disappearance of a diastolic murmur with an amelioration of the cardiac action. Clinically they had noted the latter in cases of exophthalmic goiter, and experimentally in dogs when a diminution of the cardiac tone was produced. In view of these facts they were led to make a study of the action of the ventricular musculature surrounding the aortic orifice in dogs, in order to determine to what extent the valvular competency was dependent on muscular action. For this purpose they devised an instrument by which the contraction of the ventricle internally could be recorded. The approximation of the opposing walls of the ventricle at different points from apex to base were noted. Special study was made of the sphincter-like muscle which surrounds the aortic outlet. This muscle had long been recognized and is well described by MacCallum in Welsh's *Festschrift* (1900). The results of the investigation were, in brief, that the cavity of the ventricle is contracted first at the apex, the contraction passing upwards towards the base. The contraction at the outlet appeared to be more complete than elsewhere. The contraction of the muscle mentioned above, viz., the aortic ring muscle, is prolonged into diastole.

Dr. W. S. Thayer, Baltimore, called attention to the fact that the writer had by a series of other experiments confirmed the work reported, taking the record of the contraction of the heart muscle by an ingenious little instrument, and getting the same results, showing prolongation of the contraction of the aortic ring muscle into diastole.

HEART SOUNDS HEARD IN EARLY DIASTOLE.

W. S. Thayer, Baltimore, said that having noticed this sound in dogs, in one of which they could even see a slight tic at the beginning of the diastole, visible whenever they could hear the third sound, they thought it would be of interest to go back over human patients and study this condition. They did this over four months, taking the cases that came to the consulting room, and had met with upwards of thirty cases in normal individuals in which the early diastolic sound was audible. It is a very slight sound distinctly audible, associated with slight shock to be felt and in some cases was visible; more marked in the recumbent position and with the patient on the left side. Hirschfelder, in his studies, had noted a similar sound and Gibson at Oxford had described it. It was impossible to accurately measure the relation of the sound to other sounds, but they had studied it in relation to the normal cardiogram and observed in all of them that the early diastolic elevations were distinctly exaggerated. The plethysmogram showed that the ventricular diastole was a very rapid and not a gradual process. The sound was very similar to that in mitral stenosis. The hypothesis that seemed best was that with the first onrush of blood through the mitral and tricuspid valves, the valve is brought into such contraction as to cause sudden tension of the valve. The writer concluded that it was not uncommon to find in the normal heart a slight sound occurring in early diastole shortly after the second sound, but too late to be due to closure of the valve. It occurs between ten and twenty-one hundredths of a second after the second sound.

(To be continued.)

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THE MASSACHUSETTS MEDICAL SOCIETY.

The one hundred and twenty-seventh annual meeting of The Massachusetts Medical Society closed its sessions on Wednesday of this week, with the usual dinner, followed by speeches, under the presidency of Dr. George W. Gay, of Newton, Mass. The general conduct of the meeting was not unlike that of previous years. The presentation of a large number of papers on varied subjects has very wisely been given up, and the attempt made rather to discuss more or less related subjects in the several sections on the basis of relatively few original communications. In addition to the general sections on surgery and medicine, a section on tuberculosis, under the chairmanship of A. T. Cabot, of Boston, has been instituted, which is again indicative of the important place this subject is taking at the present time. The Shattuck Lecture was this year delivered by Dr. Frederick Forchheimer, of Cincinnati, Ohio, on the subject, "Some Aspects of Gonorrhea." While recognizing the significance of this disease in the production of sterility, he was inclined to think that its influence in this direction has been somewhat exaggerated. The annual discourse was delivered by Dr. T. F. Harrington, of Boston, who took as his subject, "The Sanctity of Medicine." After tracing historically the high esteem in which medicine has always been held, he drew attention to some of the dangers and possibilities in the problems now facing the profession. The address was characterized by a sane and conservative attitude toward many matters now agitating the public mind, particularly with regard to the large public problems of hygiene and prophylaxis, and to the much-talked-of relation between religion and medicine.

At the conclusion of the dinner which followed the annual discourse, Dr. Gay introduced as the first speaker Acting-Governor Draper, who paid a high tribute to his Excellency Governor Guild, for some time prevented by illness from the exercise of his public duties. He also drew attention to the important place the medical profession should occupy in relation to legislation, and asserted that it was alone to blame for such bad legislation as exists in connection with matters of public health. He was impressed with the influence which such a body of men as The Massachusetts Medical Society represents might have, were its power properly appreciated and utilized. The Rev. Edward Cummings, who was asked to speak on the relation of religion and theology, expressed a feeling which was evidently predominant in the minds of his hearers, that the functions of the two professions are in great measure distinct, but that in the future medicine, to accomplish its highest good, must take into more definite account certain attributes of the so-called spiritual life which it has hitherto in great measure neglected. He felt strongly that in the treatment of many moral, as of physical disorders, the physician's training should make him more serviceable to the community than that of the clerical profession. Any movement in this direction on the part of the churches stood as a challenge to the medical profession, and must be so accepted. Representative Luce, who has actively served for ten years in the Massachusetts Legislature, spoke of the extreme importance of legislation relative to matters of public health, and of the great service rendered such legislation by the advice and coöperation of physicians, which he hoped might be very much greater in the future than it had been in the past. Dr. Herbert L. Burrell, this year president of the American Medical Association, brought the greetings of that association to The Massachusetts Medical Society. He spoke of the great success of the meeting recently held, both from the standpoint of numbers and of scientific communications presented, but deplored the fact that an extremely small number of physicians had attended from Massachusetts, considerably less than a hundred in all. Of these, forty-four were from Boston, and a large proportion of this small number either read papers or had some official connection with the meeting which necessitated their presence. He hoped that in the future a much larger number of the rank and file of the profession would make the effort to attend the annual meeting of the national society. Dr. Johnson, of Baltimore, and Dr. Silas D. Presbrey, of Taunton, Mass., the newly elected president of the society, said a few words before the adjournment.

This year, as for a number of years past, there were several admirable exhibits in the main hall. Among these was a remarkable series of photographs and drawings provided by Drs. Mallory, Wolbach, Nichols and M. H. Richardson, on various pathological conditions. A series of microphotographs of high power, taken with ultraviolet light, of vaccine bodies in cells, and colored drawings of various surgical conditions of the gall bladder, kidney and appendix were especially noteworthy. An exhibit which has hitherto not been presented, but the significance of which cannot be over-estimated, was that under the auspices of the Dental Hygiene Council of Massachusetts. This exhibit, designed to instruct the public in relation to the importance of the care of the teeth, has already been seen in Boston and at Salem, Mass. The movement in dental hygiene has evidently started on a career of great usefulness. There was also a tuberculosis exhibit offered by the Boston Society for the Relief and Control of Tuberculosis. Less noteworthy, but still worthy of mention, were two pictures exhibited by a commercial firm, the one representing the Asklepeion at Athens, where Hippocrates taught, and the other the new Harvard Medical School buildings. Our reversion to a Greek style of architecture could hardly be better illustrated.

Dr. Gay, the retiring president, who has served the society with great faithfulness during his two years of incumbency, made an excellent statement of what the medical profession, represented by the society, has accomplished, particularly in the way of legislation, but insisted that constant vigilance was necessary in the future. The meeting was largely attended; the subjects discussed, both in the set papers and addresses, were of much public as well as medical interest, and showed distinctly the tendency toward a widening of the scope of medicine which the last few years has done so much to foster.

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STATES' RIGHTS AND THE NATIONAL HEALTH.

We regret that, owing to delayed reception, we have been unable to publish the whole of the excellent oration on State Medicine, delivered by Dr. Charles Harrington, secretary of the Massachusetts Board of Health, before the American Medical Association at Chicago. Dr. Harrington took for his theme "States' Rights and the National Health," which he developed in his usual clear and forcible English. Beginning with an account of the movement for a department of health inaugurated by the American Medical Association in 1871, which led to the establishment in 1879 of the National Board of Health, which was starved out of active existence four years later by the withholding of necessary appropriations, he outlined the work of the Bureau of Public Health and Marine-Hospital Service, which, since the National Board was officially dissolved, has been the only national health authority. After presenting a sketch of the various attempts to pass a national quarantine law, which attempts covered nearly a century, the invariable obstacle to success being the doctrine of states' rights, he discussed the rights and duties of the individual, of the municipality, of the state, and of the nation concerning matters affecting the public health, and of the extent to which the individual must yield his rights for the benefit of the community, and the community for the benefit of the state at large, and showed that the parallel ends here, for states' rights stand in the way of any legislation by which a state can be prevented from becoming a menace to the health of adjoining states. At present there exists no law which authorizes the national authorities to take charge, without being asked to do so, if a state, invaded by bubonic plague, should neglect to take proper precautions to prevent its spread within and beyond its boundaries.

The difference which may exist in the feeling concerning states' rights according to circumstances was illustrated by the fact that, although national quarantine was obstructed for a century, on the ground that it would be an interference with the police powers of the states, no objection was made on the same score to the passage of the National Pure Food Law, which, although intended and urged as a measure for the protection of the public health, is really a regulation of interstate commerce, and a protection against fraud and misbranding; for it is a well-known fact that adulteration which is actually injurious to the health of the consumer is exceedingly uncommon, and that in states which had no pure food laws, fraudulent adulteration was very general. So far as the national law deals with health, it is an encroachment on states' rights, but so far as it is a law against fraud, it is in accord with the provision of the Constitution, which delegates to Congress the regulation of commerce between states. States which did not care to follow the example of Massachusetts in protecting itself against both injurious adulterations and fraudulent practices were eager to have the national authorities assume charge of the general food supply, and no objection was raised concerning the constitutionality of the proposed law. In practically the only field in which the national authorities can serve the public health by enforcing the provisions of the pure food law, nothing is done, and when action has been requested, the excuses given for non-action have been evasive. As an interstate commerce regulation, the law can be made the means of excluding stale and dirty milk from interstate traffic, such milk being officially determined to be adulterated within the meaning of the act, and such exclusion would certainly be beneficial.

Emphasis was laid upon the unaccountable blindness of the country to the pecuniary loss suffered annually through preventable sickness and death, a disregard which is rendered most conspicuous by the fact that the government appropriates millions every year for protection of the animal industry and of growing crops against the ravages of diseases that affect animals and plants, but refuses or neglects to do anything whatsoever against human diseases, excepting to maintain maritime and interstate quarantine. In time of yellow fever outbreaks the general government assumes not one dollar of the expense of suppression beyond the salaries of the officers of the Public Health and Marine-Hospital Service, but in case of the outbreak of an epizoötic, it opens its purse liberally. As instances, were cited the yellow fever outbreak of 1905, the cost of fighting which fell upon New Orleans and the Gulf States, and the outbreak of foot and mouth disease in New England in 1902, upon which the government spent half a million dollars.

The proposal to place all interstate waters under the control of the national government, which has been extensively advocated within recent years on account of the common practice of discharging sewage into interstate rivers and the Great Lakes, thus causing pollution of vast amounts of water which otherwise would be available for public supplies, was shown to have been urged without sufficient recognition of the fact that such control is absolutely impossible without an amendment to the Constitution, inasmuch as it has been repeatedly decided that the rights of the states in the waters which pass through them are sovereign, and that the government can control them only so far as navigation and commerce are concerned.

A discussion of the outlook for legislation for the creation of a central health organization brought out the fact that, until recently, the movement has had the backing only of medical men, but now is being promoted by economists and others of the laity. The creation of an educated public sentiment in public health matters needs the co-operation of the profession and the lay leaders who recognize the economic importance of the public health far better than the medical profession at large. The widespread movement against tuberculosis and the first steps looking to the establishment of the first State Board of Health in this country (Massachusetts, 1869) were due to laymen rather than to the profession, and it will be well not to undervalue their importance in promoting any scheme for a national department of health. To create public sentiment, it is necessary to explain satisfactorily the importance of registration of vital statistics, which has not yet been so demonstrated by the medical profession or anybody else as to induce more than a very small proportion of the states to make provision for proper and adequate registration. Even in those states which have such laws, the profession is, to a certain extent, apathetic in respect to them, and it needs as much education as the lay public. In order to convince the people at large of the importance of state medicine, it is essential that those placed in control of local health matters should be men for whom one may have respect in the matter of their qualifications, and if such places are handed over to incompetent men or as reward for political services, the public is not likely to become interested in handing over larger matters to the care of a higher class of men. Until the public is thoroughly aroused to the importance of safeguarding the public health, the outlook is not especially encouraging.

With regard to the form which a national health office shall take, some have proposed a department with representation in the Cabinet; others a division in an existing department, to have as its nucleus the Bureau of Public Health and Marine-Hospital Service, to which should be added various existing bureaus, now scattered about under different departments — such, for example, as the Bureau of Chemistry of the Department of Agriculture, which is charged with the enforcement of the national pure food law, and the Bureau of Vital Statistics of the Department of the Interior. The administrative head, whether cabinet officer or commissioner, should, in Dr. Harrington's opinion, have an advisory council made up of delegates from each state, which council should be called together whenever necessary. Such a council, besides being of value in an advisory capacity, would serve, he holds, to promote a proper feeling of cordiality on the part of the individual states.

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PUBLIC EDUCATION IN SCIENTIFIC MEDICINE.

Dr. Herbert L. Burrell, of this city, the president of the American Medical Association, made the above topic the basis of his inaugural address on June 2. A veil of mystery can indeed no longer surround our professional activities. We should not " be blind to the fact that our scope of usefulness as physicians in dealing with large disease problems depends in great measure on the co-operation of the public. We must have intelligent co-operation to make our work as effective as may be."

Encyclopedias, magazines and the daily press have given an amazing amount of information regarding the aberrations to which the human organism is prone. The expression of the family physician's views in any given case and the directions for treatment which he sets forth are now to a large degree interpolated by consultations which he must hold with the patient and the patient's family. The public has amassed a great deal of knowledge of disease, though this is somewhat incoherent in its nature, and perhaps it is not to be blamed, considering that health is, after all, absolutely the most precious of human possessions. The chief criticism one has to make of articles upon medicine in the lay press is that they convey much information, but in an indiscriminate way; and those which are written by lay writers are likely to show how dangerous a thing is a little knowledge. The public status with regard to medical matters seems indeed at present to accord with the scriptural observation that knowledge comes, but wisdom lingers. The public has thus far ingested a great many scientific data, and seems just now to be suffering no little intellectual indigestion in consequence. For example, there is the general subject of bacteria. All micro-organisms are alike dreaded by the laity, yet most of these are, in point of fact, not only innocuous, but quite essential to human well-being. Not many are inimical, and among those which are, some are very little so, some not essentially fatal and comparatively few virulent and malignant. Some appreciation of such differences would save the laity much anxiety, and would prevent the perpetration of many foolish and oftentimes cruel and inhuman acts.

Since the tendency of the age is for the layman to give some thought and study to medical science, it is desirable that such information should come at first hand from authoritative sources. Here lies a distinct phase of the physician's vocation in the present day. That this is recognized has already become abundantly evident in the work which has been done under the authority of great institutions. The members of the faculty of the Harvard Medical School have given lectures; such also have been given under the auspices of the New York Academy of Medicine, of the New York Board of Education in their evening free lecture courses, of the Chicago Medical Society and other bodies in many other communities.

When we turn from medicine in its individualistic aspects we observe one of the most grateful things in the civilization of our day to be the sanitary renaissance, which is certainly in a way quite unprecedented in history. This awakening has had its inception in Pasteur's epoch-making work, and in his pronouncement that it is within human power to banish all parasitic diseases from the face of the earth.

Dr. Burrell's address, published in our issue of June 4, is therefore most timely and deserving of careful and reflecting perusal.

It is worthy of note as a further indication of the present trend of medical thought that Dr. W. S. Thayer's oration in medicine, concerning itself with the duties and opportunities of the physician in his relation to the public, covered very much the same ground as Dr. Burrell's address. This last meeting of the American Medical Association, largest in point of numbers of any yet held, was significant in many respects. Dr. Burrell, its president, in addition to his forcible address, proved himself an excellent presiding officer, both at the general meeting and in the House of Delegates. Conspicuous as Dr. Burrell was in the management of the meeting held in Boston two years ago, it is a matter of gratification that his presidency of the society this year should have been over the largest and in certain respects the most notable meeting which the growing association has ever held.

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PRESIDENT ELECT OF THE AMERICAN MEDICAL ASSOCIATION.

Col. William Crawford Gorgas, of the Isthmian Canal Commission, has been elected President of the American Medical Association at its recent meeting in Chicago, by a vote in the House of Delegates of ninety to twenty-nine.

Colonel Gorgas should make in many ways an admirable presiding officer for the association. In this connection and in connection with his work on the Panama Canal, a few facts in regard to his life and training will doubtless prove of interest to our readers.

Colonel Gorgas was born in Mobile, Ala., in 1854. His father was an officer in the Confederate service, and rose ultimately to the grade of general. The subject of our sketch took an A.B. degree in the University of the South at Sewanee, Tenn., in 1875, an M.D. degree at Bellevue Hospital Medical College, New York, in 1879. He served on the house staff of that hospital through the year 1880. In 1903 he received an honorary degree of Doctor of Science from the University of Pennsylvania. He was made an associate fellow of the College of Physicians of Philadelphia. In 1880 he was appointed a first lieutenant in the Medical Corps of the United States Army. In 1885 he was promoted to be captain, and in 1898 to be major. By special act of Congress he received his present grade of colonel for his excellent yellow fever work at Havana in 1903, and as a result of this same work, he was made chief sanitary officer of the Isthmian Canal Zone, and later, March 4, 1907, appointed a member of the Isthmian Canal Commission.

Colonel Gorgas' work in Cuba should be still fresh in our readers' minds. In 1903, he contributed a paper "Concerning the Method of Transmission of Yellow Fever from Man to Man," to the annual meeting at New Orleans, of the American Public Health Association. This was in continuation of several previous papers which he had prepared upon this same and kindred subjects. It is hardly necessary to dilate on Dr. Gorgas' thorough and efficient work as a sanitarian, an executive and an administrator in relation to the general situation at the Isthmian Canal Zone. This has attracted the attention and met with the warm approval of those who from expert knowledge are most competent to judge, and has excited the enthusiasm of the people at large.

Such honors as now come to him are well merited, and it is not surprising that a desire should be manifested to secure services of the kind which he can render in various directions.

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MEDICAL NOTES.

American Gynecological Society. — At the meeting of the American Gynecological Society held in Philadelphia May 26, 27, 28, the following officers were elected for the ensuing year: President, Dr. J. Riddle Goffe, New York; 1st Vice-President, Howard A. Kelly, Baltimore; 2d Vice-President, Dr. Malcolm McLean, New York; Treasurer, Dr. J. Wesley Bovée, Washington; Secretary, Dr. LeRoy Broun, New York. Members of the Council, Dr. George T. Harrison, New York; Dr. J. Montgomery Baldy, Philadelphia.

Attendance at the Meeting of the American Medical Association. — The number registered at the recent meeting of the American Medical Association held in Chicago was decidedly in excess of that of any previous year. By Wednesday noon of the week during which the association met, 5,944 had been registered, a number which later in the week was still further increased to over 6,400. Next to this in point of numbers was the Boston session, numbering 4,722. Last year, at Atlantic City, the total registration reached 3,713.

American Climatological Association.— At the annual meeting the following officers were elected: President, Charles E. Quimby, of New York; first vice-president, Edward R. Baldwin, of Saranac Lake; second vice-president, Carrol E. Edson, of Denver; secretary and treasurer, Guy Hinsdale, of Hot Springs, Va. Council, James C. Wilson, Philadelphia, W. F. R. Phillips, Washington, E. L. Shurly, Detroit, Thomas Darlington, New York, and Thomas D. Coleman, Augusta, Ga.; delegate to the council of the congress at Washington, in 1910, Frederick T. Knight, Boston, with Roland G. Curtin, Philadelphia, alternate.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 9, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 60, scarlatina 39, typhoid fever 21, measles 221, smallpox 0, tuberculosis 50.

The death-rate of the reported deaths for the week ending June 9, 1908, was 15.93.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, June 6, 1908, was 188 against 197 the corresponding week of last year, showing a decrease of 9 deaths and making the death-rate for the week 16.03. Of this number 91 were males and 97 were females; 180 were white and 8 colored; 127 were born in the United States, 52 in foreign countries and 9 unknown; 40 were of American parentage, 113 of foreign parentage and 35 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 61 cases and 3 deaths; scarlatina, 31 cases and 6 deaths; typhoid fever, 22 cases and 3 deaths; measles, 208 cases and 2 deaths; tuberculosis, 16 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 13, whooping cough 0, heart disease 20, bronchitis 2, and marasmus 6. There were 14 deaths from violent causes. The number of children who died under one year was 36; the number under five years 53. The number of persons who died over sixty years of age was 40. The deaths in public institutions were 69.

Three cases of cerebrospinal meningitis were reported.

Death of Dr. R. H. Faunce. — Dr. R. H. Faunce, of Sandwich, Mass., long one of the medical examiners on Cape Cod, has recently died at the early age of forty-nine years. Apart from his strictly professional duties he was a public-spirited citizen, for many years chairman of the town school committee. He was chairman of the Davis Memorial Library Committee at the time of his death.

Report of the Social Service Department of the Massachusetts General Hospital. — The second annual report of the Social Service Department of the Massachusetts General Hospital, chiefly from the pen of Dr. Richard C. Cabot, illustrates the wide scope which this enterprise has assumed. Many matters are briefly discussed in the report relative to the care of the poor or unfortunate by other than medical means. The usefulness of this department of the hospital work has been definitely established, and will, no doubt, increase in the coming years, provided sufficient financial support can be obtained. This is requested.

NEW YORK.

Bequest. — Among a number of charitable bequests in the will of the late Mary Ann Astor Woodcock, of Bedford, Westchester County, N. Y., is the sum of $5,000 to the Methodist Episcopal (Seney) Hospital of Brooklyn.

Milk Depots. — Seven milk depots are to be opened in the congested districts of the city on June 15 by the Society for Improving the Condition of the Poor, and each will be in charge of a trained nurse, under the supervision of an attending physician.

Seaside Hospital. — The St. John's Guild opened its seaside hospital at New Dorp, Staten Island, on June 1. It will send sick children and their mothers there daily by means of the regular Staten Island ferry-boats until July 6, when the trips of its floating hospital will be started for the season.

Water Trips for Incipient Consumptives. — The old ferry-boat *Southfield*, of the Staten Island Line, which was recently acquired by the board of trustees of Bellevue and Allied Hospitals, has been in commission as a hospital ship for incipient consumptives. Patients are admitted to the boat at 9 o'clock in the morning and landed at 5 P.M.; while on board receive food and medical attendance.

Death of Dr. George Gallagher Hopkins. — Dr. George Gallagher Hopkins, of Brooklyn, N. Y., died suddenly on May 23, in the sixty-fifth year of his age. He was graduated from the medical department of the University of Pennsylvania in 1868, and for many years was a prominent practitioner of Brooklyn. At the time of his death he was consulting surgeon to St. John's Hospital and other institutions.

Insanity and Murder. — In the Court of General Sessions Judge Foster has inaugurated a new procedure in murder cases in which the defence is insanity. In a case in which a woman was charged with killing her husband he has appointed a commission, consisting of Drs. C. F. Macdonald, A. McLane Hamilton and F. W. Robertson, to examine the defendant, and should she be pronounced insane she will be sent to the State Hospital for Insane Criminals at Matteawan without trial.

New Hospital for Italians. — Plans are now well under way for the removal and enlargement of the Italian Hospital, which was organized under the auspices of the Italian Benevolent Institute in 1882, and for a number of years has been carried on in crowded quarters in West Houston Street. The new hospital is to be located on Washington Square, South, and the estimated expense of the undertaking is $500,000. One hundred and thirty thousand dollars has already been collected, and of this amount $60,000 was presented by the Italian government, while King Victor Emanuel sent 1,000 lire from his private purse. During 1907, 760 patients were treated in the wards of the hospital in Houston Street, and over 6,000 in the dispensary department. There are said to be 200,000 more Italians in New York than in Rome, and Dr. A. Caccini, a well-known Italian physician of exceptionally large experience as a member of several clinics on both the east and west sides of the city of New York, is authority for the statement that 75% of the Italians do not speak English even after years of residence in America.

Weekly Mortality. — The weekly reports of the Health Department show the lowest death-rate for May of any month of the present year. The mortality in the city represented an annual death-rate of 16.44, as against 18.31 in April and 17.71 in May, 1907. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles declined from 42.5 in April to 37.25 in May; the weekly average from scarlet fever, from 59.25 to 44.75; from diphtheria and croup. from 49.25 to 34.25; from influenza, from 8 to 1.75; from pulmonary tuberculosis, from 187.75 to 177.5; from acute bronchitis, from 24.25 to 12.25; from pneumonia, from 118.5 to 105.25; from bronchopneumonia, from 129.25 to 110.25; and from Bright's disease and acute nephritis, from 112.25 to 104. Among the few diseases in which there was an augmented mortality were the following: The weekly average of deaths from whooping-cough increased from 2.25 to 4.75; from diarrheal diseases, from 49.25 to 56; from diarrheals under five years of age, from 45.25 to 51.75; and from organic heart diseases, from 144.25 to 147.75. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 15.95.

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Current Literature.

Medical Record.

April 25, 1908.

1. * Wallace, G. B. *The Physiological Mechanism of Vaso-Constriction and Vaso-Dilatation.*
2. *Le Fevre, E. *Therapeutics of Vaso-Constriction and Vaso-Dilatation.*
3. Goelet, S. H. *The Treatment of Endometritis by Irrigation and Drainage.*
4. Barshingle, M. L. *Sciatica.*
5. Barrett, C. W. *Intramural Transplantation of the Round Ligaments vs. Alexander's Operation or Ventro-Suspensio-Fixation of the Uterus in Retroversio-Flexion.*
6. Abrams, A. *Auto-Intoxication and Indicanuria.*

1. Wallace gives a careful summary of the physiological mechanism of vaso-constriction and vaso-dilatation, with many references to the latest works on the subject.

2. The author divides the results of high blood pressure into three stages. The first stage is characterized by persistent high tension, due to hypertonicity of the muscular coats of the arteries and arterioles. The second stage is that of progressive hypertrophy of the muscular tissue of the cardio-vascular system, associated with degenerative changes in the intima and fibrosis of the external coat of the artery. The third stage is that of diminished muscular control due to progressive fibrosis, which causes increased obstruction in the arteries and arterioles of certain areas, and a tendency to cardiac exhaustion and insufficiency. The treatment varies with the stage. In the first stage efforts should be directed toward finding the cause of the persistent high tension. Conditions that cause hypertonicity may be due to increased irritability of the vasomotor system, or of the arterial muscle, both of which may be dependent upon primary toxic or primary nervous influences. The increased irritability may be due to poisons acting on the neuro-muscular system of the circulation, as lead, alcohol and tobacco, bacterial toxins, retained excrematory products and abnormal amounts of the secretion of such glands as the thyroid and adrenals, etc. The treatment then of this stage is to eliminate, if possible, any of the causes of hypertension. Drugs should be used to increase the activities of the emunctories.

In the second stage the question is how far the obstruction to the circulation is due to the sclerotic changes in the vessels, and how much is due to spasm of the muscular coats. Since the fibrotic changes do not go on symmetrically in all the vessels at the same time, it may be imperative that muscular hypertonics should be present in other parts of the vascular system, in order to obtain the high pressure necessary for maintenance of the circulation in these fibrosed vessels. The use of vaso-dilators may be then very disastrous. The treatment should be guided by the question in each case as to how far it is possible or safe to act upon the muscular tissue of the arteries. In the third stage, where the pathological changes have become so marked, we have to relieve symptoms of failure of the circulation. The author lays stress on the importance of the splanchnic area in the tension of the vessel walls of the general circulation. He points out the fact that kidney disease is not a necessary precursor of arteriosclerosis, and that marked arterial changes may occur when the kidney lesions are very slight. He gives careful directions for the use of baths, massage of different kinds, passive and resisted exercises, and the use of the iodides.

May 2, 1908.

1. Savidge, E. C. *The Cancer Problem.*
2. Stella, A. *The Effects of Urban Congestion on Italian Women and Children.*
3. Brown, S. H. *The Fifth Nerve in Relation to Ophthalmic Conditions.*
4. Reynolds, W. S. *A Piece of Catheter Voided during Urination.*
5. Wilcox, S. F. *Inunctions of Iodoform in Tuberculous Peritonitis.*

New York Medical Journal.

April 25, 1908.

1. Hibbs, R. A. *An Original Method of Operating for Congenital Dislocation of the Hip.*
2. Buchanan, M. *Sudden Blindness and Its Various Causes.*
3. Cole, L. G. *Radiographic Diagnosis of Renal Lesions.*
4. Burvill-Holmes, E. *A Case of Chronic Fibrinous Bronchitis.*
5. Zemp, E. R. *Accidents during Anesthesia.*
6. LeRoy, B. *The Etiology of Psoriasis.*
7. Freeny, L. C. *The Management of Typhoid Fever without a Nurse.*
8. MacMurrough, F. K. *Chlorosis Cured by Thyroid Extract.*

May 2, 1908.

1. Anders, J. M. *The Year's Progress in Tropical Medicine.*
2. *Knopf, S. A. *Etiology, Prophylaxis and Treatment of the Social Ill.*
3. DeVries, J. C. *Psychic Phenomena of Intestinal Toxemias and Their Treatment.*
4. Stein, A. *Who Originated the Method of Paraffin Imbedding? A Reply to Dr. Pond.*
5. Drennan, J. D. *Abstraction of Calcium Salts from the Mother's Blood by the Fetus; Cause of Dental Disease in the Former.*
6. Dukeman, W. H. *Hysterectomy of a Five-Month Gravid Uterus for Carcinoma Uteri; Recovery.*
7. Spence, T. B. *Angulation of the Sigmoid.*

2. Knopf considers that the social ill depends largely upon the prevalence of child labor, alcoholism, unsatisfactory environments and poor habits of living and hygiene. In his opinion the relief is to be sought for chiefly in legislation and in a campaign of education.

[R. I. L.]

The Lancet.

April 18, 1908.

1. Thompson, R. *Hunterian Lectures on the Anatomy of the Long Bones Relative to Certain Fractures.* (Continued article.)
2. Shrubsall, F. C. *Hunterian Lectures on the Pygmy and Negro Races of Africa.*
3. Higgins, H. *Observations on Blood Pressure, Chlorine Retention and Dechlorination, Hyperacidity and Variations in the Starch Ration.*
4. *Sambon, L. W. *Epidemiology of Diphtheria in the Light of a Possible Relationship between the Diphtheritic Affections of Man and Those of the Lower Animals.*
5. Stoker, G. *Case of Cavity of the Lung Successfully Treated with Ozone.*
6. Middlebro, T. H. *Anterior Dislocation of the Sternal Ends of the Clavicles; Treatment by Treatment of Fracture of the Clavicles with Good Results.*

4. Sambon believes that there is a relationship between the diphtheritic affections of man and those of the lower animals, which explains the epidemics of diphtheria more plausibly than any other theory. He describes the disease as it occurs in horses, cattle, sheep, hogs, rabbits, mice, cats, dogs, pigs, fowls and other birds, and the various epidemics which have occurred among these animals. He does not believe that it has been proved that the bacillus of animal diphtheria is a distinct type from that of human diphtheria, any more than the same has been definitely proved in regard to tuberculosis. He believes them to be merely different strains of the same organisms. He believes that the various epidemics of diphtheria which have occurred in man in almost every case can be found to follow an epidemic among animals. He believes that the wild pigeon, which is particularly susceptible to this disease and among which terrible epidemics have occurred in England, is the cause of many epidemics which have here occurred in man.

[J. B. H.]

British Medical Journal.

April 4, 1908.

1. Mott, F. W. *Two Lectures on the Physiology of the Emotions.*
2. Hurry, J. B. *Vicious Circles Associated with Disorders of the Heart.*
3. Jellinek, E. O., and Copper, C. M. *Report, with Comment of Six Cases of Heart-Block, with Tracings, and One Post-mortem Examination of the Heart.*
4. Deycke. *A Lecture on a Specific Treatment of Leprosy.*
5. Turner, D. *Electrolysis in Tic Douloureux and in Spinal Sclerosis.*

April 11, 1908.

1. *Lister. *Remarks on the Treatment of Fractures of the Patella of Long Standing.*
2. *Hutchinson, R. *Remarks on the Rational Treatment of Functional Dyspepsia.*
3. Mott, F. W. *Two Lectures on the Physiology of the Emotions.*
4. *Watson, C. *Clinical Value of the Pancreatic Reaction in the Urine, Based on over 250 Analyses.*
5. Hort, E. C. *Therapeutic Uses of Normal Serums.*
6. Malcolm, J. D. *Hysterectomy Performed upon a Patient with Glycosuria.*
7. Boyce, J. W. *Some Remarks on the Irish Poor-Law Medical Service.*
8. Williams, R. P. *The Attendance Prize System. Its Relation to the Spread of Disease in Elementary Schools.*

1. Lister describes a method which he first used in 1895 for uniting fractures of the patella of long standing by means of two operations. In the first operation he brings the two fragments of the patella as near together as he can and keeps them in place by a wire ligature. There is no shock or hemorrhage to this operation. The leg is kept in a firm splint in a vertical position until the wound is healed and then the patient is allowed to walk around and take exercises with a view towards stretching the quadriceps muscle. After a varying interval a second operation is done, and at this it is generally possible to bring the two fragments of the bone into apposition. He has had excellent success by this method in obstinate cases.

2. Hutchinson gives a clear and practical article on the rational treatment of functional dyspepsia. For cases of hypersecretion he advises a bland diet rich in fat, into which milk, eggs, meat and fish enter freely, while starchy foods are kept within strict limits. For medicinal treatment he strongly recommends bromides and soda or magnesia. In cases of insufficient secretion he says that the actual composition of the diet is a matter of indifference, provided it be presented to the stomach in a suitable mechanical form. In addition, he recommends bitters and small doses of soda before meals. Where there is excessive motility and pyloric spasm, in addition to a bland diet, he recommends the local application of heat to the epigastrium, while in motor insufficiency he believes the most important factor to be frequent meals, dry in character and small in amount. For hyperesthesia he is strongly in favor of bismuth.

4. Watson believes that there is a definite and important relationship between the pancreatic reaction in the urine and disease of the pancreas. He divides the cases in which the pancreatic reaction is present into the following groups: (1) A group with definite clinical or pathological evidence of serious organic disease of the pancreas. (2) A group in which the reaction in the urine is associated with pronounced arterial sclerosis, a condition usually accompanied by more or less sclerosis in different glands. (3) A group in which the reaction is dependent on congestion and catarrhal conditions of the gland ducts and substance, with associated toxemia — for example, advanced heart disease, appendicitis, pneumonia, malaria, etc.

[J. B. H.]

The Quarterly Journal of Medicine. Vol. I, No. 3.

April, 1908.

1. * Poynton, A. J. *A Contribution to the Subject of Rheumatism, Based upon a Study of 52 Cases in Children under Five Years of Age, and an Analysis of 100 Cases of Fatal Suppurative Pericarditis in Childhood.*
2. * Treadgold, C. H. *Chloroma and Acute Lymphatic Leukemia, with an Account of Four Cases, and a Discussion of the Pathology of these Diseases.*
3. * Forsyth, D. *The Parathyroid Glands: Part II. Their Pathology in Man.*
1. * Hope, W. B., and French, H. *Persistent Hereditary Edema of the Legs with Acute Exacerbations. Milroy's Disease.*
5. Gossage, A. M. *The Inheritance of Certain Human Abnormalities.*
6. * Boycott, A. E. *Critical Review: Caisson Disease.*

1. Poynton aims to prove that rheumatism under the age of five years is not uncommon and presents much the same characteristics as during later childhood. He includes under the term "rheumatism" cases of chorea without arthritis. As he gives no figures, however, as to the relative frequency of rheumatism in the material from which these cases were taken, and as to the number of cases of rheumatism over the age of five in the same material, his observations merely show that rheumatism occurs at an early age. Moreover, all but 18 of his 52 cases were over the age of four, and only 1 occurred during the first year of life and 3 in the second year. The old statement, therefore, that acute articular rheumatism is very rare in infancy remains true, and it becomes progressively more frequent in childhood as age advances. The mortality in this series was high, 8 deaths out of 52 cases, 7 being of these due to pericarditis. He makes an interesting comparison of rheumatic pericarditis with suppurative pericarditis. In the pneumococcic infections there was only 1% of endocardial involvement, and empyema was frequently present. In the rheumatic form, on the other hand, empyema was not met with, and endocarditis

was nearly always an accompanying feature. An interesting point is that the diagnosis was made in only 6 out of 100 cases of suppurative pericarditis, largely owing to the infrequency of pericardial friction in these cases. These striking differences between the two forms should render the differential diagnosis of rheumatic pericarditis an easy matter.

2. Treadgold reports very fully 2 cases each of chloroma and of acute lymphatic leukemia, and discusses the literature of these conditions. The cases of chloroma were accompanied by very high white counts, and resembled clinically acute lymphatic leukemia. An interesting feature of the cases of acute lymphatic leukemia was the slight degree of enlargement of the lymphatic glands and spleen. The cells seen in the blood in the cases of chloroma were in general larger and possessed more protoplasm than those usually seen in lymphatic leukemia. Some of them showed neutrophile, basophile, or eosinophile granulations. The writer attempts to distinguish chloroma from acute lymphatic leukemia, chiefly by the character of the cells, but his attempts cannot be regarded as successful; the illustrations of the cells seen in the blood which accompany the article are so poor that they are of no value. Except for the green color seen in the lymph glands and in the bone marrow in chloroma, such cases cannot be absolutely distinguished from acute lymphatic leukemia. It is an interesting fact that almost all the cases of chloroma hitherto reported have been associated with blood conditions similar to those seen in acute lymphatic leukemia, and that in both diseases the bone marrow is invariably affected, and is probably the primary seat of the disease. No cases of chloroma have been associated with the chronic small cell variety of lymphatic leukemia. The cause of the green color of the lesions in chloroma has never been satisfactorily explained. The writer also attempts an extensive classification of the different forms of leukemia and pseudo-leukemia, which, however, is based largely upon theoretical considerations, and does not add any new light to this much confused subject.

3. Forsyth, in the second part of his article on the parathyroid glands, reviews very fully the literature on the pathology of these structures, and reports a number of personal observations. Various changes in the glands have been described, such as the presence of fat within the cells and in the connective tissue spaces, hyaline degeneration and fibrosis, but these changes are not found constantly in any one disease, and are not accompanied by symptoms which might be ascribed to perversion of the parathyroid secretion. Thomas found the parathyroid glands normal in 9 cases of paralyses agitans, which renders it extremely improbable that this disease is due to lesions of the parathyroid. Five cases of tumor of the parathyroid gland have been described, 3 of these being accidental findings at autopsy. The other 2 were quite large and gave symptoms of local pressure only. They were of the nature of adenomata and for that reason might be supposed to have supplied parathyroid secretion, so that the symptoms due to lack of this secretion could not be expected to have taken place. Moreover, there were in all these cases other parathyroid glands which were normal and could, therefore, have maintained the secretion. He concludes that disturbance of the function of the parathyroid glands has not yet been proved to be the cause of any known disease. It should be noted, however, that the parathyroids have not yet been examined in any case of idiopathic tetany, the disease which, of all others, seems most likely to be due to disturbance of the function of the parathyroids. In a few cases of tetany in childhood the parathyroids have been found normal, but this disease is certainly distinct from the idiopathic tetany of adults.

4. Hope and French describe a family in which persistent hereditary edema of the legs, or Milroy's disease, was present in 13 out of 42 individuals in five generations. This remarkable disease is characterized by the presence of a painless soft edema of the legs, coming on usually in childhood or adolescence and remaining throughout life. It usually stops short at one of the joints, either at the knees or the groin, and pits upon pressure. It is almost always a family disease, and affects equally males and females. A remarkable feature in the family in question was the occurrence of more or less frequently repeated attacks of pain and swelling of one of the legs, with heat and redness of the skin and usually high fever. These attacks, as a rule, first appeared many years after the beginning of the edema, lasted only a few days, and could not be ascribed to bacterial infection. The disease is regarded as a vasomotor neurosis allied to Raynaud's disease and to angioneurotic edema.

6. Boycott gives an excellent review of our present knowledge of caisson disease, and adds many important observations of his own upon animals. It has been fully shown that the symptoms of this disease are due to bubbles of nitrogen that are set free in the blood during the process of decompression. During the work in compressed air the tissues of the body become more or less saturated with nitrogen in varying degrees. Fatty tissue will take up more nitrogen than any other, and owing to its poor blood supply takes the longest time to become saturated. Whether symptoms of caisson disease occur on decompression depends upon three factors: the height of the air pressure in the caisson, the duration of the exposure, and the rapidity of decompression. Different individuals show a varying degree of susceptibility, chiefly due, apparently, to variation in the amount of fat in the body and the rapidity of the respiratory exchange. The greater the amount of fat and the less the rapidity of the respiratory exchange, the greater is the liability to symptoms. The author shows by experiments upon goats and by a process of mathematical reasoning, that uniform slow decompression is not the safest method, but that the pressure in the decompressing chamber should be rapidly reduced to one half the absolute pressure in the caisson, followed by slow uniform decompression at the rate of about eight minutes per pound of pressure. Lastly, only young men, and such as are not fat, should be selected for work under high pressure, and the more susceptible individuals should be weeded out by trying them first at lower pressures. [W. T.]

Münchener Medizinische Wochenschrift. No. 12.
March 21, 1908.

1. Holzinger, F. *A Theory of the Natural Immunity of Living Tissues.*
2. Fraenkel, H., and Much, H. *Wasserman's Reaction in Syphilis.*
3. Baisch, K. *Present Tendencies in Operative Obstetrics.*
4. *Seitz, L. *Localization and Clinical Symptoms of Intracranial Hemorrhage of the Newborn.*
5. Coste. *Passive Hyperemia in Acute Inflammations.*
6. Hecht, A. *The Relation between Diseases of the Stomach and Nose.*
7. *Georgopulos, M. *The Treatment of Malaria with Atoxyl.*
8. Sellbeim, H. *Three Uncommon Forms of Hemorrhage during Delivery, Etc.*
9. Widmer, C. *Differences in Temperature in the Two Sides of the Body in Appendicitis.*
10. Kauffmann, M. *Diabetes Associated with Psychosis.*
11. Rothschild, O. *The Effect of Infusion of Salt and Adrenalin in a Case of Acute Peritonitis.*
12. Hansen. *A Case of Cholesteatoma of the Ear.*
13. Trautmann, G. *A Case of Phlegmon of the Neck Arising from Carious Teeth.*
14. Kuhn, F. *Remarks on the Article of Zacharias on Post-Operative Tetanus.*
15. Lichtwitz, L. *The Origin of Gallstones.*
16. Allemann, A. *Nicholas Senn. Obituary Notice.*

4. Sietz has had opportunity to examine 23 cases of intracranial hemorrhage of the newborn. Frozen sections of the brain were made in every case. Differing from hemorrhage in the adult, that of the newborn is almost always of venous origin. The seat is between dura and pia, almost never in the substance of the brain. Clinically the most important feature is whether the hemorrhage is supra- or sub-tentorial, the latter being by far the more serious. The usual amount of hemorrhage is small, a teaspoonful to a dessertspoonful. The symptoms of subtentorial hemorrhage are usually very typical. At first the child is apparently normal, and then develops symptoms referable to pressure on the medulla, followed by

death in twenty-four to forty-eight hours. When there is pressure on the cord by blood flowing down the spinal canal cord symptoms will develop. The supra-tentorial hemorrhages are not so dangerous; they are usually one-sided, and spread out like a shell over the convexity of the hemisphere. Only the smallest traces of blood are visible in the spinal fluid. One of the most characteristic symptoms is the marked unrest and continued screaming, developing perhaps twenty-four hours after birth. Then slowly other symptoms of increased intracranial pressure develop, sometimes associated with pupillary change on the same side as the hemorrhage and facial paralysis on the opposite side. Operation in these cases may be of advantage. The treatment should be to keep the child quiet, warm and away from external stimuli, preferably in an incubator.

7. Georgopulos has given atoxyl in 14 cases of malaria where quinine was not well borne, or did not affect the course of the disease. In all cases after a course of atoxyl (4–5 gm. given in 18 injections over a period of two to three weeks) the chills ceased and the organisms disappeared from the blood. No toxic effects were experienced from the drug. The author highly recommends atoxyl as an auxiliary to quinine in the treatment of malaria.

[R. D.]

No. 13. March 31, 1908.

1. Heillunner. *The Problem of the Proper Restraint of Drunkards.*
2. Riedel. *The Therapeutic Value of the Arc Light in Skin Diseases.*
3. Stieda, A. *A Rare Complication Following Resection of the Stomach.*
4. Hart, C. *Persistent Thymus and "Thymus Death."* (Continued article.)
5. Moritz. *The Technic of Orthodiagraphy.*
6. Geissler. *The Treatment of Cardiospasm.*
7. Trespe, A. *Case of Traumatic Dementia.*
8. Berliner, L. *The Treatment of Angina.*
9. Flatau, S. *The Sterilization of Rubber Gloves.*
10. Sehlbach, A. *A Typical Case of Cessation of Menses in Angina.*
11. Kästle, C., Ruder, H., and Rosenthal, J. *Instantaneous X-Ray Pictures.*

Berliner Klinische Wochenschrift. No. 12. March 23, 1908.

1. Hildebrand, O. *Remarks on Surgery of the Esophagus.*
2. Küttner, H. *Contributions to the Surgery of the Brain and Cord.* (Continued article.)
3. Veit, J. *The Diagnosis and Treatment of Puerperal Fever.*
4. Hirsch, C. *Gastric Pain Due to Masturbation.*
5. Fränkel, B. *The Decrease in Mortality from Tuberculosis.*
6. Lane, W. A. *The Operative Treatment of Chronic Constipation.*
7. Neisser, A., and Meirousky, E. *The Treatment of Lupus.*
8. Posner, C. *The Proper Procedures in the Treatment of Tumors of the Bladder.*

No. 13. March 30, 1908.

1. Siemerling, E. *The Symptomatology and Treatment of Cerebellar Tumors.* (Continued article.)
2. Jürgens. *The Practical Significance of Opsonins.*
3. Gross, O. *The Action of Pepsin, and a Simple Method of Estimating the Same.*
4. Richter, P. F., and Gerhartz, H. *The Action of X-Rays on Ferments.*
5. Kotzenberg. *The Operative Treatment of Diffuse Purulent Peritonitis.*
6. Küttner, H. *Contribution to the Surgery of the Brain and Spinal Cord.* (Continued article.)
7. Möllus, B. *Insects as Disease Carriers for Man or Animals.*

Die Therapie der Gegenwart. No. 2. February, 1908.

1. Sonnenberg, E. *Some Aids to Diagnosis in Acute Appendicitis.*
2. Körte, W. *The Question of Administering Castor Oil in the Acute Stage of Appendicitis.*
3. Rotter, J. *What is the Action of Castor Oil in Acute Appendicitis?*
4. Karewski, F. *Remarks on the Castor Oil Treatment of Appendicitis.*
5. Salzwedel. *The Treatment of Coryza.*
6. Elsner, H. *The Treatment of Gastric Ulcer.*
7. Hecht, A. *Critic on the Cholegen Treatment of Gallstones.*
8. Steinberg, W. *Potato Cakes in Diabetes and Obesity.*

Deutsches Archiv für Klinische Medizin, 1907. Band 91, Heft 5 and 6.

1. *Schleip. *Ring Bodies in the Blood of Anemic Patients.*
2. *Wiens. *Observations on the Influence of the Antiferment of the Blood upon the Proteolytic Leucocytic Ferment.*
3. *Hornung. *A Typical Paroxysmal Tachycardia.*
4. *Hoepffner. *Heart Volume in Normal and Diseased Individuals.*
5. *Grober. *Work Hypertrophy of the Heart.*
6. *Müller and Blauel. *A Criticism of the Riva-Rocci and Gartner Sphygmomanometers.*
7. Tiedemann und Lund. *Clinical Observations on the Influence of Carbon Dioxide Baths and Gymnastic Exercises on Cardiac Cases.*
8. Port und Schültz. *Chloroma.*
9. Weyrauch. *A Case of Spontaneous Rupture of the Aorta.*
10. Grawitz. *The Water Equilibrium of the Blood. A Reply to the Previous Article of A. Plehn.*

1. Schleip describes ring bodies in certain cases of anemia. These are structures which have been previously described by Cabot, of Boston. Schleip believes that they represent the remains of nuclei, whose chromatin has been dissolved out, leaving behind only the nuclear membrane and possibly a slight amount of attached chromatin. He thinks that he can trace transitions between nucleated reds and red corpuscles with ring bodies. He considers these findings as additional evidence that the red blood corpuscles lose their nuclei by karyolysis rather than as a result of extrusion.

2. Wiens has studied the proteolytic ferment action of the blood serum according to the method of Müller (Deut. Arch. für klin. Med., Bd. 91, Heft 3 and 4, reviewed, Bost. Med. and Surg. Jour., 1908, clviii, p. 171) in 72 cases, representing a variety of conditions, cases such as form the ordinary service of a general hospital. He finds that those diseases in which there is a generalized septic process show an increase of the proteolytic action of the blood serum. The cause of this he assumes to be related to increased processes of a leucocytic nature, which lead to increased destruction of leucocytes in the organism. In all tuberculosis cases, on the other hand, there is an increase of the inhibitory action of the anti-ferment, in other words, a decreased effect of the proteolytic ferment as compared with normal cases. It is well recognized that in all tubercular processes the leucocytic process remains in the background as compared with the lymphocytic, and as has been previously shown by Müller, the lymphocytes do not possess this same proteolytic ferment. It is even possible that they possess an inhibitory substance to the proteolytic ferment of the leucocytes. In other diseases in which there is no septic process, the results do not depart much from the normal. It has been assumed that the anti-ferment is bound to the proteid bodies of the blood fluid. If this were so, it would be expected that, in diseases in which the blood serum shows an increase in water and a decrease in proteid, as is probable in various chronic diseases, there would be a decrease in the anti-ferment. However, the author's work does not show this, which may be taken possibly as evidence that, in diseases with a decrease of the entire metabolism, there is not regularly an increase in the water of the blood.

3. Hornung describes several cases of paroxysmal tachycardia occurring in individuals over sixty years of age, associated with arteriosclerosis. These cases have been studied by means of sphygmographic tracings. In addi-

tion to the arteriosclerosis all of the cases had a high blood pressure. The tachycardia he believes to be of central origin.

4. The assumption of v. Recklinghausen that the work done by the heart can be measured in terms of the product of the amplitude of the pulse multiplied by the frequency of the pulse has been submitted to criticism by Hoepffner, who has studied these relations in a number of cases not suffering from cardiac disturbances. The claim of v. Recklinghausen is only true when it is assumed that there is no change in the caliber of the peripheral vessels. With changes in the peripheral vessels it is possible with the formula of v. Recklinghausen to get almost constant figures in patients who are evidently passing into a state of collapse and in whom this figure cannot in any way measure the amount of work done by the heart.

5. It has been very generally assumed that as the result of increased work the heart will hypertrophy, and this assumption has been submitted to experimental test by a number of observers. Grober in this paper has further studied the problem by comparing the proportionate weight of the heart and parts of the heart to the body weight in caged rabbits, wild rabbits and hares. He finds, as might be expected, that the proportionate heart weight is greater in those animals accustomed to muscular activity; and in different races developmentally related it is to be assumed that the larger heart has resulted from a development of the heart muscle in proportion to muscular activity. He finds that the right ventricle proportionately is increased more in weight than the left, which fact at first seems rather surprising. He seeks an explanation of the increase in the size of the right ventricle in an increased intrapulmonary pressure resulting from the acute emphysema, caused by the more rapid and more forcible respiration of the animal during muscular exercise. Possibly another factor in this is the fact that an animal running expires against the air resistance created in his motion, and consequently uses more respiratory effort against resistance, and so brings about a condition analogous to emphysema. In this emphysema the intrapulmonary blood pressure is raised in part by the increased capillary resistance in the walls of the distended alveoli.

6. Of the several instruments constructed for the clinical determination of blood pressure the Riva-Rocci and the Gärtner have been the ones in most common use. There has been much discussion with regard to the accuracy of these instruments, especially since different types of instruments give somewhat different values on the same individual. It has not been possible on animals to determine the accuracy of these instruments in comparison with blood pressure results determined by direct manometric methods. Müller and Blauel have undertaken comparison in man, utilizing arms that were to be amputated. By means of a canula in the artery direct readings of blood pressure in each case were made with Hürthle's feather manometer and Ludwig's mercury manometer. These were adjusted in the operating room and the canula introduced just prior to amputation. The blood pressure was taken before the introduction of the canula by means of the Riva-Rocci and the Gärtner sphygmomanometers, and during the operation similar observations were made on the other arm, the readings being taken in the usual way, with the finger on the radial pulse. In addition, on the arm to be amputated, the air cuff was adjusted around the arm and connected with the Riva-Rocci instrument, and several times during the observation the pressure was raised to the point of the disappearance of the pulse wave, as recorded on the revolving drum. These observations were made on 3 patients, aged forty-five, thirty-five and thirty-three respectively, in whom there was no demonstrable arteriosclerosis. One was an amputation for cancer of the hand, one for sepsis and one for tubercular elbow. These observers found considerable discrepancy between the blood pressure, as recorded by the clinical instruments and as determined by the direct manometric method. There was less error in v. Recklinghausen's modification of the Riva-Rocci apparatus than in the Gärtner tonometer. This error did not exceed 20%, except when the narrow cuff was used, in which case systolic pressure showed an error of more than 40%. This shows conclusively that the wide cuff gives more accurate readings than the narrow. Even greater discrepancies occurred in the determination of the diastolic blood pressure. Through the wide cuff Riva-Rocci instrument gives results of use in the clinical study of cases; still the error inherent in the method is too great to allow of any sweeping conclusions in regard to the cardio-vascular mechanism in man. Observations in which these instruments have been used must then be discounted in proportion to the possible average error in these instruments, and physiological laws should not be deduced from such observations. [This piece of work seems to the reviewer to have been carefully done and to be timely, since there has been recently a tendency to draw rather sweeping conclusions from blood pressure observations in the clinics. H. A. C.]

Miscellany.

ARMY MEDICAL DEPARTMENT EXAMINATIONS, 1908.

The Act of April 23, 1908, reorganizing the Medical Corps of the Army, gives an increase in that corps of 6 colonels, 12 lieutenant-colonels, 45 majors and 60 captains or first lieutenants, and establishes a Medical Reserve Corps as an adjunct to the Medical Corps. Under this recent act, the lieutenants of the Medical Corps are promoted to captain after three years' service instead of five, and the increase in the higher grades insures promotion at a reasonable rate all through an officer's military career. Furthermore, applicants who are found qualified in the preliminary examination are appointed first lieutenants of the Medical Reserve Corps and ordered to the Army Medical School in Washington, D. C., for eight months' instruction. Preliminary examination for appointment in the Medical Corps will be held on Aug. 3, 1908, and formal applications should be in possession of the War Department prior to *July 1.* The applicant must be a citizen of the United States, between twenty-two and thirty years of age, a graduate of a medical school, legally authorized to confer the degree of doctor of medicine, of good moral character and habits, and must have had at least one year's hospital training or its equivalent in practice.

The large number of vacancies created in the Medical Corps by recent legislation makes it certain that *all* successful candidates will be recommended for a commission for several years to come.

The Medical Reserve Corps. — It is desired to obtain and maintain a list of qualified men all over the country who are willing to serve as medical officers in time of emergency, and to such men the President is authorized to issue commissions as first lieutenants, Medical Reserve Corps. It is recognized that it will be necessary to place only a limited number of these officers on the active list in time of peace, and it is hoped that young medical men throughout the country and medical officers of the militia of the various states may be sufficiently interested to secure positions on the Medical Reserve Corps list.

Full information concerning the Medical Corps and the Medical Reserve Corps may be procured upon application to the Surgeon-general, U. S. Army, Washington, D. C.

RECORD OF MORTALITY

For the Week ending Saturday, May 30, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	6	1
Chicago	—	—	Waltham	3	—
Philadelphia	—	—	Pittsfield	4	2
St. Louis	—	—	Gloucester	—	
Baltimore	178	51	Brookline	8	1
Cleveland	—	—	North Adams	4	—
Buffalo	—	—	Chicopee	9	6
Pittsburg	—	—	Northampton	10	2
Cincinnati	—	—	Medford	4	1
Milwaukee	—	—	Beverly	6	—
Washington	—	—	Leominster	—	—
Providence	79	18	Hyde Park	2	—
Boston	236	84	Melrose	7	1
Worcester	36	6	Newburyport	—	—
Fall River	43	19	Woburn	8	2
Cambridge	24	7	Westfield	4	—
Lowell	21	6	Marlboro	5	2
Lynn	28	10	Revere	2	—
New Bedford	26	10	Attleboro	3	1
Springfield	15	3	Peabody	—	—
Lawrence	21	6	Adams	4	3
Somerville	19	6	Clinton	—	—
Brockton	12	4	Gardner	4	2
Holyoke	21	12	Milford	—	—
Malden	11	2	Watertown	1	0
Chelsea	4	2	Plymouth	—	—
Newton	7	—	Weymouth	—	—
Salem	15	8	Framingham	2	—
Haverhill	14	2	Southbridge	6	2
Fitchburg	7	1	Wakefield	—	—
Everett	8	2	Webster	—	—
Taunton	15	4	Arlington	1	—

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 6, 1908.

L. W. Bishop, passed assistant surgeon. Detached from the "Hancock," and ordered to the Naval Recruiting Station, Indianapolis, Ind.

A. H. Allen, assistant surgeon. Detached from duty in connection with the Cape Cruz-Casilda survey expedition and ordered to duty with Marines at Havana, Cuba.

E. C. White, assistant surgeon. Detached from duty with Marines at Havana, Cuba, and ordered home to wait orders.

W. F. Schaller, assistant surgeon. Resignation accepted to take effect June 1, 1908.

J. A. Biello, assistant surgeon. Detached from the Naval Hospital, Portsmouth, N. H., and ordered to the "Solace."

F. C. Cook, surgeon. Detached from the Naval Academy, and ordered to the "North Carolina," June 6, 1908.

C. C. Smith, passed assistant surgeon. Ordered to the Naval Hospital, Portsmoth, N. H.

W. N. McDonell, passed assistant surgeon. Detached from the Naval Recruiting Station, Buffalo, N. Y., and ordered to the "Severn," for duty in connection with the Navy Rifle Team.

J. M. Brister, passed assistant surgeon. Detached from the Naval Hospital, Puget Sound, Washington, and ordered to continue other duties.

C. J. Holeman, assistant surgeon. Orders of May 26 modified; detached from Naval Training Station, San Francisco, Cal., and ordered to the "Arethusa."

APPOINTMENTS.

The following appointments have been to the staff of the Rockefeller Institute for Medical Research: P. A. Lewis, Assistant in Pathology; A. I. Kendall, Assistant in Bacteriology; A. R. Dochez, Fellow in Pathology; A. O. Shaklee, Fellow in Physiology and Pharmacology. The following promotions have been made: John Auer, Associate in Physiology and Pharmacology; Don R. Joseph, Assistant in Physiology and Pharmacology; Alexis Carrel, Associate in Surgery; J. W. Jobling, Associate in Pathology; Benjamin T. Terry, Assistant in Protozoölogy; Donald D. Van Slyke, Assistant in Biological Chemistry; Walter A. Jacobs, Assistant in Biological Chemistry; Bertha I. Barker, Fellow in Pathology; R. V. Lamar, Fellow in Pathology.

ANNOUNCEMENT.

A Research Fellowship.—The graduating class of the Department of Medicine of the George Washington University, numbering 45, has announced to the University authorities the establishment by the class of a research fellowship. This fellowship will be known as the "Class of '08 Fellowship" and will have an annual fund of not less than $300.

SOCIETY NOTICE.

New England Electro-Therapeutic Association.—The twenty-second regular meeting will be held in the auditorium (third floor), Edison Building, 39 Boylston Street, Boston, Mass., Friday, June 12, 1908, at 8 p.m. A paper will be read by Margaret A. Cleaves, M.D., of New York City, on "The Chemical Rays Promoters of Life and Energy: Their Mode of Action and Therapeutic Uses."

Samuel J. Harris, M.D., *Secretary.*

RECENT DEATHS.

Dr. Charles H. Davie, of Scituate, Mass., died in Boston suddenly, June 4, aged sixty-five years. He graduated from the Buffalo Medical College in 1875. He was active among the medical organizations of Plymouth and Norfolk counties, and for thirty years had been a prominent and beloved physician of Scituate.

Dr. Enoch Vine Stoddard, a prominent physician of Rochester, N. Y., died on June 7. He was sixty-eight years of age, and was graduated from the Albany Medical College in 1863. Dr. Stoddard was formerly president of the New York State Board of Charities, and at the time of his death was consulting physician to the Rochester City Hospital.

BOOKS AND PAMPHLETS RECEIVED.

First Annual Report of the Commissioner of Health of the Commonwealth of Pennsylvania. Harrisburg. 1908.

The Harvey Lectures. Delivered under the auspices of the Harvey Society of New York. 1906–07. By Prof. A. E. Wright and Others. Philadelphia and London: J. B. Lippincott Co. 1908.

Comparative Anatomy of Vertebrates. Adapted from the German of Dr. Robert Wiedersheim by W. N. Parker. Reprint.

A Manual of the Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P. Eighth edition. London: J. & A. Churchill. Philadelphia: P. Blakiston's Son & Co. 1908.

On the Witness Stand. Essays on Psychology and Crimes. By Hugo Münsterberg. New York: The McClure Co. 1908.

Subcutaneous Hydrocarbon Protheses. By F. Strange Kolle, M.D. Illustrated. New York: The Grafton Press. 1908.

The Principles and Practice of Hydrotherapy. A Guide to the Application of Water in Disease. By Simon Baruch, M.D. Third edition, revised and enlarged. Illustrated. New York: William Wood & Co. 1908.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Hygienic Laboratory. Bulletin No. 40. 1. The Occurrence of a Proliferating Cestode Larva (Sparganum proliferum) in Man in Florida. By Ch. Wardell Stiles. 2. A Re-examination of the Type Specimen of Filaria restiformis Leidy, 1880—Agamomermis restiformis. By Ch. Wardell Stiles. 3. Observations on Two New Parasitic Trematode Worms: Homalogaster philippinensis n. sp., Agamodistomum nanus n. sp. By Ch. Wardell Stiles and Joseph Goldberger. 4. A Re-examination of the Original Specimen of Taenia saginata abietina (Weinland, 1858). By Ch. Wardell Stiles and Joseph Goldberger. Washington. 1908.

Original Articles.

AN ACCOUNT OF DR. LOUIS-DANIEL BEAUPERTHUY,

A Pioneer in Yellow Fever Research.*

BY ARISTIDES AGRAMONTE, M.O., OF HAVANA, CUBA.

In the year 1853, the Province of Cumaná, in the Republic of Venezuela, was no doubt properly considered by the enlightened nations of the world as one of the wildest and remotest regions of the earth; its closest foreign neighbor is the English island of Trinidad, which little imaginative effort may well establish as a fragment of the mainland, severed by seismic action during one of the numerous earthquakes which, even within the history of man, have carried terror and desolation throughout Venezuelan territory.

What could it interest the world then, that a virulent and extensive epidemic of yellow fever ravaged that obscure and benighted country in the year of which I write? Still, let us be thankful that because of the preservation of a few documents, the records of one who labored at that time in the same field as ourselves will not remain forever buried in the musty archives of those ancient institutions.

The subject of this biographic sketch was then forty-five years of age, having been born on the 25th of August, 1808, at Basse Terre, in the Island of Guadeloupe (French West Indies). After obtaining his degree of Doctor in Medicine from the Paris Faculty in 1837, he was appointed "Traveling Naturalist" for the Paris Museum of Natural History, returning in that capacity to the regions of the Orinoco, which he had evidently formerly visited.[1]

He devoted most of his time to the microscopical investigation of disease, carefully studying, with the means then at hand, the urine, excreta, and secretions of his clients, with such patience and perseverance, that many ignorant though well-meaning persons were led to consider him a harmless "crank" on the subject of microscopy.

As early as 1838, he had evolved theories which ascribe a parastic origin to all the infectious diseases; at that date he presented to the Academy of Science (Paris) an essay, written in collaboration with his college-mate, M. Adel de Rosseville, in which he attributed the cause of putrefaction to the presence of animalcules in organic matter.

The fact that this man in the early forties traveled through the wilds of Venezuela, investigating with a microscope the tropical diseases which came under his observation, makes him sufficiently deserving, to my mind, of the high place which I claim for him among the pioneers in the research of tropical medicine.

Leprosy was a "hobby" which he rode to the moment of his death, which, unfortunately for the subsequent development of his cherished branches of medicine, occurred in September, 1871, while, as director of the Leper Hospital at Demerara (Georgetown), British Guiana, he was engaged upon the humanitarian enterprise of carrying out a method of treatment based upon his parasitic theory of the disease. In connection with this, it is interesting to note that, as published by his colleague, Dr. Bakewell, of Trinidad,[2] Dr. Beauperthuy's treatment of leprosy particularly enjoined repeated bathing and excessive alimentation, both of which means are to-day considered as absolutely necessary for the success of the many vaunted methods. As evidence of his undeniable intellectual foresight, I quote the second requisite which he describes in his method of treating leprosy. He says: "The patients should live in as healthy a locality as possible, and not in the neighborhood of marshes, etc. They are required to sleep under mosquito nets so as to prevent the sting of insects, which irritate and inflame the skin and perhaps propagate the disease."

It was because of the favorable report rendered by a special commissioner of the English Government, that Dr. Beauperthuy was appointed director of the Demerara Leper Hospital.

But that to which I desire mostly to call the attention of the society is the fact that Beauperthuy, as early as 1853, distinctly saw the rôle played by mosquitoes in the spread of malaria and yellow fever. With regard to yellow fever, the "striped-legged mosquito" attracted his attention, and he was the first one, to my knowledge, who called it the "domestic" species, a fact which to-day has been conclusively demonstrated.

A fortunate circumstance has placed in my hands the documents which testify to the truth of the above statements, one of them, the *Official Gazette* of Cumaná, of May 23, 1854,[3] a few paragraphs of which I shall quote here, is most valuable from an historical point of view, and I am happy for the opportunity afforded by the invitation of the American Society of Tropical Medicine, to present to our English-speaking colleagues these facts, as a late tribute, but a sincere one, to the memory of a fellow practitioner who, if not entirely unknown, has been absolutely overlooked or forgotten by our contemporaries.

He labored upon a sterile soil; the minds of men were not yet in a condition to accept views so iconoclastic of the old hypotheses, so contrary to the cult of miasms and other intangible and mysterious agencies of disease. And still, the preachings of the harmless "crank" attracted considerable attention among the political authorities of the surrounding country. We have seen that the Government of the Island of Trinidad appointed Dr. Bakewell to investigate Beauperthuy's treatment of leprosy, and the French Colonial Office detailed Dr. G. P. M. de Brassac, a navy surgeon of the first class, for the same purpose. The latter rendered a more complete report and entered upon an agreement with both Drs. Beauperthuy and Bakewell to try the method under discussion after becoming impressed with its merits in Dr. Beauperthuy's hands. Of Beauperthuy's ideas, it is needless to say that neither De Brassac nor Bakewell could understand a single word.

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* Read by title at the fifth annual meeting of the American Society of Tropical Medicine, held in Baltimore, March 28, 1908.

In his report, De Brassac says:[4]

"In combating the ideas of Dr. Beauperthuy, we shall not forget that we have known this excellent confrère, a veritable type of honorability and disinterestedness, always convinced and filled with good faith in his scientific errors. If instead of being a detached pioneer from the army of investigators, deprived voluntarily for more than thirty years of all aid granted by progressive science, Dr. Beauperthuy had remained in contact with the workers of his time, there is no doubt but that the passion for research which characterized him would have made him one of the most remarkable among them."

But Finlay had also been considered a harmless "crank" by many, until the United States Army Board demonstrated the mosquito's agency in the spread of yellow fever, notwithstanding the fact that he had something more tangible on which to base his claims, from the fact that Manson had already demonstrated what the insect could do in transmitting disease since 1879.[5]

Until Manson's demonstration of filaria transmission, since Beauperthuy's articles (1854–1870), no mention of insect agency in the propagation of disease can be found in medical literature. Finlay quickly followed, in 1881, with a paper read before the Havana Academy of Sciences,[6] expounding the fundamental principles of a theory which we know to-day as the modern doctrine of yellow fever transmission, and which, unknown to all then, was in fact a regenerated and strengthened revival of Beauperthuy's ideas, regenerated and strengthened by the accumulated knowledge of thirty years, which period had elapsed since its conception.

Man to man transmission of disease through the bites of insects was unknown before Manson's discovery; this was the point brought out by Finlay in his theory and in which it principally differed from Beauperthuy's at the time of which I write. On the other hand, Finlay and Beauperthuy had arrived at the same conclusion (the mosquito's rôle), by following a series of logical deductions, based exclusively upon the study of yellow fever epidemics. Neither one nor the other had knowledge, at the time of their respective publications, of any demonstrated evidence on which to base their claim, and, in fact, not until the publication of the investigations made by the United States Army Board was there any scientific proof that could be accepted by the medical world as incontrovertible.[7]

Two important points which were the subject of uncertain speculation were definitely settled only after the experiments of the Army Board above referred to (1900–1901); these were the period of incubation of the disease, and the time during which a patient may remain infective. Without both of these, to serve as a fulcrum, the mighty lever, even of such a master mind as Finlay's, could accomplish but little. In Beauperthuy's time, when native and foreigner alike were stricken by the dreaded scourge, even the positive knowledge of immunity was lacking.

Before going any further in studying the value of Beauperthuy's work, which can only be done by just comparison and a careful estimation of its merit and of its time, I may be permitted to quote a few paragraphs from his original contributions to the medical literature of those days.

In the above cited *Official Gazette*, he says:

"In the performance of the duties which I have undertaken [city physician during an epidemic of yellow fever, in Cumaná], I have applied the experience obtained during fourteen years of microscopic investigations made of changes in the blood and other fluids of the animal economy in the fevers of all types.

"These observations, made in the equinoctial and tropical regions, were of great aid to me in recognizing the causes of yellow fever and the appropriate means of combating this terrible disease. As to my work regarding the etiology of yellow fever, I shall abstain from making it public just at present. My investigations in this direction are part of an extensive work in which the results present facts, so new and so different from the accepted views, that I must not publish them without bringing to their support the most evident demonstrations. On the other hand, I am sending to the Academy at Paris a sealed letter which contains a résumé of the observations which I have collected up to date (1854), and the object of which is to insure against all events the propriety of my discoveries regarding the causes of fever in general."

It is my intention to obtain from the legal heirs of Dr. Beauperthuy authority to open the letter to which he refers; it is no doubt fraught with interesting data and thus we shall rescue one more document from undeserved obscurity.

Further on he says:

"The disease known as yellow-typhus, black-vomit, etc., is produced by the same causes which induce the intermittent fevers.

"Yellow fever cannot be considered as a contagious disease. The cause of this disease develops under climacteric conditions which allow it to spread at once or successively; these conditions are those which favor the development of mosquitoes (insectes tipulaires, maringoines, etc.)."

"The mosquitoes introduce into the skin their *sucker*, composed of a grooved sting or spur with two lateral saws; they instil into the skin a venomous fluid, which has the property of snake poisons. It softens the blood cells, produces a rupture of their tegumentary membranes, dissolves the parenchymatous portion and facilitates the solution of the coloring matter in the blood plasma. This dissolvent action seems to facilitate the flow of the blood through the capillary duct of the mosquito's 'sucker.'

"The agents of this infection (yellow fever) present great number of varieties, not all of them being equally harmful. The variety known as 'Zancudo bobo,' which has *white-striped legs*, is to a certain extent the *domestic species*. It is not the most common and its sting is comparatively less painful than that of the other species."

The following is an interesting statement, which shows Beauperthuy's power of observation and his good judgment:[8]

"It is not necessary to search very far in order to find why typhus icteroides is so common along the seacoast and so rare in the interior of the country and in localities little frequented by mosquitoes. In Basse Terre, capital of one of the West Indies, it has been observed that the epidemics of yellow fever do not extend their harmful influences as far as the town of Matouba, situated barely three miles from said city. It must be admitted that this distance is entirely too short to preserve, by itself, the town of Mantouba against the supposed noxious effluvia exhaled by the coast and which the winds, when blowing from the east, would transport within a few minutes; on the other hand, this distance from the sea, that is, from the locality inhabited by mosquitoes, is more than sufficient to preserve against their action and the serious inconveniences which they produce."

Beauperthuy thought that mosquitoes obtained the yellow fever poison from the putrefying organic matter in the stagnant waters in which they breed; this grave error is quite excusable when we consider the meager medical attainments of his day.

Speaking of malaria fever, he says:

"The intermittent fevers are severe in proportion with the abundance of mosquitoes, and these fevers disappear or lose much of their intensity in the woods which, on account of their altitude, contain but few of these insects.

"The marshy emanations are reputed as more energetic during the night than in the rest of the day. These are the hours in which mosquitoes are most active.

"To protect themselves against the fevers, the Indians employ certain preservatives, and those who inhabit the unhealthy valleys place burning coals (a brazier) at the entrance of their huts. This method is very effective for barring mosquitoes.

"Of all means employed to protect themselves from the action of mosquito bites, the most efficient is that followed by some Indians, which consists in rubbing the skin with oleaginous substances."

Upon acclimatization, he says:

"Perhaps we ought to look upon acclimatization only as an inoculation. It is not that the febrile virus introduced under the skin of man preserves him from the fevers, but that it diminishes the harmful action of these diseases and makes them lose a great part of their gravity. It acts as the variola inoculation, although the latter does not always preserve from pustulous infections. This analogy is still more evident in yellow fever, which generally affects the individual only once."

Further on we find:

"Contagious diseases are transmitted by inoculation. A certain period must elapse between the action of an infecting cause and the start of a visible lesion."

"The expression 'winged serpents,' used by Herodotus, is well applicable to the tipulary insects and the action of their bites upon the human economy."

The collection of Beauperthuy's papers, published under the title of 'Travaux Scientific,' contains a great deal of matter which is just as absurd in our judgment to-day as his mosquito theory must have been to his contemporaries; there is a good quantity of chaff and irrelevant material in his writings; numerous pages are filled with obscure meaning, but now and then, as through a rift in heavy and accumulating clouds, a ray of light, clear and distinct, shines forth to give us a glimpse of the truth which he could see, no doubt, in spite of the bigotry and ignorance of the times.

Finally, allow me to quote a paragraph from another article:

"The attachment to old ideas is always protected by indifference and indolence. The worship of errors is otherwise as passionate as that of truth. It is necessary to remove from medicine those erroneous explanations which disfigure it. Truth can be established but very slowly; it cannot come forth except after a struggle, after having destroyed the errors which occupied its place. It was only after thirty years of debate that Harvey could demonstrate the circulation of the blood, a thing in which the proofs are easily established. The products of the imagination shining with greater splendor than the real facts are often substituted for the truth. Fantastic glares! Physicians, in the impossibility of discovering the causes of a great number of diseases, imagine an invisible power, occult, intangible to our senses and beyond our means of investigation. The routinary spirit of many physicians is content with this vague appreciation of the sources of most diseases and makes no effort to penetrate into the real causes of epidemics and of contagious diseases which are still unknown. From this point of view, science requires a complete renovation."

I consider the evidence here presented quite sufficient on which to base a claim for recognition of this investigator, lost in the devious by-ways of tropical America; it seems to me that it also serves to porve that, like all great truths which have been rbought forth in medicine, since the earliest history of the art, the modern doctrine which explains the propagation of yellow fever had a prolonged and distressing evolution extending over a period of half a century.

If we eliminate the questionable credit which has been ascribed to Nott, who in 1848 vaguely suggested the possibility of insect transmission for both malaria and yellow fever, we find that in 1854 Beauperthuy speaks plainly of mosquitoes spreading epidemics of yellow fever and that he, thinking several species were responsible, fixes upon the domestic habits of the striped-legged variety; then, in 1881, Finlay defends the hypothetic mosquito transmission, introduces the feature of man to man infection and presents the striped-legged and the Culex pipiens (C. cubensis) as the probable vehicles of infection; later he retains only the striped-legged mosquito as the propagator of the disease. Then in 1900–1901, the experiments of the United States Army Board definitely settle the question of mosquito transmission; they establish the exact maximum limit of incubation in man, the minimum in the mosquito, the infective period of yellow fever cases and fixes the guilt upon the single species Stegomyia calopus. Subsequent investigators have only corroborated the findings of this board.

REFERENCES.

[1] Beauperthuy: De la Climatologie. Thesis presented to the Paris Faculty of Medicine, Aug. 23, 1837.

[2] Bakewell, Dr. R. H.: Dr. Beauperthuy's Cure of Leprosy, in the "Star of the West," Port of Spain, Trinidad, March 24, 1870.

[3] Beauperthuy: Gaceta Oficial de Cumaná Año 4, No. 57, May 23 1854.

[4] De Brassac: Une Mission á Cumaná. Rapport addressé a M. le Directeur de l'Interieur de la Guadeloupe. Imprimière du Gouvernment, 1869.

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SUTURE OF THE PATELLAR TENDON: REPORT OF THREE CASES.

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THE following three cases are recorded because of the comparative rarity of the condition and the necessity for its surgical treatment. Rupture of the quadriceps tendon or its avulsion from attachment to the patella is of quite frequent occurrence and numerous instances of this have found their way into medical literature. The short, broad and very strong tendon extending from the patella to the tibial tubercle is much less likely to rupture than is the thinner, more widely attached tendon of the quadriceps. Consequently muscular violence is more prone to effect a tear in this than in the patellar tendon.

In fact, so far as the personal experience of the writer is concerned, the ruptures of the patellar tendon have always resulted from direct violence to the tendon itself. It may be that there was a contributory factor present in the violence of the muscular contracture of the quadriceps, but violence directed to the tendon itself was the conspicuous feature. In one case the division of the tendon was brought about through an incised wound of the skin. In the other two the patients fell heavily upon the flexed knee, striking in one instance upon a hard wood floor and in the other upon the ground. The injury was in men in all three instances, as is commonly the case. Men are more subject to traumatic influences and also it may be that the wearing of skirts offers greater protection to the knee when a fall is sustained upon the flexed leg. The two patients here reported who received their injuries through falls upon the bent knee were both adults, one well along in years and the other in the prime of life. It is not, therefore, necessarily because of any senile fragility that such ruptures occur. In the two cases where the patients fell upon the knee the rupture took place at or very close to the line of attachment of the patellar tendon to the patella. In the incised case the division of the fibers of the tendon was also so close to the patella that it was impossible to sew into that portion of the ruptured tendon which was attached to the patella, and the sutures had to be passed through the substance of that bone or its marginal cartilage.

The disability which follows an injury of this nature is greater than that which follows fracture of the patella where the separation of the fragments is considerable and the final union is purely a fibrous one. The insertion of the vastus internus and externus into the capsule of the knee joint and the lateral prolongation of their insertions down upon the head of the tibia and fibula are of very material assistance in the preservation of function when the patella is fractured and imperfectly united or the main part of the quadriceps tendon is torn from the patella. Without an intact patellar tendon, however, the last few degrees of extension, which are so essential, cannot be secured, though in the cadaver it has been demonstrated that extension of the leg is possible with a divided patellar tendon.

The symptoms of this condition seem hardly worth discussing. The two cardinal and distinguishing ones are the loss of ability to extend the leg and a palpable hiatus in the continuity of the patellar tendon. In addition to this all the symptoms of severe trauma may be present if the rupture was brought about by direct violence without rupture of the skin. Swelling and local tenderness may obscure the hiatus in the tendon and the severity of the trauma may be, for a time, a sufficient explanation of the inability to completely extend the leg. Incised wounds through the skin over the course of the patellar tendon should always be carefully explored to avoid overlooking a section of this tendon. The instance (Case I) of this kind here reported illustrates the importance of observing this caution.

Fixation in complete extension, either in plaster, or preferably upon a posterior wire splint which will permit of the application of ice bags to lessen swelling, will render the diagnosis easier and make it possible earlier. The x-ray, in a lateral view, is capable of revealing a break in the continuity of the patellar tendon, after swelling and effusion have subsided. One case was complicated by a hematoma in the knee joint, necessitating a free opening into that articulation and flushing out the clotted blood.

Operative treatment. — The incision which the writer has employed has been a straight one directly over the patellar tendon, beginning at the tibial tubercle and extending up over the lower half of the patella. The sheath of the patellar tendon is fully three quarters of an inch in breadth and at its attachment to the patella is separated from the synovial membrane by quite a thick layer of subserous fat. In elderly patients this fat may be so atrophied that the synovial membrane is practically a part of the posterior surface of the patellar tendon. If the rupture has been of long standing there is likely to be considerable contracture of the divided tendon, and in these cases it is necessary to employ the method of Lange, devised for the purpose of transmitting the power of a muscle at a distance where there was no intervening tendon of sufficient length. In one case the writer used braided pedicle silk, bridging over the entire distance between the tibial tubercle and the patella. Four strands of this silk were placed parallel to each other, being attached above to the marginal cartilage of the patella by threading through holes drilled in the cartilage, and below they were quilted through the patellar tendon. A fascia was then closed over these sutures with interrupted catgut and the skin united with a buried silkworm gut. In the two cases where there had been but little retraction it was possible to approximate the cut ends of the tendon quite closely to the lower border of the patella. It was always necessary to drill holes in the margin of the patella. The leg was then put up in plaster of Paris in complete extension and was not again disturbed, except for the removal of the skin suture, until six weeks had elapsed. The plaster was then split and taken off each day to permit of passive motion. During the next two weeks the patients were allowed to bear weight on the leg, protected by the plaster. At the end of a month, or ten weeks after the operation, motion was possible to nearly a right angle and walking was then permitted without the protection of any splint. Crutches were used for the first six weeks and then a cane for the next month. Protection by a flannel bandage was urged for two or three months after the omission of the plaster.

The functional results have been entirely satisfactory. There has been the loss of not over 5° of extension in any case and this has not seemed to materially interfere with function. In the case where Lange's method was employed one strand of the silk used to bridge over the hiatus worked its way to the surface, after being in place six months. This required a careful dissection in order to avoid the removal of the entire network. It also gave opportunity to observe the way in which a new tendon was being formed, fibrous tissue having enveloped these strands throughout their entire extent.

Here follows in detail the history of the three cases:

Case I. Mr. E. A. J., Nov. 7, 1905. Age twenty-three years. Complaint: Disability, right leg. Duration: Four months. Cause: Cut with an axe.

On July 10, while the patient was in the Maine woods, he incised the right upper shin with a hatchet. The wound bled freely, was sewn up at the time by a local doctor, and he was kept in bed for four or five days. At the end of that time he got up and undertook to walk about but had to go to bed again. Since then he has frequently "sprained" the joint, after each of which attacks the knee has swollen up very much as if there were a synovitis present. Two weeks ago, at the date of his last wrench, the joint was so swollen that a physician was called in, who tapped the knee without any result.

Patient has never been a very strong boy, but has had no rheumatic troubles in any of his joints. Since the injury in July he has never been able to fully straighten the leg and has had to use crutches a good part of the time.

Physical examination. — Poorly nourished and fairly developed man. Right knee swollen from the top of the quadriceps pouch to well below the patella, the swelling being due apparently to an effusion in the joint and not to a thickening of the capsule. Over the patella the right knee was 2.5 cm. larger than the left, 8 cm. atrophy of the thigh and $\frac{1}{2}$ cm. atrophy of the calf. There was an oblique scar over the outer side of the leg which crossed fully two thirds of the entire width of the patellar tendon. This scar was 3 cm. in length. Passive motions of the knee joint were practically unrestricted. Voluntary extension not possible except for a very few degrees. No increase in the surface temperature nor tenderness on palpation. An area of anesthesia about the upper and outer side of the scar. Redness and induration over the tibial tubercle, but no heat or tenderness in that situation. Contracture of the quadriceps tendon gives rise to no tightness of the patellar tendon, seeming to exert its entire pull upon the capsule of the joint. X-ray did not show any conclusive evidence of section of that tendon.

Nov. 13, 1905. Under ether an incision 9 cm. long made from the lower border of the patella to below the insertion of the patellar tendon into the tibial tubercle. The sheath of the tendon was opened and the tendon was found to be completely divided, retracted and much frayed out. This was freed from attachment to the sheath and a network of silk was passed to and fro from the patella (subperiosteally) to the frayed-out ends of the tendon. It was impossible to pull the patella down to the position which it should assume with the leg extended, but constant traction was kept up manually during the operation. Two heavy pedicle silk sutures were also passed subperiosteally from the insertion of the tendon into the tibial tubercle underneath the tendon itself and again subperiosteally into the base of the patella in the form of a mattress suture. The sheath of the tendon was then closed over with interrupted silk sutures, nearly completely covering in the network of silk underneath. A dry sterile dressing was applied and broad adhesive straps put on above the patella and firmly pulled down to the calf, producing some traction. Wound was closed with interrupted silkworm sutures and the leg put up in complete extension in plaster of Paris.

Dec. 9, 1905. No swelling. Gentle manipulation of the knee practised through 20° of flexion.

Jan. 23, 1906. Right-angled flexion. Extension to almost a right angle. Walked two and three-quarter miles yesterday without discomfort. Is going back to college. Discharged.

Sept. 5, 1906. A few weeks ago a small bleb appeared on the front of the knee, halfway between the tibial tubercle and the patella. This was non-inflammatory in appearance, but the skin gradually became thinner over it and at last broke down and a small amount of pus evacuated. Evidently represents an old suture. Has voluntary extension of the leg to nearly normal amount. Can raise himself on that leg alone. Has walked ten miles without discomfort and a palpable tendon about one-half inch in width is present. Walks without any limp. Boric acid dressing to the ulcer on knee.

Dec. 10, 1906. Wound has almost scabbed over. Continue dry dressing.

Dec. 26, 1906. Under ether strand of silk suture removed.

April, 1908. Since that time the patient has been heard from once, and is able to use his leg without any appreciable impairment of function.

Case II. April, 1906. Male, sixty-three years of age.

Patient was coming out of a room which was not carpeted, and slipped, falling heavily, with his right knee flexed to a right angle. He was unable to get up, partly on account of the pain and partly on account of inability to use the leg. Effusion appeared in the joint very rapidly and he was carried home, put to bed and ice bags kept over the knee for several days. There was much pain and tenderness about the front of the joint; the swelling gradually subsided and with its subsidence no improvement in ability to use the leg occurred. There was an hiatus below the lower border of the patella which was palpable, and contracture of the quadriceps made no appreciable tightness in the patellar tendon.

The patient was seen in consultation with his family physician and operation advised, the diagnosis of rupture of the patellar tendon having been made.

A vertical incision paralleling the patellar tendon and extending from the middle of the patella down to the tibial tubercle was made and this traversed, at the juncture of the patella with the patellar tendon, the sheath of the tendon and immediately opened the joint, the skin being much atrophied on account of the patient's age and the retraction of the tendon, leaving nothing but the sheath between the skin and the synovial membrane. The fat pad ordinarily found in this situation had also disappeared. There was a considerable amount of clotted blood in the knee joint, which was washed out with sterile salt solution. The patellar tendon had shrunk down about a half inch. Mattress silk sutures were passed through the end of the tendon which is attached to the patella and by these it was drawn up into pretty close approximation to the patella. Four holes were bored in the cartilaginous margin of the patella, through which the sutures were passed. The limb was then put up in plaster of Paris, after closure of the skin incision and application of a dry sterile dressing. Union was by first intention and function has been entirely satisfactory.

Case III. C. H. F., age thirty-two years, male. Occupation: Grocer.

Jan. 21, 1903. Five months before entering the hospital patient fell from a car, striking heavily on the ground, and it was supposed he had fractured his patella. He was kept in the house for six weeks. After that he began to walk about. Seventeen days before entering the hospital he slipped, after which there was some swelling of the knee.

On physical examination there was moderate thickening of the patella, but if it had been fractured the union was osseous. There was marked swelling, particularly over the lower half of the patella and from there over the upper part of the tibia. A marked hiatus could be felt just below the inferior border of the patella and no bone could be palpated below this hiatus. An x-ray taken at this time showed the patella to be intact and there was no evidence of there having been a previous fracture. Patient could not extend the leg voluntarily.

He entered the hospital on the 11th of February, and an incision was made over the anterior surface of the patellar tendon and it was found to have been separated from the lower border of the patella and the patella had ridden up somewhat upon the femoral condyles. It was possible, however, under ether to crowd the patella down so that sutures passed through the cartilaginous margin of the patellar and quilted into the patellar tendon were successful in approximating the tendon to the bone. Wound was closed with silkworm gut and the leg put up in an extended position in plaster of Paris.

April 3, 1903. The patient could extend his leg almost completely and hold it in the extended position and could flex it about 45°.

Jan. 29, 1904. Patient returned on account of rheumatic trouble in his shoulder, and an opportunity to examine his knee was taken. Functionally he was having no trouble with it. He could go over the stairs in a normal manner and could extend the leg to within about 5° of complete extension. Nothing more has been heard from him.

In an article written by Binnie[1] for Keen's "Surgery," he indicates the more common tendinous ruptures, viz., that of the quadriceps, the patella, the Achilles, the long head of the biceps and the triceps. He intimates that those of most common occurrence are of the quadriceps and the patella, which he classifies as one. In the world's literature of the thirteen months ending with Jan. 31, 1908, as given by the *Index Medicus*, under the heading of "Surgery" and its various subdivisions, ruptures of the quadriceps tendon were not as common as others, and no reference was made to rupture of the patellar tendon. Binnie, quoting Ritschl, enumerates as exciting causes of tendinous rupture (*a*) inflammatory hydrops; (*b*) lipomata in tendon sheaths; (*c*) the trophic disturbances of tabes and syringomyelia; (*d*) arthritis.

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NOTES ON X-LIGHT. NOTE 208. THE RESISTANCE OF AN X-LIGHT TUBE IS NOT AN ACCURATE INDICATION OF THE DEGREE OF THE VACUUM.

BY WILLIAM ROLLINS, BOSTON.

In Note 89 the accepted idea that the resistance of an x-light tube, as shown by the length of the parallel spark-gap, was an indication of the degree of the vacuum, was stated to be incorrect. In a later Note the matter was also taken up. As the erroneous idea is still accepted, another experiment is here given, in which the tube being sealed, no serious change in the vacuum can have taken place during the experiment The tube was 280 mm. long, 25 mm. in diameter, with the cathode 20 mm. in diameter and placed 40 mm. from the anode, a small piece of platinum wire. The cathode had a hole in the center 3 mm. in diameter, being of the type described in Note 207. The resistance of the tube as measured by the parallel spark-gap was 3 mm. When a small bar magnet was brought near the tube opposite the cathode the resistance of the tube was increased sevenfold, rising to 28 mm., falling again at once to the initial resistance as soon as the magnet was removed. The change in the resistance was the same with the north pole as with the south pole.

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[1] Keen's Surgery, vol. ii, pp. 435, 468.

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MODERN MEDICINE AND SURGERY IN THE ORIENT.

BY J. EWING MEARS, M.D., PHILADELPHIA.

(Concluded from No. 24, p. 900.)

On my way from China to India, I stopped at Colombo, the seaport of Ceylon, an island colony of Great Britain. A small medical college has been established here with a general civil hospital; a bacteriological institute, lying-in hospital and a colony for lepers. The instruction in the college and hospital is given by English physicians and surgeons; women students are admitted. In the hospital the nursing is done by Anglican Sisters, assisted by nurses trained in the hospital. Another general civil hospital is at Kandy, a town of 20,000 inhabitants, situated in the mountainous regions of the island, 1,800 feet above the sea level, and 50 miles from Colombo. The railway, *en route*, passes through the tea plantations of Sir Thomas Lipton, the well-known tea-grower and yachtsman, whose unsuccessful and persistent efforts to return the Queen's Cup to its original home has given him an international notoriety and very largely, no doubt, increased the sale of Ceylon tea. The hospital is built on the pavilion system, with roofed connecting walks, cheerful, airy wards, and is well conducted by a staff of excellent physicians and surgeons, assisted by Anglican Sisters. It has a very interesting record in the treatment of cases of tetany, some 20 cases reported without a death. Of these cases a number were puerperal in character. The Government Botanical Gardens, five miles from Kandy, is full of interest to the physician. It is an experiment station and has in it a complete collection of tropical trees and plants. In the collection of trees are specimens of the different varieties of the cinchona. It was an agreeable pastime to an inhabitant of the temperate zone to wander through groves of cinnamon, nutmeg and spice trees, the air laden with fragrant odors of mixed variety. Further up the mountain, at an altitude of 7,000 feet, there is another government botanical garden, the purpose of which is the cultivation of trees and plants indigenous to a temperate climate. These gardens are educational institutions and receive liberal support from the British government, which takes much interest in their successful conduct. In the Kandy garden it was interesting to see the monster bats, quite as large as the crow, hanging from the dead limbs of the trees in great numbers, apparently thousands of them. Disturbed by the noise of our carriage they left their points of suspension and circulated about us, filling the air with a peculiar sound and emitting a very disagreeable effluvium.

Colombo is an important seaport, the stopping place for seagoing vessels going to and coming from the East, Africa and Australia. It has never been infected by the plague owing to the precautions taken and the vigilance practiced by the Plague Committee, composed of municipal and medical officers. The spread of leprosy throughout the island is prevented by the strict enforcement of laws which compel segregation in the colony provided for all sufferers from the disease. Ceylon presents to the world a bright example of what modern medical science can do in conserving the health of the people, and in this way protecting its commercial interests, so as to make it the richest colony of Great Britain.

From Colombo I sailed to Bombay, a city of India sharing with Calcutta distinction as a great commercial metropolis and, as well, as a medical center. It has a population of nearly eight hundred thousand, somewhat less than that of the capital, Calcutta, and it is the seat of the Grant Medical College, the largest one of the four medical colleges of the country. Connected with the colleges are hospitals which are used in conducting clinical and laboratory instruction. Besides these hospitals there are many located in the cities and towns throughout the country. The teachers in the colleges and attending physicians and surgeons in the hospitals are taken from the corps of medical officers in the Indian medical service of the Indian military service, which consists, at the present time, of 175,000 English and 250,000 native troops. Since the mutiny in 1857 the proportion of English to native troops has been increased and the native troops are now enrolled from the lowest Hindu castes, which are not inspired with the spirit of nationalization as are those of the higher castes, and are, therefore, more subservient to discipline. The teachers in the colleges and medical officers of the hospital receive fairly liberal compensation for their work, and on retirement are placed on the pension list. In case of death the widow and children receive pensions, the boys up to the period of manhood, and the girls until marriage. The students in medicine, male and female, consist of Hindus, Parsees and Eurasians, or half-breeds. Very few Mohammedans enter the medical profession. The male graduates in medicine enter the military medical service among the native troops, obtain hospital positions and medical office in the municipal governments, engage in private practice, or serve as district physicians in the civil service which in its work covers the entire country. In upper India I met on the train a civil service medical officer who informed me he was returning from a visit through his district which had a population of 3,000,000 people. He, with a large corps of native physicians, had the medical care of this large number of inhabitants, a colossal undertaking in the presence of epidemics of contagious or infectious diseases. The female graduates in medicine take up hospital work, or engage in private practice, in which the success is not very great. Training schools for nurses are connected with the various hospitals; in these the instruction and training are not quite as efficient as in those of Japan. The medical colleges are in affiliation with the universities which constitute the head of the educational system, carried on by the British government. They are organized and conducted upon the same plan as the medical schools of Great Britain, the mother country, the requirements for admission and graduation and the courses of instruction, including dentistry, are the same as in those schools. Students who desire to enter the military service after graduation must be of European or Eurasian parentage.

From this statement of the character of the medical institutions concerned in teaching scientific medicine in India, it will be interesting to note to what extent modern methods are employed in dealing with the great question of the prevention of disease and the successful control of it when present. There are many endemic and epidemic diseases, occuring yearly in different seasons, which, owing to the religious beliefs and superstitions of the natives, as well as to their modes of life, make the work of the medical men most difficult, and, in some instances, absolutely nullify their efforts. The government with all of its power refrains, except in extreme conditions, from the enactment and the execution of sanitary laws and regulations; hesitates to interfere with religious rites and customs which may be harmful to the well being and welfare of the community lest the quickened sensibilities of the natives should be aroused and increase the difficulty of peaceful control. The Hindu, whose religion forbids him to kill an animal, permits the plague rat, which carries in its hairy covering the plague flea, to eat from the receptacle containing his food, and shares with him, without restraint, the fifthy hut he inhabits. The municipal authorities trap the rat on his place for the purpose of submitting it to examination and using it in experimentation and the Hindu makes it free. The government has, indeed, been successful in interdicting Sutteeism, the self-immolation of the widow upon the funeral pile of the deceased husband, but it has not been able to prevent absolutely infanticide, caused by exposure of the female infant upon the banks of the sacred rivers, to become the prey of the rapacious crocodile. It required, I was informed, much tact on the part of the municipal authorities to prohibit the subject of smallpox, with fully developed eruption, from parading the public streets of Bombay, or taking part in public meetings of the natives; and so it may be stated with regard to other conditions of life, which are hostile to the welfare of the community, as for instance the public cremation of the body of the Hindu, in the open air, dead from contagious or infectious diseases of most dangerous character, or the exposure of the dead bodies of the Parsees in the Towers of Silence, where the soft parts are devoured by vultures. The Towers of Silence are on Malabar Hill, one of the most fashionable parts of Bombay, and the residence largely of the opulent citizens. A large reservoir which supplies this portion of the city with water is but a short distance from the Towers, and until three years ago it was uncovered. It is related that it was not an unusual sight to see pieces of the dead bodies, carried away by the vultures, dropped by them into the water of the reservoir, and also, that unfinished morsels of fingers and toes were brought into the houses of the fashionable residents of Malabar Hill by their pet dogs and cats who gathered them on the well-kept lawns, on which they had been deposited by the vultures as they rested in the trees. Notwithstanding these unfavorable conditions and almost insurmountable difficulties, which obstruct the adoption of progressive methods, the medical officers of the Indian Medical Service with commendable zeal continue their efforts to educate public opinion, and to inspire the natives with an appreciation of their labors in their behalf.

The plague appeared in India in 1896, since which time it has killed over one million of the inhabitants, including in the list a few Europeans and not many Parsees. When it was ascertained that the plague rat was the cause of the disease, a war of extermination was commenced in different parts of the country, and by the orders of the government a bounty was paid for the rats killed. It is interesting to note that, after a time, it was found that the natives had formed rat-raising corporations, which carried on a lucrative business,—the adoption of a bit of Western civilization quite novel and unexpected. The government, moved by an appreciation of its duty, called into existence the Research Commission, of which Mr. W. M. Haffkine, a scientist from Russia, was made the head. This gentleman has made valuable contributions to medicine in the discovery of a cholera serum and a plague serum, each possessing prophylactic powers. The commission was installed at Parel, a suburb of Bombay, in a large building, located in spacious grounds, which had been the residence of a former governor-general. At the time of my visit Lieutenant-Colonel Bannerman, Major Lamb and Captain Liston constituted the commission, and to these officers I carried a letter of introduction from Mr. Millard, Honorary Secretary of the Natural History Society of Bombay, which gave me the opportunity of observing the work done in the research laboratory. To these gentlemen I am indebted for many courtesies.

The commission, acting in co-operation with the board of health of the city, receives each day a large number of rats, which are trapped in the different districts of the city, especially in those infected with the plague. Each trap is covered with a strong cloth covering and then tagged, stating the kind of rat —*rattus* or *rattus decumanus* — and where trapped. These are then transported to the laboratory and submitted to examination. On the day of my visit four ox carts laden with filled rat traps arrived, and I was informed that on some days, at least one thousand were examined. The first step in the process of examination consisted in placing the live rats — some are found dead from the plague, and these are brought with the live rats to the laboratory — into an hermetically sealed receptacle and subjecting them to the vapor of chloroform. This agent kills the rat, and simply stupefies the fleas. When dead, the rats are placed on a table, covered by white paper, at which stands an examiner, a European, and his assistant, a native. These strip the rat with the hand, and by this movement dislodge the stupefied fleas which, falling upon the white paper, are picked up by the moistened finger end, and placed in a test-tube, closed with a sterilized stopper. Shortly the fleas revive and are put away for use in demonstrations. From this table the rat is carried to the next where the autopsy is made, and the organs infected are removed. Usually the inguinal and axillary, seldom the cervical lymphatic glands, in some instances the lungs and the liver, are found involved. These organs are placed in a preservative fluid and kept for further examination and experimental purposes.

The fleas are used in two ways in experimentation. In the first a guinea pig is placed in the inner compartment of a box, shaped like a large cheese-box, which is enclosed by wire netting having a large or small mesh, and the live fleas are deposited in the outer compartment on the floor which has been covered with plain paper. If the meshes in the wire netting are large enough to permit the fleas to enter the inner compartment in which the guinea pig is placed, it is found that the animal is infected with the plague bacillus and after a period of incubation of nine days the disease manifests itself. If the meshes of the wire surrounding the inner compartment are too small to permit the ingress of the fleas, the animal is not infected. If, instead of the ordinary paper, "tangle-foot paper" is used to cover a portion of the floor of the outer compartment, leaving a free border on which the fleas are placed, it is found that the animal escapes infection, the fleas being unable to cross over the tangle-foot paper. The fluid obtained by crushing a number of fleas conveys infection, if injected hypodermatically into a non-infected rat or a guinea pig; the same condition occurs if the fluid is obtained by crushing the infected organs taken from a plague rat. These experiments prove conclusively that there is, first, a plague rat, stated to be indigenous to the Orient, of two or more varieties, *rattus* and *rattus decumanus*. Second, that the flea on the plague rat becomes infected, and acts as the medium of conveyance to other animals which are susceptible, and to the human subject. It is believed that the flea does not become the host in the same sense as in the case of the mosquito in malarial and yellow fever infections. The flea, it is stated, at the time of biting passes a fluid from the intestine which contains the bacillus and which is rubbed into the wound made, either by the hand of the person bitten or by the clothing.

In my interview with Professor Kitasato, at Tokyo, I understood that he did not accept, unreservedly, this method of infection in the human subject. He thought the bacillus could enter the body by inhalation, or through abrasions on the feet or on other parts of the body, the bacilli having been set free from rats dead from the plague, and which had undergone decomposition. Further investigation of this subject it is hoped will determine positively the question as to the mode of conveyance of the microbes from the flea to the human subject. It would appear reasonable that the flea should act as the host, as in the case of the mosquito in yellow fever infection.

Calvert (Osler's "System of Medicine") states that the origin of the plague among rats has not been determined; it may arise from infected material recently introduced into a district or propagated by cases among them. Rats with open ulcers from broken down buboes are important factors in keeping the disease alive. Flies and fleas contract fatal plague; the former may infect food, the latter transfer bacilli from place to place and their bite produces direct infection.

Bacilli may remain virulent in the stomach of bedbugs for a number of days; their bite is harmless; if mashed on the wound infection may take place. Ants harbor bacilli for a number of days, or may carry infection from place to place, especially from cadavers to the surface of the ground. Buboes occur most frequently in the groin, next in the axilla. Infection, in majority of cases, occurs through skin of the trunk or extremities, may enter any abrasion or even microscopic wound of skin or mucous membrane. In children, infection occurs most often through abrasion of the buccal mucous membrane. Bacilli introduced into the stomach may or may not produce infection. In all well-advanced cases all of the secretions and excretions may contain bacilli. Pus from buboes, excretions from pustules, vomitus, sputum in pneumonic cases, bedding, furniture and room may become infected. Those in attendance are exposed to infection through abrasions. Very few hospital attendants have contracted the disease. Cadavers contain many bacilli and are dangerous sources of infection until disinfected or destroyed by cremation. One bacillus may produce infection. The viability of bacilli is long; intense cold does not kill the organism. To ordinary disinfectants bacilli are very susceptible. Contagion is conveyed by convalescent patients with old unhealed ulcers from buboes, and individuals who have been exposed to infection, but have not developed the disease, may convey it. On board of ship, clothing, merchandise, fabrics and raw materials are most important means of conveying the disease. Water and air are not good carriers of infection. Insects in limited areas may be sources of infection. Plague thrives best among those who live in filth. From twenty to forty years of age the majority of cases occur. This is believed to be on account of the exposure which occurs at that time of life.

Since my return from the Orient I have had an opportunity to examine the *Public Health Reports* issued each week by the Public Health and Marine-Hospital Service of the United States, and have been greatly interested in learning of the extensive work done by this service in connection with the prevalence of the plague at San Francisco and in cities adjacent, Oakland, Point Richmond and Emeryville, Cal. The causes of the disease have been attacked with the most modern measures and with an energy which gives promise of complete obliteration, although experience thus far gained seems to indicate that when it once gains a foothold it is not possible to permanently eradicate it. Rat destruction, by trapping and cremation, and by the deposit of poisons, has been carried on extensively, those destroyed numbering thousands, and an abatement in the spread of the disease has been noted. I have learned from the Surgeon-General of the Public Health and Marine-Hospital Service that a small quantity of plague serum was used during the early part of the present outbreak in San Francisco and, further, that the Bureau is informed that plague serum has never been successfully produced in the United States, owing to technical difficulties and dangers inseparable from its manufacture. Of these difficulties I was not informed in Bombay, and I was led to believe that the serum was prepared there.

In Bombay I was informed that but two varieties of plague rats had been identified, *Mus rattus* and *Mus decumanus.* In the reports from San Francisco it is stated that in addition to these, there have been identified the *Mus Alexandrus* and *Mus musculus.* Many thousands of rats have been examined bacteriologically, and some have been, in experimental research work, infected with the bacillus pestis. A large number of premises have been inspected, many disinfected and some destroyed. The government is to be commended for the rigorous way in which the disease has been attacked, through the excellent work of the Public Health and Marine-Hospital Service; and the promise of, at least, keeping its dissemination in abeyance is very encouraging. Eternal vigilance will alone keep it from assuming an epidemic form and that must be practiced.

At the time of my visit to Bombay the plague was prevalent in the city and Bombay Presidency, the reported deaths numbering weekly some twenty-four hundred. The plague hospital received as many as twenty to thirty cases each day, including the pneumonic and bubonic varieties. The former is very fatal, the lungs are affected and patients die in three or four days after development of the disease. In the bubonic form the inguinal glands are inflamed and pass on to the stage of suppuration; the disease progresses more slowly than in the pneumonic variety. A general septic condition is present in all cases; if recovery takes place the convalescence is slow, and sometimes retarded by complications. The treatment is expectant, stimulating and supporting. Suppuration of the affected glands is hastened by poulticing, and aseptic incision is practiced when fluctuation is present. Excision of the affected glands has been performed, with the hope of aborting the infection, but without marked success. The prophylactic treatment by serum inoculation is carried out by the government authority among the natives whenever it is possible. Many resident foreigners submit to the operation. Inoculation is gaining favor, and it is believed that, in not many years, opposition to its practice by the native population will be generally overcome and it will take its place by the side of vaccination as a well-established preventive measure. The plague serum is prepared at the Parel Laboratory and is sent to the different parts of the country. The period of immunity obtained by one inoculation is thought to be not more than two or three years. Experience gained in its use may extend this period.

As in other parts of the Orient, there is at Matunga, a suburb of Bombay, a home for lepers, where some four hundred men, women and children are cared for. Residence here is not compulsory, but the unfortunate sufferers from leprosy find in the hospital so much comfort and relief from suffering that they gladly remain; moreover, the grounds, in which the buildings are placed, are made most attractive by plants and flowers and efforts at landscape gardening. I made a visit to this institution in company with the native physician in charge, Dr. Chudder, and was much impressed by what I saw and learned. Patients exhibiting the two forms of the disease, anesthetic and tubercular, were examined in the wards, which were scrupulously clean, well-lighted and well-ventilated; in a few, operative measures by amputation had been tried, to stop the progress of the disease in the extremities; these appeared to be successful. Much is done to make the life of the inmates contented. A Hindu temple, a Mohammedan mosque, and a Roman Catholic chapel built in the grounds afforded them opportunities to worship according to their creeds. There was no Protestant chapel. Missionary Protestant ministers from the city, I was informed, came when their services were needed. A schoolhouse provided a place for the instruction of the children, who all seemed to be happy and satisfied with their home. That which interested me greatly was the method employed in the sewage disposal, the resultant obtained being gas, which supplied all the fuel needed in heating and cooking and illumination of the grounds and buildings. A small cremation furnace had been built, which Dr. Chudder hoped would be used by the Hindus in burning their dead; it was, he said, educational in character, and thus far he had succeeded in having one body thus cremated. The substitution of the closed crematory for the funeral pile of wood in the open, he regarded as very essential for many reasons.

In Bombay, over a hundred lepers wander about the streets and gain a scanty living by begging. In Calcutta, the municipal ordinances are very strict with regard to what kind of work lepers may engage in. One ordinance, according to the report which has been made to our government by the consul-general at Calcutta, directs that no leper shall, within certain areas from which lepers may be sent to asylums, personally prepare for sale or sell any article of food, drink, drugs, or clothing intended for human use; bathe, wash clothes, or take water from any public well or tank, debarred by any municipal or local by-law from use by lepers; drive, conduct or ride in any public carriage, or exercise the calling or trade of barber, washer-man, water carrier, baker, confectioner, tailor, draper, haberdasher, domestic servant, schoolmaster, clerk, medical practitioner or butcher.

In view of these stringent municipal regulations it would appear that the disease is regarded as hostile, in most marked manner, to the public health, and conveyable by personal contact and through food and drink.

Each year in India many lives are destroyed by snake bites, the country being the home of the most venomous specimens of cobras and vipers. I have the report of one year in which twenty-four thousand people were killed and a large number of domestic animals. The great mortality from this cause has moved the government to take measures of prevention, and to this end has established a laboratory under the care of Major Lamb for the preparation of anti-venene, to be used as a curative remedy. This is made from the venom obtained from the venom sacs of the cobras and vipers, and is distributed throughout the country in a dried state, in small phials. Major Lamb, who has had large experience in this work, does not believe that there can be made an anti-venene which is a general specific. The anti-venene, curative in cases of poisoning by cobra bites, must be made from the venom of the cobra, and so in the case of all venomous snakes. This opinion is at variance with that entertained by Calmette, of France, the discoverer of anti-venene, who believed in a general specific antitoxin. I saw a number of cobras and vipers in the collection Major Lamb had with him at the Parel Research Laboratory, and was interested in the way they were handled in order to obtain the venom for the manufacture of anti-venene. In my early professional life I assisted, at times, Dr. Weir Mitchell in his work in connection with the rattlesnake venom, which was of great value as a scientific contribution. My duty was to hold the snake, an humble, but a very important one. In his own case, Major Lamb exhibits the value of the anti-venene as a curative remedy, he having been bitten by a cobra whilst obtaining venom. Owing to delay in getting the remedy, he became profoundly affected by the poison before the injection could be made. The loss of the distal portion of the index finger testifies to the local effect of the fang laceration.

Our country, by reason of the acquisiton of Oriental possessions, has become one of the great powers of the world, charged with important responsibilities in the care of Oriental races. Already in the Philippines have we seen the important part taken by our profession in making that country safe for the residence of military and civil officials, reared in the climates and accustomed to the conditions of life belonging here, as well as promoting the conditions of life of the native inhabitants. By reason of our close contact, social and commercial, with Oriental countries, their diseases, with their products, have come to us. The plague has, I fear, a foothold upon our Pacific coast, and leprosy exists, happily to slight extent as yet, in many parts of our country. The progress of the sleeping sickness in Oriental countries gives us warning. I need not tell what is the duty of modern medical science in dealing, through its disciples, with these conditions. In our country to-day, in the home, in the village, in the town, in the city and in the state, the medical profession, equipped with knowledge as never before, and armed with the lessons of experience gained in wide fields, submerged sometimes, it may be, with disaster or crowned with success, stands on guard, the valiant protector of the health of the people.

In reverential memory, we will ever cherish the name and the exalted labors of that heroic son of medicine, Dr. Lazear, of the Medical Service of the United States Army, who, in Cuba, gave his life, that his fellow men might live; and we point, with feelings of pride, which stir to the profoundest depths our patriotic emotions, to the transcendent achievements of Colonel Gorgas, medical officer of the United States Army, which have made possible the construction of the Panama Canal. May we not justly claim this colossal enterprise, surcharged as it will be when completed with the destinies of the people of the world, as a magnificent triumph and the crowning pride and glory of American medicine?

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Clinical Department.

HISTORY OF A CASE OF MALARIAL FEVER, ALGID FORM, CHOLERAIC TYPE.*

BY R. H. VON ESDORF, M.D.,

Passed Assistant Surgeon Public Health and Marine-Hospital Service, New Orleans Quarantine Station, Quarantine, La.

During the past year a number of cases of fever were removed from vessels coming from tropical ports to the Quarantine Hospital, New Orleans Quarantine Station, for observation and diagnosis.

There were 69 cases of malarial fever, 11 cases of typhoid and a number due to other causes, such as pneumonia, rheumatism, diseases of the digestive tract, etc., treated at this hospital. There were also a number of cases of malarial fever and typhoid fever which were diagnosed and allowed to proceed on the vessel to New Orleans of which no clinical record was kept.

The majority of cases of malarial fever had an estivo-autumnal infection. Stained preparations of blood were used in making a search for the parasite in all cases; sometimes a differential leucocyte count was also made; pigment was looked for in leucocytes. These laboratory aids, together with clinical course, were used in differential diagnosis.

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* Read by title at the fifth annual meeting of the American Society of Tropical Medicine, held in Baltimore, March 28, 1908.

Nearly all cases had points of interest, but one in particular occurred which was not diagnosed until after autopsy. This case I will cite; the history is as follows:

On Aug. 16, 1907, the Mexican steamship *Puebla* arrived at this station at 2.05 P.M. from Tampico where the vessel had been during the past thirty days. While the vessel was being fumigated the usual inspection of the crew was begun at 3 P.M. The temperature of each member was taken and recorded at this inspection and then a careful visual inspection of each man made. The pulse was felt, eyes examined, etc.

At this inspection I stopped to speak and examine more minutely than customary one individual who was a German. I spoke to him in his own language. I had noticed that he had a muddy complexion and was cachetic in appearance. He appeared to be dull or stupid, and was slow in making answer to my questions. His temperature was 36.6° C. Pulse normal. He appeared to be otherwise well and had nothing to complain of. Being a German, and not speaking Spanish, he did not converse with the other members of the crew, but spoke to them by making signs. I ascertained from the captain that the man had, on the voyage, complained of pain in his abdomen, which was attributed to seasickness; that his temperature had been taken with a clinical thermometer and found to be 37.4° C. He had been on watch at his regular turn during the voyage from Tampico except the one day he was thought to be seasick. The man signed on the vessel July 28, 1907, at Tampico.

On Aug. 17, 1907, this same man, A. F., took coffee at 5.30 A.M. with the other members of the crew and appeared to be about the same as usual during the morning. Nothing unusual was noted.

At 11 A.M. he was asked if he would not go to breakfast. He had no desire to eat, and it was thought that he wished to rest, as he had not slept during the night on account of the mosquitoes. None of the crew except the officers slept during the night for the same reason.

At 12.30 P.M. he was seen walking up and down the deck, when the captain asked what the trouble was, and he reported himself sick, pointing to his abdomen.

At 2 P.M. he was seen lying in a hammock which was stretched on the deck under an awning, where he was apparently sleeping.

At 4.30 P.M. the chief engineer reported to the captain that the man appeared to be suffering and was very sick. The captain at once went forward and noticed that there was considerable change in the man's appearance and he at once ordered a boat to be lowered to bring the man ashore, when he observed the Quarantine launch coming and he decided to await my arrival.

I was aboard in a few minutes and the captain reported the illness at once. I went forward and saw the man, whom I at once recognized as the same one I had carefully questioned the day before, suffering with what appeared to be abdominal pains. I spoke to him and ascertained that he had continuous pains, which were cramplike; that he had had diarrhea and had gone to the toilet frequently during the past few hours; that he had not vomited. His extremities were cold, skin a little moist, pulse small and irregular, face pinched, eyes glaring, pupils dilated, lips pale, tongue pale and dry, and apparently in collapse.

I ordered and gave him an ounce of brandy and repeated this in ten minutes while the launch had gone ashore to get a stretcher which I had ordered, that he might be carried to the hospital. I had also noticed that the man had evidently had involuntary stools, as his trousers were stained. There was also a stain on his legs, which was of bloody mucus and greenish yellow. The cramps came and went about every fifteen to thirty seconds. Abdomen was flat and became rigid during the pain. Legs were drawn up during pain and relaxed at intervals when pain subsided. He was apparently exhausted.

Upon inquiry from other members of the crew I ascertained that he had been seen going into the closet at intervals of from one to three minutes. One man noticed him enter and leave six times; each time he left he would take a drink of water and return to the closet. The crew went about their work, and the German, who could not speak their language, did not intimate his condition to any of the men. He had not complained except the one time at 12.30 P.M.

The man was carefully removed and taken to the launch, where he was placed on a stretcher, and while steaming toward shore fell into a syncope and died just before landing.

The illness had been so sudden in its onset that no diagnosis was ventured until a post mortem could be made.

Autopsy. — One half hour after death. Five thirty-five P.M. Aug. 17, 1907.

Adult male, 5 ft. 5 in. in height. Hair sandy. Skin dark muddy hue. Eyes blue white; pupils partly dilated. Lips blue, tongue pale, no corrosions about the mouth, hypostatic congestion beginning in spots. Hands those of a laborer. Rigor mortis setting in.

Incision made in median line. Section dry and bloodless. The intestinal tract was the first examined. No evidence of poisoning presented.

The peritoneal cavity had an excess of clear serous fluid, but no evidence of peritonitis could be seen. No intestinal obstruction.

The small intestine was flat, the large intestine flat and the same size as the small intestine and to all appearances absolutely empty. Peritoneal surface of the intestines smooth and glistening.

It was then noticed that the omentum was nearly black in color, that the entire mesentery was also black, but no macroscopic evidence of thrombi, emboli or hemorrhage presented. Large vessels of mesentery intact.

The large intestine was then opened its entire length. It was absolutely devoid of fecal matter and gas and contained nothing but bile-stained serous fluid. The mucous surface had some scattered bloody mucus adherent to it. No gas in any part of it.

Ileum, jejunum and duodenum were opened; the same character of fluid was present as found in the colon; no ulcers; no change in the mucous membrane could be noticed. There was no gas in any part of the intestinal tract except in some places the fluid was frothy; no particles of solid matter nor fecal matter were seen; absolutely no odor could be detected on opening these organs. Mesenteric glands not enlarged, apparently normal.

Stomach contained about 1 pint of bile-stained yellow fluid, the same as was found in the intestinal tract. There was an odor of brandy perceptible. The mucous membrane was completely intact, no corrosions or ulcers, but one thing was noticeable which was not seen in the intestines; this was, that the mucous membrane was black in appearance throughout. Esophagus, abdominal end, apparently normal.

The liver was enlarged, weight 6 lb., firm and of dark slate color. On section little blood exuded, color the same as the external surface. Gall bladder distended with bile.

Spleen.— This was found to be large, weight 1½ lb., soft and dark in appearance. On section my first remark was, " It cuts like a clot of blood." It was found to be very friable and the cut surface was diffluent. Pancreas appeared normal. Lungs appeared normal.

Heart and pericardium. — Pericardium contained more than the normal amount of fluid. No evidence of pericarditis was present. Heart was soft and flabby, distended with blood, in asystole. A blood slide was taken from the heart blood; also a smear from the spleen. No edema. No evidence of renal disease. Nothing else was noted from the normal.

I was satisfied that the case was not one of acute poisoning or a suicide, but felt sure that the cause must be toxic. The man had not eaten anything to give him ptomaine poisoning so far as I could ascertain, so this cause could be excluded.

My first concern was, that I must be satisfied that I was not dealing with a quarantinable disease. Choleraic symptoms had predominated, but finding a fluid in the intestines which was not rice water in character, but apparently serous and bile stained, settled the question negatively for cholera. I was puzzled for a short time. Then I thought that the spleen was certainly malarial and was indicative of the probable illness, and this conformed with the first impression that the man was a malarial cachetic. I then made the provisional diagnosis of acute malarial toxemia of the algid form, choleraic type.

I left the examination of my slides for the next morning. These were stained with Wright's polychrome methylene blue. The blood slide was a poor one, but I found a clear area under low power where the blood cells seemed to be flat and separate. I then examined this under high power and was struck with the presence of so much black pigment free and in white cells. The red blood cells showed a small ring form of the malarial parasite with its thin blue ring and red chromatin spots. Nearly every cell was so infected with one or two to three such young parasites. This was conclusive that it was malaria. The slide made from the spleen was then examined and found to be full of pigmented bodies. I reasoned then that the appearance of the mucous membrane must have been due to pigment which blocked the capillaries; that the appearance of the mesentery and omentum was due to the same condition.

Sections made of the liver and spleen tissues, stained with hemalum and eosin, showed them to be full of hemozoin in granules and large and small masses.

I regret that a blood count was not made, as there was unquestionably a marked, at least relative, leucocytosis. A differential leucocyte count from two slides gave the following results:

Small mononuclear leucocytes,	1,743	
,, ,, ,, pigmented,	25	68.8%
Large mononuclear leucocytes,	288	
,, ,, ,, pigmented,	173	17.9%
Polymorphonuclear leucocytes,	269	
,, ,, pigmented,	68	13.1%
Eosinophiles,	4	.15%
Total,	2,570	

I can at least safely report a marked leucocytosis, as may be judged from the above count.

I suppose that treatment would have availed had the case been recognized earlier, but certainly not at the time the case was seen by me. Had the man presented even a slight elevation of temperature I would surely have made a blood examination at the time of my first inspection, and would have given him quinine even if the examination had proven negative, as I would have been guided by the malarial aspect presented.

I frankly admit that I did not diagnose or even suspect the true character of the disease until after the autopsy was made by me.

The history just given was submitted to the surgeon-general's office and a copy also sent to Surgeon M. J. Rosenau, Director of the Hygienic Laboratory. Dr. Rosenau in his letter to me says, " He surely had an accesso pernicioso." " Don't you suppose, however, that he might have been sick on the trip and that when you saw him he was suffering with the stupor due to clogging of the capillaries of the brain with malarial pigment and parasites? "

I believe this was probable.

To recapitulate. We had a case presenting: Illness of about six hours; symptoms of cholera; no fever; syncope and death.

Post mortem: Enlarged liver and spleen; discolored mucous membrane of stomach; discolored mesentery and omentum; sections of liver and spleen showed hemozoin in large and small masses; young small ring form of malarial parasites in red blood cells and some free in the blood; hemozoin in white blood cells chiefly mononuclears; lymphocytosis; free hemozoin in blood.

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TWO CASES OF CARCINOMA OF THE BLADDER TREATED WITH INJECTIONS OF TRYPSIN.

BY R. H. GILPATRICK, M.D., BOSTON.

The following cases occurred at the Boston City Hospital, on the service of Dr. G. H. Monks, to whom I am indebted for the privilege of reporting them.

Case I. B. C. Female forty-four years, married, was admitted to the second surgical service, Boston City Hospital, May 29, 1907. Family history negative. Mother of six healthy children. At admission her only complaint was of a lump in the left groin which she said had appeared there four days before. She had vomited each of the four days and the bowels had moved each day.

Physical examination showed a well-developed and nourished woman. Except for pallor and a dirty coated tongue, examination was negative. Left femoral region presented a tumor the size of a hen's egg, slightly reddened, painful, tender, not fluctuating and dull to percussion. A diagnosis of strangulated omental hernia was made and operation done.

Incision revealed much edema of tissues and an abscess cavity in which was about an ounce of pus about a mass of inflamed glands. These were removed and the cavity packed with iodoform gauze and dressed.

Pathological examination showed the glands to be epidermoid carcinoma. With this knowledge in hand an attempt was made to obtain a history of previous symptoms but without success. Vaginal examination showed a carcinomatous growth of utterly inoperable proportions involving the bladder and anterior vaginal wall. The operation wound did well, but within a few days patient began to complain of frequent and painful micturition. Hematuria was first noted two days after operation. Micturition rapidly became more frequent and painful and hematuria continued. Treatment with injection of trypsin was begun three days after operation. At first 10 minims were injected into the body of the tumor every other day. The dose was rapidly increased to 25 minims, and 5 minims of a 2% solution of cocaine given with each dose controlled the pain of the injection.

Patient's condition grew rapidly worse. Pain became constant and required morphia frequently. She became incontinent and rapidly increasing glands were noted in both groins. General tonic and supportive treatments were kept up. The course of her disease was apparently not at all influenced by the treatment. Seven weeks after operation she was discharged to her friends that she might die at home. She was lost sight of but her condition was hopeless.

Case II. M. B. Female, seventy-eight years. Married. Admitted March 31, 1907. Family history and past history good. She had noticed her urine to be bloody for two weeks. Urination had been painful for ten days and of increasing frequency. Examination showed a well-developed and fairly nourished woman, somewhat senile, but arteries in good condition. There was a systolic murmur at the cardiac apex. Vaginal examination showed considerable thickening and induration of the anterior wall with several hard nodular tender tumors apparently involving the bladder. Urine was bloody. Under rest in bed and general treatment hematuria ceased. Cystoscopy eight days after entrance showed a nodular bladder wall much inflamed. Several nodules projected into the bladder and were evidently continuous with nodules seen in vaginal wall. A bit of tissue was removed from the vaginal wall and proved to be carcinoma. After cystoscopy micturition was frequent and very painful. She became incontinent, vomited occasionally and was unable to sit up in bed at the end of two weeks on account of pain and weakness. Cachexia rapidly developed and a small decubitus appeared over the sacrum. Pain was such as to require morphia.

On April 19, she was still failing and condition became critical. Injections of trypsin were begun as in Case I and continued as before. Cocaine was used as in Case I.

Her condition remained critical for about ten days, when it began to improve. On June 1 there was a well marked improvement. Tongue had cleaned up and a fair amount of nourishment was being taken. Pain was much less and hematuria had ceased. The injections were kept up as before. On June 8 she sat up a short time and continued to improve. On July 13 she walked out of the hospital. At this time the anterior vaginal wall was still considerably thickened but the nodules had decreased markedly in size. Urine was passed about once in an hour and three times at night. She had gained much in weight.

Seen on July 30. General condition much as at discharge. She is up and about most of the day. She sleeps well and complains of no pain. There has been no hematuria. She was seen to go up an ordinary flight of stairs slowly.

From the time of discharge until Sept. 1 she received no treatment. On that date her old symptoms had begun to return and treatment was begun as before. The conditions were less favorable, as she was at this time keeping house for herself and son. The bladder symptoms were controlled as before, but soon signs of gastric disturbance were noted, and by Oct. 1 a well defined tumor was felt in the pyloric region. Patient's condition rapidly failed. Marked evidence of pyloric obstruction appeared. She died three weeks later and an autopsy was refused.

No general conclusions can be drawn from so small a number of cases, but the fact that in Case II the treatment seemed to relieve the local condition both early and late offers encouragement for further trial.

Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.

NEUTROPHILIC BLOOD IN INFANCY.

(1) *The neutrophilic blood picture in naturally and artificially-fed infants.*

Esser[1] found that the neutrophilic blood picture was at first turned to the left but was much like the adult after a few weeks, rather more corpuscles, however, being at the extreme right. Otherwise the picture corresponded to that in adults. The neutrophilic blood picture in infancy reacts to disease as it does in the adult. He found great differences in the blood picture in breast and artificially fed babies. In the artificially fed the blood picture was like that in the adult; that is, there were less cells at the right. In diseased conditions, especially of the gastro-enteric tract, great variations occurred in the blood picture. It shifted to the left on cow's milk and other artificial foods.

(2) *The neutrophilic blood picture in healthy and sick infants.*

Zelenski[2] found from his own observations two marked peculiarities in the blood pictures of infancy. The reaction of the neutrophilic corpuscles brought on by disease was as a rule stronger than in adults and at times reached a grade never found outside of infancy. This reaction resulted even in its most marked type from apparently insignificant and unimportant diseased conditions; in many cases, indeed, without any evidence whatever of disease. He found, in contra-distinction to Esser, that the neutrophilic picture was the same in both the normally and the artificially fed.

CLASSIFICATION OF THE INFANTILE ANEMIAS.

Simon[3] does not believe that the study of the blood is far enough advanced at present to justify any accurate classification. He merely divides the blood conditions into various types, as follows: simple anemia, anemia of the chlorotic type (oligosideremia), pernicious anemia, anemia with splenic tumor, leukemia.

Simple anemia. — The babies show evidences of malnutrition and are irritable. Digestive disturbances are frequent. The liver, spleen and lymph nodes are not enlarged. The blood shows a considerable diminution in hemoglobin, even to 25%, and a diminution in the number of red corpuscles down to 2,000,000. There may be poikilocytosis and polychromatophilia. Nucleated red corpuscles may or may not be present. If they are, there are rarely more than one or two to one hundred leucocytes. The leucocytes may be normal or may be modified as the result of the pathological condition. Recovery is frequent, almost the rule. The stages of amelioration can be followed with the microscope, the improvement following the orthoplastic type. The appearance of some myelocytes or of some nucleated red corpuscles indicates the weakening of the hematopoietic organs. The red corpuscles which are at first produced are small, with a low hemoglobin content, and the globular value remains low. It is only when the number of red corpuscles approaches 5,000,000 that their hemoglobin content increases and the globular value begins to ascend. There are many causes for this form of anemia. The pathogenesis is simple. The diminution of the number of the red corpuscles measures the intensity of the hemolysis. The presence of polychromatophilia, of variation in shape and of nucleated reds, all indicate an effort of regeneration on the part of the marrow which is not sufficient to form perfect adult corpuscles.

Anemia of the chlorotic type. — The general condition of the babies is relatively good. The weight is normal, the flesh soft. They are apathetic. There is no enlargement of the spleen, liver or lymph nodes. Souffles are often present in the heart or neck. The red corpuscles are normal or sub-normal in number. The hemoglobin is diminished from one half to two thirds. The globular value is very low, even as low as 28%. Poikilocytosis is very marked; there is often much variation in size and shape. Nucleated cells are never present. The leucocytes are normal in number and in relative proportions. The diagnosis is confirmed by the extraordinary rapidity of cure under the influence of iron. The microscope shows that recovery takes place in two phases. The number of red corpuscles at first increases to above the normal, the globular value remaining unchanged; the number of red corpuscles then drops to normal while the globular value rises to normal. Simon believes that while we are so ignorant as to the nature of chlorosis, there is no reason why we should not admit a chlorosis of infancy as well as one of young girls at puberty. He prefers the term "oligosideremia" to that of anemia of the chlorotic type.

Pernicious anemia. — He states that the frequency of this condition in infancy is much discussed and that it is very difficult to decide this point in the absence of accurate data. He accepts four cases which he has found in literature between three months and two years. This variety of anemia has the same characteristics in infancy as in adult life. The number of red corpuscles is much diminished, even descending below 1,000-000. The amount of hemoglobin is below normal but the globular value is increased. This is explained by the large number of large nucleated cells whose presence attests the profound affection of hematopoiesis. The nucleated red cells are nevertheless not as numerous and do not show as many nucleated figures as in anemia pseudoleukemica. The leucocytosis is slight. Myelocytes of different sorts are often present.

The presence of nucleated cells and of myelocytes indicates that there is a myeloid reaction and that the bone marrow is attempting to repair the anemia, whence the name of plastic form. Observations in children seem to prove that they also have the aplastic form. He has seen no examples in infants, however.

Anemia with splenomegaly. — He includes under this head all cases of anemia with splenic tumor, varying from the lightest cases to the anemia infantum pseudoleukemica, which represents the extreme degree. All may be due to the same causes, may be cured by the same treatment and may change from one to the other. He divides them into 3 classes:

1. Mild cases, in which there is a diminution in the number of red corpuscles, hemoglobin and globular value.
2. Intermediate cases in which the diminution in the number of red corpuscles and globular value is more marked; there is variation in the size, shape and color of the red corpuscles and some nucleated cells. There is slight leucocytosis with a predominance of lymphocytes, sometimes a few myelocytes; in a few cases there is leucopenia.
3. Severe cases. This class is made up of the cases commonly known as anemia infantum pseudoleukemica. These are characterized by the presence of a very large number of nucleated red cells and by a leucocytosis which may be marked. The formula of the leucocytosis is variable; they may be divided into several classes on this basis.

a. Cases with an excess of myelocytes, splenic anemia with myelemia.

b. Cases with an excess of lymphocytes, infantile splenomegaly with anemia and lymphocythemia.

c. An excess of lymphocytes and myelocytes, a mixed form.

d. Cases with an excess of eosinophiles (Labbé and Aubertin), splenic anemia with eosinophiles.

The main point in these cases is, however, the abundance of normoblasts with signs of irritation of their nuclei.

The organs always show evidences of two processes, — one of destruction and one of reparation.

The ordinary causes of anemia may be incriminated in all forms, slight, intermediate and severe, all of which are susceptible of cure. They differ, therefore, essentially from leukemia, a disease of whose nature we are ignorant and which is at present incurable. Experience and experimentation show that the different varieties of splenic anemia have no different etiological factors from those of the other infantile anemias. All the infantile anemias form, therefore, an uninterrupted series with all intermediate degrees, and the same causes are able to provoke the most different types, the forms of which are explained by the difference in the intensity, the duration of the action and the special susceptibility of the individual child.

THE CHLOROTIC TYPE OF ANEMIA IN INFANCY.

Since the paper of Hallé and Jolly[4] which appeared in 1903 and in which they described a case of anemia with very low hemoglobin and normal red count due apparently to disturbance of digestion and quickly relieved by iron, much has been contributed by the French to this subject.

Leenhardt[5] published 16 cases in his thesis and attempts to establish from them the existence of a form of anemia in infancy of the chlorotic type with marked pallor, sallow complexion, pale mucous membranes, digestive troubles, constipation, cardiovascular murmurs and no involvement of the liver or spleen. The hemoglobin is relatively low and the number of red and white corpuscles normal although in some cases the number of red cells may fall as low as 3,500,000. He believes that anemia of the chlorotic type is due to insufficiency of the reserve of iron, either congenital or acquired, or to the premature exhaustion of this reserve. The congenital insufficiency occurs as the result of anemia in the mother, when birth is premature or when there are twins. The reserve may be exhausted as the result of hemorrhages or acute diseases. The treatment consists in change of food and the administration of iron.

A review[6] of the subject in the *Revue Mensuelle des Maladies de l'Enfance* sums up as follows: Extreme pallor of the skin and mucous membranes; cardiovascular murmurs; digestive troubles, nervous troubles, absence of physical signs, general condition, fat tissue and development well preserved. The combination of normal weight and extreme pallor is the most striking diagnostic feature, as there is wasting in secondary anemias. One of the essential characteristics of these cases, as in chlorosis in general, is the rapid curability under proper treatment. These cases recover extremely rapidly when iron is given. The first sign of improvement is in the character, the infant being transformed in a few days from a condition of apathy to one of interest. The pallor improves next, the digestive troubles disappear and after one or two weeks of treatment with large doses of iron, the disease is cured. In order to avoid this condition it is important to give foods containing iron earlier than would otherwise be done, for example, starches early, lentils at one year, meat at fifteen months. The best form of iron is the protoxalate.

Rist and Guillemot,[7] under the name of oligosideremia, have described the same or a similar condition. They have never seen it under eleven months. Their description of the symptomatology and of the blood is essentially the same as that of Leenhardt except that they state that there may be poikilocytosis and polychromatophilia. They claim that the effects of iron are more marked than in chlorosis and that the analogy with the chlorosis of girls is therefore complete. The ordinary causes of anemia are not found. The condition occurs most often in twins, sometimes in premature infants and especially in those who are fed for an abnormally long time on a diet consisting entirely or almost entirely of milk. The premature child or twins may be born with an insufficient reserve of iron which may become exhausted before the termination of lactation. On the other hand, a child born with a proper reserve of iron will have this exhausted if an exclusively milk diet is continued after the first year.

A review[8] in the *Archives de Médecine des Enfants,* under the head of "Simple Anemia of Infants," states that a simple anemia, especially in early infancy, can reproduce the picture of chlorosis. These anemias are, however, not chlorosis but are of digestive origin. They occur indifferently in boys and girls; they have no pathological connection with the nervous system or with the genital system; in a word, they have nothing to do with chlorosis. Nevertheless, like chlorosis, they respond to iron and are cured very rapidly when iron is given. The name *simple* is preferred for this condition to distinguish it not only from chlorosis but from symptomatic anemias. They sum up as follows: Anemias of early infancy are extremely common. If those due to hereditary taint, acute or chronic illnesses, grave intoxications and conditions like leukemia or pseudoleukemia are put aside there are left simple anemias resembling more or less the chlorosis of young girls which are dominated by latent or manifest digestive troubles or are due to improper food which does not allow the infant to replace his reserve of iron exhausted by long use.

Tixier[9] has found that in a large number of anemic children from various causes that the hemoglobin was almost always proportionally lower than the number of red corpuscles. This relative diminution in the amount of hemoglobin is more frequent in those under three years than in older children or adults. He reports a case in a baby of twenty-five months in which the diagnosis on Sept. 5, based on the examination of the blood, would have been oligosideremia without notable anemia. Sept. 23, the diagnosis would have been serious anemia without myelemia. Oct. 15, it would have been anemia with myelemia. He believes that the anemias are essentially evolutive and that this observation is a certain proof that the same child may show at intervals of several days types of anemia which would be considered unrelated if seen in different subjects. Consequently it seems difficult to create types of anemia and it does not seem in accordance with the clinical facts to assume a separate cause for each variety of blood.

Most authors who have written regarding anemia of the chlorotic type state that the administration of iron is followed by a very rapid rise in the hemoglobin and believe that this forms an important diagnostic point between chlorosis of infancy and the more intense anemias.

He has found, however, that in many of the anemias secondary to disturbance of digestion there is no marked improvement until iron is given. Consequently he does not believe that anemia of the chlorotic type in early infancy corresponds to the clinical and hematological type of the young girl. The therapeutic value of iron is not of exclusive value in any particular variety of infantile anemia, but gives marvelous results in the greater part of the anemias secondary to gastro-intestinal troubles.

PERNICIOUS ANEMIA.

Petrone [10] reports a case of the aplastic form of pernicious anemia in a baby of ten months. The number of red corpuscles was 1,400,000 and the Hb. 12%. There were no nucleated red corpuscles or leucocytes. The bone marrow showed no regenerative reaction.

ANEMIA INFANTUM PSEUDOLEUKEMICA.

Koplik [11] reports his own cases in detail and also reviews at some length the literature of the subject. He states that no one has yet shown that any case which presented the symptom-complex of anemia infantum pseudoleukemica of Von Jaksch can degenerate into a true leukemia. One of Von Jaksch's cases, which to him seemed clinically identical with the others described by him as anemia infantum pseudoleukemica, was shown post-mortem to be a true leukemia, thus disproving the possibility of these two conditions merging into one another.

A study of the post-mortem findings of all the cases of Von Jaksch's anemia thus far published shows that there is nothing pathognomonic in the anatomical changes in the spleen, bone marrow, liver or other organs. In the spleen there has been regularly found an enlarged organ with an increase of the connective tissue and a diminution of the splenic pulp with nothing even remotely suggesting a leukemia. In the liver there has been, in the various cases published, an enlargement due to simple parenchymatous changes, to fatty degeneration or to simple lymphoid infiltration. The bone marrow shows at most a mixed red marrow and its constituents. There is nothing suggestive of leukemia nor of very marked disturbance in the structure which can be designated as specific. The intestine also fails to show anything but lymphoid infiltration.

The clinical picture described by Von Jaksch is easy of recognition. The anemic habitus, the large abdomen, the very large spleen, the large liver and the intestinal disturbance enable us to easily distinguish such cases from those of slight anemia with moderate enlargement of the spleen. There is nothing to suggest leukemia except the large liver and spleen. The complete and satisfactory recovery of some of these cases leads him to believe that the condition is due to the reaction of a severe disturbance of the nutritive functions of certain organs, such as the intestine and its large secretive glandular system, upon certain other organs, such as the spleen, causing changes in the same with secondary changes in the blood, which later may assume a rôle of primary importance. Von Jaksch's anemia is, therefore, a severe secondary anemia with or without marked leucocytosis. Those cases reported as ending in true leukemia were really cases of leukemia from the outset. Cases of Von Jaksch's disease which terminated fatally did so as the result of some intercurrent disease.

ANEMIA INFANTUM PSEUDOLEUKEMICA. TREATMENT WITH RÖNTGEN RAYS.

Lommel [12] treated an eight months' old child suffering with anemia infantum pseudoleukemica with the x-ray. The spleen became smaller and the blood condition improved rapidly. The child died a year later with pneumonia and the spleen was found to be normal.

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(To be continued.)

Reports of Societies.

ASSOCIATION OF AMERICAN PHYSICIANS.

TWENTY-THIRD ANNUAL MEETING HELD AT WASHINGTON, D. C., MAY 12, 1908.

(Continued from No. 24, p. 914.)

HEART SOUNDS HEARD IN EARLY DIASTOLE.

Dr. A. A. **Eschner**, Philadelphia, said it had always seemed to him that the physical condition present in the passage of blood from the auricle to the ventricle was such as to be particularly calculated to develop a sound during this period; on one side a cavity of considerable caliber and on the other a cavity still larger, separated by an orifice; it seemed to him this provided admirably the elements for a generation of such a sound which would become audible to the examiner according to varying conditions; if the walls or the cavity underwent enlargement it would become audible.

Dr. W. S. **Thayer**, in closing, said one of the conditions in which an analogous sound was heard is that of aortic insufficiency; at the apex of the heart one hears the dull first sound, then a second sound without any diastolic murmur, and then a third one.

STUDY OF THREE CASES OF ANEMIA IN CHILDREN.

Dr. M. H. **Fussell**, Philadelphia, reported three cases with clinical notes and study of the tissues and blood. The first, a male, thirteen months; only child; during life had intestinal disturbances; at about eight months the child began to get pale, and a tumor in the abdomen was noticed. It died suddenly during an attack of vomiting. At autopsy all the tissues were extremely pale, but with the exception of enlargement of the mesenteric glands and spleen, there was nothing else; there was hyperplasia of the spleen and lymphatic glands. The second, aged seven, female; had vomited blood a number of times and had been for some time weak and pale; all the physical signs of ordinary anemia, with enlarged heart; probably a septic condition. Child died after a very large hemorrhage from the stomach, before which blood examination showed 20% hemoglobin, 1,275,000 reds, 6,000 whites. At autopsy the liver was found large, pale, and pinkish in color, and one branch of the hepatic vein closed with a thrombus. Third, child sick three months; pale, yellow color; could get no history. Spleen was extremely large; liver half way between the xyphoid cartilage and umbilicus. Hemoglobin, 20%; 1,600,000 reds. Patient developed further anemia and died. The bone marrow was pale and made up of large cells with granular protoplasm and a vast number of small lymphocytes. Malpighian bodies were small.

SPLENIC ANEMIA, SPLENECTOMY, RECOVERY.

Dr. Morris J. Lewis, Philadelphia, reported the studies of the blood covering a period of seven years, four before and three following the operation. Slight enlargement of the spleen, first detected in 1900, with gradual subsequent increase in size, until 1904, the year of operation. Moderate anemia of four years' duration, followed by profuse hematemesis, and by melena, which occurred shortly after an examination, which proved the blood to be practically normal, viz.: hemoglobin, 90%; red blood count, 5,000,000; white, 6,100. There was rapid fall in hemoglobin to 18% and red blood count to 1,100,000. There was history of indigestion of long standing. Gastro-enterostomy was performed on the theory of possible gastric or duodenal ulcer, followed by a gradual gain in health, and practical cessation of melena. The question arose as to whether this gain was due to an accidentally performed Talma's operation brought about by adhesions, or to the enforced quiet of the stomach. Splenectomy in 1904, four months later. Accurate study of the effects of splenectomy on the blood changes were interfered with by inflammatory complications, viz.: pleural effusion, pericarditis and abscess in wound. High total leucocyte count immediately after operation and during time of complications reached 24,000 per centimeter and rapidly fell during convalescence to average of 10,000, which average was still maintained. Eosinophilia immediately after operation was apparently modified by the complications, but reached its highest point, 1,300 per centimeter, two months later. Eosinophilia still persists three years after operation, viz.: 570 per centimeter and with little change in the lymphocytes.

Dr. J. B. Herrick, Chicago, reported a case seen two years ago of a young man suffering from pneumonia in whom he noticed a large scar over the abdomen and asked the cause, and was told that a surgeon had operated for tumor of the spleen. Dr. Ochsner, who did the operation, said it had been removed with considerable difficulty because of adhesion, and the spleen measured 22 x 16 x 8 cm. The diagnosis was primary splenomegalia. It added one to the list of patients who had survived the operation in splenic anemia.

Dr. A. D. Blackader, Montreal, reported a similar case of splenic tumor where the size of the spleen prevented the patient from taking much food because of pressure upon the stomach. The case went to operation, and a peculiarity of it was dense adhesions to the transverse colon. The patient made an uninterrupted recovery, and several examinations after the operation showed the condition stated by the essayist.

ON THE RELATION OF UROBILINURIA TO PRESENCE OF BILE PIGMENT IN THE BLOOD.

Drs. L. A. Conner and **J. C. Roper**, New York, attempted to throw some light upon the perplexing subject of the source of the urinary urobilin. By the use in a large number of pathological cases of a clinical method of determining the presence and amount of bile pigment in the blood serum, they had been able to demonstrate that, in most cases at least, the existence of urobilin and its chromogen in the urine bears a direct and quantitative relation to the presence of bilirubin in the blood; and that in such cases no urobilin is demonstrable in the blood. An exception to this general rule has been found in the case of certain pneumonias in which, although no bile pigment could be detected in the blood, urobilin was present in both the blood and urine. A possible explanation of this peculiarity was that there might be some relation between the pneumococcus and the production of the urobilin, or that it might come from the reduction of the pigment by the pneumococcus. They considered this of prognostic value if nothing else.

Dr. James Ewing, New York, said that in eclampsia we have very marked increase of urobilin in the blood, which, of course, could not be attributed to such origin; it had been attributed by some to disorder of the hepatic function.

Wednesday, May 13, Morning Session.

A REPORT OF TWO CASES OF RELAPSING FEVER, WITH A DEMONSTRATION OF THE SPIROCHETA IN THE BLOOD FROM THE PATIENTS AND THE BLOOD OF INOCULATED RATS.

Dr. John W. Hunter and **Dr. Thomas A. Cope**, Philadelphia, presented this paper, which consisted of a historical review of the disease, a *résumé* of the recent work done on the subject, including serum studies, by means of transmission and recognition of different varieties, and the histories of their two cases. The first case was imported from Europe, and the second patient, who had lived in this country for over a year, acquired the disease through sleeping with the first patient after he had developed the fever. The organisms were demonstrated under the microscope.

THE ACTION OF PURGATIN ON THE KIDNEYS.

Dr. Franz Pfaff, Boston, described his results, both positive and negative, in a series of experiments with the action of purgatin on animals. Purgatin had been considered the best of all the synthetically prepared compounds. It had been maintained that it acted without griping and that it did not affect the kidneys. Marshall had tried it on himself and woke up in the night with pain in the loins, and passed a large quantity of urine that did not contain albumin; he concluded that it caused irritation of the kidneys and should not be given where the kidneys were diseased. Frank had tried it on a parturient woman and she voided urine containing casts. In two others the quantity of albumin was increased; he warned strongly not to use it in parturient women or patients with kidney disease. The writer had used it with dogs, cats and guinea pigs; in rabbits it did not purge, but the urine contained albumin and the intestines and internal organs showed discoloration. Two cats lost appetite, became weak, and died from exhaustion; their urine showed but slight traces of albumin, but autopsy showed acute nephritis. In ten experiments on rabbits there was marked nephritis in nine, with desquamation of epithelial cells; guinea pigs showed the same effect. Three dogs did not show any deleterious symptoms. The writer concludes that purgatin does cause in certain animals acute Bright's disease and death, and that it may cause in human beings kidney trouble, and that it has no advantage over other purgatives and should not be used in clinical therapeutics.

THE THERAPEUTICS OF SELF-REPAIR.

Dr. S. J. Meltzer, New York, said that numerous facts in biology justified the conception that the living organism represented a mechanism and was in very many respects comparable to a complex human-made machine. The efficient repair of a mechanism justly presupposed a familiarity with its normal structures and construction, and also a complete understanding of the nature of the disorder. But what was the status of their understanding of the living machinery and its disorders? They might well point with pride to the great strides recently made in this understanding, but the actual extent of their knowledge, it must be admitted, was very small and was only an infinitesimal fraction of that knowledge which would enable them to comprehend the living machine as a competent engineer understood the human-made machine. While no man would be permitted to meddle with serious disorders of the human-made machine with only a fraction of knowledge of its construction, yet with the disorders of the mechanism of life for thousands of years millions of men had meddled, with a knowledge infinitesimally small indeed, even when compared with the present-day understanding of the processes of life and their disorders. No man could doubt what the outcome would be of an ignorant meddling with the human-made machine; it would lead in the great majority of cases to its complete destruction. But with the human organism no such disastrous results follow the innumerable ignorant meddlings with its disorders. The truth of the matter was that with just regard to therapeutics the living animal body ought not and could not be compared with an artificial machine. No machine had yet been invented which could automatically repair its own disorders, but the living organism was well provided with such automatic arrangements for self-repair. He said two methods of treatment competed in the past in the domain of internal medicine, the rational and the empirical, the former possessing only negative virtues, leading essentially to inactivity, the latter satisfying its followers by the activity to which it inspired. Many ailments and diseases terminated spontaneously in recovery; therefore it was evident that the animal organism must possess means and methods by which it accomplished these recoveries. And here a competent school existed where therapy could be learned thoroughly and efficiently. With this object in mind, the methods of self-repair of the animal body became the object of profound scientific studies, and immunity became the third method of therapeutics. Dr. Meltzer said he feared that the aspect of the studies of immunity was not yet appreciated, even by some of the leading pharmacologists. It was a good thing that the antitoxins were discovered; here was something which physiology could not claim as its own and pathology had not yet laid hands upon it. Here was something which the body in its efforts at defense and repair evidently manufactured anew. The present tendency in pathology was to consider every symptom as a manifestation of the efforts of the organism for defense and self-repair. All the signs of inflammation were now considered as factors in self-repair. It was interesting to observe how on the basis of this newest conception some of the very same signs which were previously considered as essential manifestations of the disease were now artificially produced for therapeutic purposes. The various attempts to influence favorably the course of infectious diseases by the artificial production of leucocytosis was another venture to utilize therapeutically one of the methods of defense and self-repair employed by the body against inflammation. Fever was another means of repair which was now being tried by various investigators as a curative agent. He referred to the experiments of Opie, in which tuberculosis of the pleura and lungs of dogs were cured or greatly mitigated by the intrapleural injection of sterile pus obtained from another animal. Learning the methods of nature should not imply that they were to be followed blindly. On the contrary, they should be improved upon. In studying self-repair, we need only get a hint as to nature's methods, but he was a bad pupil who did not try to do better than his master. Nature strove only to avoid death; the physician had an additional duty — to make life bearable. Among the new creations he mentioned the antitoxins, bacteriolysins, anti-endotoxins, agglutinins, precipitins and coagulins. The organism, no doubt, could produce other substances in its struggle against disease. Enumerated instances would suffice to prove his contention that the fact of spontaneous recovery of the organism from disease could be and had already been utilized with great profit in favor of scientific and practical therapeutics. Pathological therapeutics promised to be the most efficient method of studying therapy.

DIETETIC AND HYGIENIC THERAPEUTICS.

Dr. David L. Edsall, Philadelphia, said there had been in recent years a growing tendency to rejoice in the condemnation of drugs, but as to the question of dietetics and hygiene, he thought the majority of young men of moderate training believed they could not get the results with these methods that they could expect with drugs, and this was because they learned to administer drugs more rationally. As to hygiene, he thought that in the majority of cases the attending doctor did not give rules for hygienic conduct in the treatment for disease, as, for instance, in the care of typhoid fever — instructing the family as to the preparing of food for other members of the family, etc. The question of drugs was presented in such a way that the student had an intelligent reason for employing them; hygienic therapeutics, on the other hand, came only from experience, and the gathering together of material gradually. The student should be taught in regard to diet and hygiene that it is not so necessary to learn a large number of new facts as to correlate and put in practice the ideas he has gained from the study of physiology and etiology. They were too apt to overlook the commonplace. Most textbooks say simply that the dietetic and hygienic treatment is not to be neglected, but without saying what this treatment is. He deprecated the way in which prepared foods are used, without any knowledge of their food value; the exact value of drugs was much better understood.

ORGANO-THERAPEUTICS.

Dr. Reid Hunt, Washington, said that one lesson could be learned from the history of this subject, namely, that it is one of the oldest forms of therapeutics, but it was only after the subject began to be studied scientifically that any results were obtained. He thought what was now called organo-therapeutics would in a few years be called simply drug-therapeutics, because of the similarity to ordinary drugs. The present tendencies in organo-therapeutics were along three lines: first, more thorough study of the rôle of these hormones in the body; second, to obtain them in form suitable for therapeutic purposes;

third, efforts to influence the hormones in the body itself. The most striking advance was being made along the first of these lines, the study of the hormones in the body. A proper definition of organo-therapy, he said, was the utilization of that group of internal secretions called hormones. It had been shown that the fetus produces some secretion which led to development of the mammary glands and the formation of milk. Evidence was clear that the ovary had two or more internal secretions; that the corpus luteum produced a secretion necessary for the fixation of the embryo to the uterus.

Two hundred and sixty-seven organo-therapeutic preparations were described in medical literature and advertised in the journals and the list did not differ much from those in vogue a century ago. The parathyroid had undoubtedly a marked effect in tetany, produced by removal of the thyroid. Encouraging results had also been reported from the secretion of the pituitary body. Some new uses had been found for some of the preparations, as, for instance, the thyroid in rheumatism. Suprarenalin had been used as an ordinary drug rather than as an organo product; the only disease in which there was lack of adrenalin secretion, Addison's disease, did not seem to be of much value. Many of these products could be made synthetically and the indications were that we could make better hormones in some instances than nature. The writer said there was no standard at present for the commercial thyroid, some of it having a much larger iodine content than others. Thyroid was now being used, perhaps more by the laity than by physicians, and was being put out in a disguised manner under other names. Ethical preparations were also advertised in the best medical journals under another name, which simply contained about 10% of dessicated thyroid.

THE PRESENT STATUS OF SERUM AND VACCINE THERAPY.

Dr. **Mark W. Richardson**, Boston, under the general consideration of this subject, reviewed the history of antitoxins, bacteriolysins, anti-endotoxins, opsonins, vaccines, filtrates and residues, giving a résumé of the treatment of bacterial diseases with homologous sera and bacterial products.

PSYCHO-THERAPEUTICS.

Dr. **L. F. Barker**, Baltimore, gave a brief historical résumé of the subject and discussed the advantages and limitations of the psycho-therapeutic methods in vogue at present and the outlook for the further development of these methods. He said any influence which exerts a psychic effect also exerts a physical one, so that psycho-therapy is also physical therapy, but medical psychiatry knows nothing of telepathy or hypnotism. When one thought of the many drugs vaunted for a time and then disappearing, he must believe that there must have been a strong psychic effect produced by them. The psycho-therapy of persuasion rather than of suggestion had been revived. Isolation was of the greatest importance and he called attention to the fact that the idea of isolation in disease had arisen in antiquity with the anchorites. The psycho-neuroses were the most promising diseases for psycho-therapy and any intelligent man might gain an insight into these disorders and give relief by this form of therapy. Its limitations were definite, but its field was broad and the future would reveal great opportunities that might be taken advantage of. Unfortunately, psycho-therapy had had in the past such a yellow streak in it that many medical men had refrained from employing it to advantage. Its use should always be preceded by definite diagnosis and it was a very valuable adjunct to the other forms of therapy.

THE RADICAL CURE OF CHRONIC CONSTIPATION BY PSYCHO-THERAPY.

Dr. **Irving P. Lyon**, Buffalo, said that chronic constipation is generally looked upon and treated as a local disease of the intestines; that this view is erroneous and, if strictly followed, leads to failure in treatment. He considered that chronic constipation was generally a simple psycho-neurosis — a mental habit or conviction of constipation, by which the normal innervation of the intestine was obstructed or altered. This altered innervation did not necessarily lead to either a tonic or an atonic condition of the bowel, i. e., spastic or atonic constipation. While such forms might sometimes be clearly marked, usually no well-defined and consistent change of innervation was evident, but rather merely a habit of whimsical, uncontrolled irregular action. This faulty control had been intensified by dependence upon cathartics, so that there was combined in the mentality of the patient a conviction of constipation and a conviction of necessary dependence upon catharties — two habits of mind instead of one. In the treatment the physical basis of the disordered function should be recognized, emphasized and utilized. Drugs and special local measures should be regarded as unnecessary, if not positively harmful. The patient's mentality or conviction of constipation should be changed at once, and at the first interview the patient should leave the doctor's office thoroughly convinced that constipation is merely a faulty habit that can be immediately overcome. With this new conviction impressed, it would be found easy to establish a new habit of regularity of function. Various accessories or natural stimuli to normal function at a regular time should be utilized, especially at first. The cure could be established, as a rule, within a few days, often on the first day, seldom requiring more than a week or two. The correctness of these views was attested by the uniform success of the treatment and by the permanence of the cure. His personal experience with the method of treatment had been limited to the last two years in 69 cases, with the following results: complete cures, 67; partial cures, 1; failures, 1.

(To be continued.)

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Book Reviews.

Lea's Series of Pocket Text-Books: Materia Medica, Therapeutics, Pharmacology and Pharmacognosy. By **William Schleif**, Ph.G., M.D., Demonstrator of Medical Pharmacy in the Medical Department of the University of Pennsylvania. Series edited by **Bern B. Gallaudet**, M.D., Demonstrator of Anatomy and Instructor in Surgery, College of Physicians and Surgeons, New York; Visiting Surgeon, Bellevue Hospital, New York. Third edition, revised and enlarged. Philadelphia and New York: Lea Brothers & Co. 1907.

This is an elementary textbook on materia medica of 470 pages, appearing in its third edition, and contains a brief notice of the physical, chemical and physiological properties and uses of most of the drugs employed in medicine.

The author adopts the old classification into antispasmodics, cardiants, spinants, tonics, alteratives, antiperiodics, etc.

Although the descriptions of the physiological actions are not quite sufficient to recommend the book for the study of pharmacology, yet it may be serviceable as a small textbook of Materia Medica.

Poisons: Their Effects and Detection. By Alexander Wynter Blyth, M.R.C.S., F.I.C., F.C.S., etc., Barrister-at-Law; Public Analyst for the County of Devon; Medical Officer of Health and Public Analyst for the Borough of St. Marlebone; and Meredith Wynter Blyth, B.A. (Cantab.), B.Sc. (Lond.), F.I.C., F.C.S., etc., Public Analyst for the Borough of Brighton, and also for the Borough of Eastbourne. Fourth edition thoroughly revised, enlarged and rewritten. With tables and illustrations. London: Charles Griffin & Co., Limited. Exeter Street, Strand. 1906. New York: D. Van Nostrand Company.

The authors have treated the subject of toxicology in all its branches. They have carefully described the symptoms of poisons and methods of separation and detection of them.

The work, appearing in its fourth edition, is composed of 770 pages and is remarkably complete and up to date. It begins by an introduction of the poison-lore in which is given a sketch of the different schools of criminal poisoning, including those of Italy as a whole, and Venice. In the next division appears the history of the scientific development of toxicology, including a brief description of Orfila's sublime rôle.

Part II begins with a consideration of the difficult "definition of a poison," which is followed by the classification of poisons. In the latter the authors give one of their own, based upon successive steps of detection. An interesting section on statistics is followed by "The connection between toxic action and chemical composition," "The action of the poisons on the lower forms of life, "General methods of procedure in searching for a poison," "The spectroscope as an aid to the identification of certain poisons," and "Examination of blood and blood stains."

Part III takes up the toxicology of the poisonous gases, carbon monoxide, chlorine and hydrogen sulphide. Part IV, the acids and alkalies. Part V, the hydrocarbons, alcohols, aldehydes, ketones and their derivatives; also carbon disulphide, hydrocyanic acid and phosphorous. Part VI, the alkaloids, glucocides, toxalbumins, etc., found in plants. Part VII, poisons derived from living or dead animal substances, as samandarin, poisonous fishes and reptiles, ptomains and toxins. Part VIII describes oxalic acid and oxalates, while part IX gives the inorganic poisons.

Typhoid Fever. Its Causation, Transmission and Prevention. By George C. Whipple, Consulting Engineer. With an introductory essay by William T. Sedgwick, Professor of Biology, Massachusetts Institute of Technology. New York: John Wiley & Sons. 1908.

The author of this volume of four hundred small octavo pages is an engineer and a graduate of the Massachusetts Institute of Technology, where, in the department of biology, and under the tuition of Professor Sedgwick, he conceived his first interest in epidemiology.

The fight against typhoid fever must be made largely, in the author's opinion, by men of two professions, — by physicians and engineers. These two professions should co-operate more closely than they have done in the past in this great undertaking.

The object of Mr. Whipple's book, in the preparation of which he acknowledges the assistance of physicians and sanitary biologists, is to furnish to the members of the two professions above referred to a condensed summary of the important facts that have been learned regarding typhoid fever, so far as they relate to the prevention and spread of the disease; to furnish to the student of sanitary science a group of illustrations of some of the leading principles of epidemiology; and to the general reader a simple, clear and correct account of the causation, transmission and prevention of the disease, including his own responsibility for helping to bring about such conditions of cleanliness that this disease may soon cease to be a national disgrace.

In this praiseworthy attempt the author has been more than reasonably successful, and his book will be found a useful addition to the literature of the subject.

Functional Nervous Disorders in Childhood. By Leonard G. Guthrie, M.A., M.D., F.R.C.P. 8vo., pp. x, 300, with one illustration. London: Henry Frowde; Hodder and Stoughton. 1907.

The object of this book is "to emphasize the truism that the neurotic child is the father of the neurasthenic adult," and consists chiefly of lectures and addresses delivered at various times before branches of the British Medical Association and the Postgraduates' College of London. It is not a complete treatise upon the nervous disorders of childhood, but it treats in a somewhat discursive manner, yet with much sound judgment and in an agreeable style, many peculiar nervous conditions which are seldom touched upon in the more formal treatises. Among these are such conditions as the fears of neurotic children, moral and religious emotions, fretting and homesickness, infant murderers and suicide, idioglossia, stammering, delayed walking, beside various affections not of a nervous character, such as hypertrophic stenosis of the larynx, cyclical albuminuria and cyclical pyrexia. The physician will, therefore, find in it sound information in regard to various distressing conditions concerning which the ordinary textbooks will give him little aid. It may be warmly commended as a helpful supplement to the more formal treatises like those of Sachs, Gerhardt and Taylor.

THE BOSTON
Medical and Surgical Journal.

THURSDAY, JUNE 18, 1908

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A PSYCHIATRIC CLINIC IN BALTIMORE.

INDICATIONS have of late not been lacking that the same attention is to be given to the study of mental disease, and by the same methods, as has been accorded to physical ailments. This instruction has, up to the present time, been inadequate in this country, so far as medical schools are concerned, on account of the lack of clinical facilities and the strongly developed opposition against the admission of patients with mental disorders into general hospitals. As in many other departments of medicine, the solution of the difficulty seems to lie in the establishment and maintenance of special hospitals for this type of disorder, the far-reaching practical importance of which can no longer be evaded.

As we have from time to time had occasion to point out, there are several clinics in this country which have made themselves felt as a force in the teaching of modern psychiatry. Few of these are, however, independent of state aid, and integral parts of university medical systems. The need of university clinics in this subject has become so apparent, and has been so generally commented on, that the people are coming to take notice, and this usually means endowment.

It is with particular satisfaction that we note the report of a large gift to the Johns Hopkins Hospital by Mr. Henry Phipps, of Pittsburg and New York, to be expended for the development of a model psychiatric clinic. It is proposed, as announced by Prof. William H. Welch, to construct an adequate hospital building on the grounds of the Johns Hopkins Hospital for the accommodation of about sixty patients. In addition to the building and an equipment to meet the demands of modern research in this field, Mr. Phipps, it is stated, will provide salaries for the teachers, including a professor in psychiatry and a nursing staff, for a period of ten years. The amount of the gift which is to make this comprehensive scheme possible is not definitely stated, but that it will be sufficient to meet the most exacting demands is apparently not open to question.

As in various other matters connected with medical education, the Johns Hopkins Hospital is destined to be a pioneer in this neglected branch of medical study. The time is certainly ripe for the establishment of such a clinic, and it is to be hoped that the example thus set by Mr. Phipps and the Johns Hopkins Hospital may be followed by other men and institutions. Whether such munificent gifts, however, are forthcoming or not, it is manifest that the various states having at heart not only the best care of their dependent insane, but also the possibility of the prevention of the increase of this great class of state beneficiaries, must maintain observation hospitals where these affections can be studied in their incipiency and while yet curable. To this end we look forward with confidence to the establishment in various centers of population, and so far as possible connected with medical schools, of such hospitals, although few have as yet appeared. There are indications that Massachusetts is not to be backward in this beneficent movement, and that with the proposed taking over of the care of the insane by the state the further responsibilities involved in research into mental conditions and their underlying causes, with the teaching of students, will not be neglected.

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THE MEDICAL CORPS OF THE UNITED STATES NAVY.

WE have repeatedly commented on the conditions of medical service, both in the army and navy, and have held to the opinion that if these services are to be made desirable to the more promising young men in the medical profession, certain privileges must be accorded them which have hitherto not been forthcoming. The situation has been keenly felt by the surgeon-generals of both arms of the service, and repeated recommendations have been made toward an improvement of the conditions under which medical men must work. The increasing importance of the physician in time of war has been made manifest by various experiences of late years, and to many it has seemed proper that the medical departments of the army and navy should hold the same dignified position which is accorded to the rank and file. There is much evidence that a change is about to take place; in fact, through a recent act of Congress, approved May 13, 1908, the pay, allowances and privileges of medical officers have been increased. On the other hand, it is doubtless true, as expressed in a pamphlet by the surgeon-general of the navy, that one important cause of the lack of enthusiasm toward entering the medical service of the navy is the widespread ignorance of the conditions of service. It is, therefore, desirable that the public mind, so far as possible, be disabused of what false conceptions it may have in this regard. In the pamphlet to which we have referred, the surgeon-general speaks of the expansion of the navy within recent years, the establishment of the status of the medical officer on a high plane, and the enviable position he now fills, socially, professionally and officially. The opportunities for professional work and research are liberal in the various naval hospitals, many of which are now excellent in their appointments. At sea the hospital ship is a recent significant development, and the modern warship is also liberally provided with means of medical and surgical care. The value of travel, the certainty of renumeration and the probability of advancement are all matters which should attract competent young men. It is certainly to be hoped, with the increased advantages now being offered, that more will avail themselves of the opportunities which the naval service offers, and this we have no doubt will be the case.

It must, however, be remembered, and this we believe is one of the chief causes of unpopularity of this service, that a man renounces his independence; that he is never sure of an abiding place; that the education of his children, if he happens to be married, is seriously interfered with by the uncertainty of the time of his location in one place, and that many of the comforts upon which men increasingly depend as the years go by are wholly precluded by enlistment either in the service of the army or navy. It is probably a difficult matter to arrange, but could a medical officer, after attaining a certain age, be given the assurance of a permanent residence, we have no doubt that one of the great barriers toward entering the naval service would be removed.

THE JOURNAL OF SCHOOL HYGIENE.

We have before us the first number of the first volume of a publication entitled *School Hygiene*, issued by the American School Hygiene Association, and appearing monthly, with the exception of the months of July and August. This publication is the result of a number of business meetings of the officers and council of the association, of which Dr. Henry P. Walcott, of Boston, is president, and Dr. Arthur T. Cabot, of Boston, vice-president. In addition to this monthly bulletin, it is designed also during the coming year to form active committees for the purpose of compiling a bibliography on school hygiene, to investigate state municipal laws relative to school hygiene and to accumulate further statistics regarding medical inspection. Among others especially associated with this work may be mentioned Dr. A. Jacobi, of New York; Dr. Philip King Brown, of San Francisco; Dr. W. E. Fernald, Dr. Charles Harrington, Dr. J. H. McCollom, of Boston; Dr. Frederick Forchheimer, of Cincinnati; and Dr. William H. Welch, of Baltimore. The editor of the bulletin is Dr. George S. C. Badger, of Boston.

The title describes in a general way the scope of this periodical, which should prove of much practical value as a means of disseminating knowledge and emphasizing various matters connected with the hygiene of schools. It is, in fact, an effort to report progress in the attempt to secure improved school conditions and to awaken public interest in the entire subject. The establishment of the periodical is in no way a money-making enterprise and must depend for its continuance upon the degree of support which it receives from the public, for whom it is primarily intended. The subscription price has been placed low in order that it may be brought within the reach of every one and may, therefore, the sooner prove its usefulness. This first number contains, in addition to editorial comment, a series of articles relating to school hygiene of very considerable practical value. Among these articles the subject of eyestrain and the care of the teeth, with a brief statement of playground legislation, the latter written by Mr. Joseph Lee, of Boston, are perhaps of special significance.

It will be of interest to those of our readers who have not followed the development of this association to know that it owes its origin to a letter written by Sir Lauder Brunton to Dr. Arthur T. Cabot, requesting him to secure delegates to the International Congress of School Hygiene to be held in 1907. It was thereupon decided, after discussion, that there was need of a permanent organization in this country to foster the interests of school hygiene and that the formation of such a body would be the best method of bringing about the co-operation desired by Sir Lauder Brunton. We wish the society and its periodical every success in the development of its prophylactic work among school children.

MEDICAL NOTES.

A CENTENARIAN. — Mrs. Mary A. L. Hunt has recently died at Beloit, Wis., at the reputed age of one hundred and six years, retaining her faculties up to the time of her death.

PENSIONS OF WIDOWS AND CHILDREN OF DOCTORS. — The *British Medical Journal* is authority for the statement that the Spanish government has under consideration a scheme for the granting of pensions to the widows and children of doctors who have fallen victims to professional duty in times of epidemic.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, June 16, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 38, typhoid fever 16, measles 200, smallpox 0, tuberculosis 33.

The death-rate of the reported deaths for the week ending June 16, 1908, was 17.06.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, June 13, 1908, was 206, against 210 the corresponding week of last year, showing a decrease of 4 deaths and making the death-rate for the week 17.57. Of this number 117 were males and 89 were females; 202 were white and 4 colored; 123 were born in the United States, 75 in foreign countries and 8 unknown; 45 were of American parentage, 130 of foreign parentage and 31 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 58 cases and 3 deaths; scarlatina, 47 cases and 3 deaths; typhoid fever, 20 cases and 1 death; measles, 200 cases and 11 deaths; tuberculosis, 35 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 13, whooping cough 0, heart disease 27, bronchitis 2 and marasmus 9. There were 15 deaths from violent causes. The number of children who died under one year was 40; the number under five years 63. The number of persons who died over sixty years of age was 57. The deaths in public institutions were 84.

There were 3 cases and 2 deaths reported from cerebrospinal meningitis, during the week.

AN HONORARY DEGREE FOR DR. F. C. SHATTUCK. — Dr. Fred'k C. Shattuck delivered the address at the last commencement of the University of Cincinnati and was given the degree of LL.D.

INJURIES OF THE SEVENTEENTH OF JUNE. — Reports as far thus available show approximately one hundred accidents of varying degrees of severity as a result of the local holiday in and about Boston known as Bunker Hill Day.

BEQUESTS. — By the will of Mrs. Jerome Jones, of Brookline, Mass., many public bequests are made, among them the following to medical institutions: Free Hospital for Women, Brookline, $10,000; Industrial School for Crippled and Deformed Children, $10,000; Kindergarten for the Blind, $10,000; Children's Hospital, $10,000; Home for Aged Couples, $5,000, all of Boston.

PLEA FOR COURSE IN MENTAL HEALING IN TUFTS MEDICAL SCHOOL. — At the recently held annual commencement dinner of Tufts College, Boston, Dr. Morton Prince, professor of neurology in the medical department, made a strong plea for donations for laboratories and endowments to enable that institution to establish a course in psychotherapeutics. He urged the necessity of laboratory training, and insisted that the work of treating disease by this means should only be undertaken by properly educated persons.

NEW YORK.

NEW EYE, EAR AND THROAT INFIRMARY. — On June 13 the cornerstone of the new Harlem Eye, Ear and Throat Infirmary was laid by Bishop Greer. The principal address was by Dr. J. J. Cronin, of the Health Department, on "Preventive Medicine and Economy," and the closing address by Dr. C. B. Meding, Executive Surgeon.

REMOVAL OF NEW YORK DISPENSARY. — The New York Dispensary, the oldest in the city, which has carried on its benevolent work for one hundred and eighteen years at the corner of White and Centre streets, where it was established in 1790, has just removed its quarters to 180 Grand Street, in the vicinity. The old building is to be torn down to make room for the new subway extension.

ANNUAL COMMENCEMENT, NEW YORK UNIVERSITY. — At the seventy-seventh annual commencement of the New York University, held on June 3, 511 degrees were conferred, the largest number by more than 25% in the history of the institution. Eighty-seven graduates received the degree of doctor of medicine and twelve the degree of doctor of veterinary surgery. In the medical department the Valentine Mott gold medal was awarded to Richard J. Brown, of Newark, N. J.; the silver medals to Alfred C. Reed, of Pomona, Cal., and Henry I. Berger, of Indianapolis, Ind., and both the William T. Lusk memorial prize and the Herter scholarship for 1908–9 to Adolph I. Ringer, of New York City.

Further Decision in Favor of Osteopathy. — On June 12, the osteopaths won another decision in their favor, the Appellate Division of the New York Supreme Court, on an appeal by Assistant Corporation Counsel Stirling, sustaining the recent judgment of Justice Dickey, of Brooklyn. It will be remembered that Charles F. Bandel, a Brooklyn osteopath, in consequence of the refusal of the Health Department to recognize a certificate of death signed by him, brought mandamus proceedings, the action becoming a test case, and that Justice Dickey, ruling that osteopaths were qualified physicians within the meaning of the present law, granted the mandamus. It is probable that the case will be taken to the Court of Appeals for a final decision.

Commencement, Cornell University Medical College. — At the annual commencement of Cornell University Medical College, held June 10, there were 58 graduates. The Polk Memorial Prize, offered to the three members of the graduating class maintaining the highest standing throughout the course, was awarded to W. G. Graves, of Binghampton; R. W. Williams, of Fredonia, and H. C. Luke, of Salamanca. The neurological prizes were won by Mark Cohn, of New York, and F. J. Farnell, of Providence. The prizes for the best work in otology went to H. E. Santee, of Hornell, and Harold DeWolf, of Bristol, R. I. President Sherman announced in his address at the exercises that the trustees of the college had decided to require the degree of A.B. for all matriculants in future.

Co-operation for Life Saving among Infants. — On June 1 a conference was held at the Department of Health, which was attended by representatives of more than fifty hospitals and dispensaries, charitable and municipal organizations, nurseries and diet kitchens, for the purpose of forming plans of co-operation with the department for the saving of life among infants and young children during the coming summer. Heretofore each of these agencies has been carrying on its summer work independently, and it was felt that if a comprehensive system could be organized in which they might all unite, much greater efficiency and better results could be secured. The organization, which is to be permanent, was formed under the name of the Conference for Hot Weather Care of Babies, and Dr. William H. Allen, secretary of the Bureau of Municipal Research, was chosen chairman, and Dr. John J. Cronin, medical inspector of the Health Department, secretary. The executive work of the conference is to be done by a committee of seven, appointed by the chairman, and Commissioner Darlington, who has long endeavored to bring about such an organized system for the prevention of infant mortality as that now inaugurated, agreed that the Health Department should do the clerical work and furnish the educational literature required.

Suppression of Bovine Tuberculosis. — The bill drafted by Commissioner of Agriculture Pearson, designed to carry out more effective measures for the suppression of bovine tuberculosis in the state, was passed at the recent special session of the legislature just before its adjournment and has been signed by Governor Hughes. The act carries with it an additional appropriation for compensation at a somewhat increased rate for the owners of condemned cattle. The work of inspection and condemnation is to be in charge of a bureau known as the Bureau of Veterinary Service, the chief of which will be appointed by the Commissioner of Agriculture and receive a salary of $3,000.

A committee of the Veterinary Medical Association of New York, appointed to test the efficacy of tuberculin as a test for the presence of tuberculosis in animals, of which Dr. W. Reid Blair, secretary of the association, is chairman, has prepared an elaborate report, the general conclusion in which is to the effect that the objections raised to tuberculin are fallacious and that when properly employed this test will detect 97% of all cases of tuberculosis. It is stated that while a few animals with very advanced tuberculosis do not give a typical reaction to tuberculin, the reaction given is sufficiently accurate for the experienced veterinarian and, as a matter of record, these cases can be easily detected by physical examination alone.

Current Literature.

New York Medical Journal.
May 9, 1908.

1. Abbott, E. G., and Pingree, H. A. *The Restoration of the Normal Balance of the Foot.*
2. Newmayer, S. W. *Defective Vision and the Mentally Subnormal Child.*
3. Herring, A. P. *Psychotherapy in the Treatment of the Functional Neuroses.*

4. Blain, A. W. Jr. *A Clinical Study of General Anesthesia.*
5. Taylor, F. L. *A Case of Abscess of the Frontal Lobe of Traumatic Origin.*
6. Ostheimer, M. *The Prevalence of Infections in Childhood.*
7. *Braddock, C. S., Jr. *Some Random Notes on Leprosy in the Far East.*

7. Braddock has been chief medical inspector of the Royal Siamese Government. In Siam there is no segregation of the lepers. The lepers mingle with the rest of the people, even in the same public conveyances. They beg on street corners, and the money is passed on from hand to hand. The writer was much impressed by the fact that children of lepers seemed usually to develop leprosy. He believes that the disease is usually inherited, but thinks that prolonged personal contact also may transmit it. Many persons associate with lepers for long periods without contracting leprosy. [R. I. L.]

May 16, 1908.

1. Harris, T. J. *The Diagnostic Value of Symptoms of the Larynx, Pharynx and Nose in Nervous Diseases.*
2. Jelliffe, S. E. *Hysteria and the Re-education Method of Dubois.*
3. Royster, L. T. *The Medical Profession's Duty to the Children of America.*
4. Shively, H. L. *The Association of Tuberculosis of the Lungs with Diabetes Mellitus.*
5. Miller, J. A. *The Association of Tuberculosis Clinics of the City of New York.*
6. Dorrance, G. M., and Ginsberg, N. *Transfusion: History, Development, Present Status and Technic of Operation.*
7. Oppenheimer, L. S. *Some Incongruities in the Medical Profession.*
8. Palier, E. *A Case of Chronic Diarrhea Accompanied by Pyloric Insufficiency: Relieved by Hydrochloric Acid.*

The Journal of the American Medical Association.

May 16, 1908.

1. Meltzer, S. J. *Ideas and Ideals in Medicine.*
2. *Robertson, W. E., Illman, G. M., and Duncan, H. A. *A Résumé of the Coagulation of the Blood, with Especial Reference to the Therapeutic Efficacy of the Alleged Coagulants.*
3. Gorton, J. T. *Milk and its Relation to Human Tuberculosis.*
4. Meyer, L. B., and Crohn, B. B. *Acute Glanders. Report of a Case, with a Review of Recent Literature and a Complete Bacteriologic Report.*
5. Bevan, A. D., and Hamburger, W. W. *Glanders in Man.*
6. Jervey, J. W. *Conditions in the Fossæ of Rosenmüller.*
7. Andrews, E. W. *Rapid and Aseptic Anastomosis of the Hollow Viscera by a New Method.*

2. The authors studied the coagulation time in varying conditions, especially in typhoid fever. They used the coagulometer of Wright. They found that the employment of the calcium salts apparently had no direct or invariable effect on the coagulation time of the blood. Citric acid, however, seemed always to prolong the coagulation time. Hemorrhage and even venesection shortened the coagulation time. There was no relation between leucocytosis and coagulation time, and the use of nucleic acid had no effect on either. [The authors do not mention the disadvantages of Wright's coagulometer for the estimation of the actual coagulability of the blood.]
[R. I. L.]

The Lancet.

April 25, 1908.

1. Sandwith, F. M. *Gresham Lecture on the Gresham Professors of Physic.*
2. Thompson, R. *Hunterian Lectures on the Anatomy of the Long Bones Relative to Certain Fractures.* (Concluded.)
3. *Higgens, C. *On So-Called Rheumatic Iritis.*
4. Smith, F. J. *The Influenza Bacillus as a Cause of Fatal Endocarditis after Eight Years. (An Influenza Carrier.)*
5. *Noon, L., and Fleming, A. *The Accuracy of Opsonic Estimations.*
6. *Cautley, E. *Chronic Polycythemia.*

3. Higgens believes that many of the cases of so-called rheumatic iritis are really due to infections with the gonococcus. He cites several cases to show this, and speaks briefly of the treatment. He ends his paper by making a strong plea for putting gonorrhea and syphilis on the list of notifiable diseases.

5. Noon and Fleming give statistics and experimental data to show that the percentage of error of opsonic estimations is not as great as is generally considered, but is in the neighborhood of only 5 or 6%; that is, as it is done in Dr. Wright's laboratory.

6. Cautley gives the clinical history of a case of chronic polycythemia with the autopsy findings, death being due to cerebral hemorrhage. The spleen was somewhat enlarged, was adherent to the surrounding structures and contained two large infarcts. Microscopical examination of the various organs and the bone marrow afforded no indication of the etiology of the condition. [J. B. H.]

May 2, 1908.

1. *French, H. *Goulstonian Lectures on the Influence of Pregnancy upon Certain Medical Diseases and of Certain Medical Diseases upon Pregnancy.*
2. Shaw, T. C. *Lecture on the Speciol Psychology of Women.*
3. Walker, A. N., and Mussen, A. A. *Ophthalmia Neonatorum; an Experiment in Treatment.*
4. Butler, T. H. *The Treatment of Trachomatous Dacryocystitis.*
5. Fagge, C. H. *On the Pathology and Treotment of Inguinal Hernia in Children.*
6. Williamson, R. T. *Disseminated Sclerosis, commencing with Failure of Vision.*
7. Parkinson, J. P. *On the Rectal Administration of Antitoxic Sera.*
8. Hirsch, C. T. W. *Motoring Notes.*

1. French, in the first of the Goulstonian lectures, speaks of the influence of pregnancy on certain medical diseases and of certain medical diseases on pregnancy. He first considers the skin diseases, especially that form of herpes known as herpes gestationis. This is one of the conditions for which pregnancy seems to be directly responsible. It is a widely spread herpetic skin eruption, characterized by a considerable eosinophilia. He considers briefly certain other skin diseases and their relation to pregnancy, such as eczema and psoriasis. He then takes up the pyelonephritis of pregnancy. This he believes is an infection of the kidney by means of the blood stream with the colon bacillus. It is frequently overlooked, the main symptoms being backache and pyrexia. In the majority of cases where treatment is commenced early it has no effect upon pregnancy. It is caused by compression of the ureter at the brim of the pelvis by the gravid uterus. He quotes several illustrative cases. [The more generally accepted view is that pyelitis in these cases is due to an ascending infection from the bladder.] [J. B. H.]

British Medical Journal.

April 18, 1908.

1. Barr, J. *Observations on Bronchitis and Emphysema.*
2. Greenwood, M. *Lectures on the Physiological and Pathological Effects which follow Exposure to Compressed Air.* (Continued article.)
3. Cuff, A. *Primary Pneumococcic Peritonitis.*
4. *Flack, M. *Observations on the Rectal Temperature after Muscular Exercise.*
5. Butler, T. H. *Calmette's Ophthalmo-Reaction.*
6. Kesteven, W. H. *A Note on the So-Called Stimulating Effect of Alcohol on Protoplasm.*

4. Flack found a notable rise in the rectal temperature after various forms of violent exercise. The rise was roughly proportional to the duration of the exertion and reached the remarkable point of 105° in one instance.

April 25, 1908.

1. Hutchinson, J. *A Clinical Lecture on the Cystic Forms of Xanthelasma Palpebrarum.*
2. Gordon, A. K. *Notes on the Treatment of Puerperal Fever.*
3. Barling, G. *Clinical Lecture on the Diagnosis and Treatment of Renal Mobility.*
4. Riddell, J. S. *A Case of Uretero-trigonal Anastomosis for Ectopia Vesicæ.*
5. Green, C. L. *Prolapse of the Inverted Bladder through the Urethra.*
6. Ward, B. J. *"Solitary Kidney," with the Notes of a Rare Case.*
7. Griffiths, C. A. *Remarks on Traumatic Rupture of the Kidney.*
8. *Eastes, G. L. *Certain Infections of the Urinary Tract, with Special Reference to Tubercle, Gonococcus and Bacillus Coli Communis.*
9. Ball, C. A. *The Diagnosis of Impacted Calculus in the Ureter.*
10. Greenwood, M. *Lectures on the Physiological and Pathological Effects which follow Exposure to Compressed Air.* (Concluded.)

8. Eastes writes a short article on infections of the urinary tract with tubercle bacillus, gonococcus and bacillus coli communis. In regard to all these conditions he believes that the site of the lesion can be told, by a trained observer, by the character of the epithelium which is present in the urinary sediment. In tuberculosis he believes strongly in the use of tuberculin, although if there be secondary infection he would delay its administration until the other organisms have been eliminated. In regard to the colon infections, in many cases urinary antiseptics and disinfectants are of no avail, although the addition of about 3 gr. of potassium iodide renders the action of almost every urinary disinfectant drug with which it is not incompatible much more efficacious. By far the most effective form of treatment is the vaccine treatment by emulsion of the colon bacillus, not made from a stock culture, but obtained from a growth from the patient's own organisms. He speaks briefly of the work on the use of the bacillus of lactic acid in infections due to intestinal intoxication by Metchnikoff, Tissier and Fournier, and believes that in some cases of bacilluria elimination of the colon bacilli from the intestinal tract by this means will be of value. He speaks only briefly of infections with the gonococcus, but emphasizes the fact that it is important to be certain that the involvement is due to the gonococcus itself, and not to secondary organisms. [J. B. H.]

May 2, 1908.

1. French, H. *Goulstonian Lectures on the Influence of Pregnancy upon Certain Medical Diseases and of Certain Medical Diseases upon Pregnancy.*
2. Spencer, W. G. *Clinical Lecture on the Treatment of Widespread Suppuration and Multilocular Abscesses.*
3. *Morton, C. A. *Clinical Lecture on a Consecutive Series of 34 Cases of Excision of a Portion of the Rectum for Carcinoma.*
4. Adams, D. V. M. *A Case of Strangulated Femoral Hernia, Complicated by Prolapse of the Cecum and Adhesion of the Vermiform Appendix to the Sac.*
5. Robson, W. M. *Acute Fecal Impaction in the Rectum.*
6. Mackinnon, M. *A Case of Tubercular Leprosy.*
7. Smith, P. W. B. *Kala-Azar in the Royal Navy, with Illustrative Cases.*

3. Morton reports his experience with 34 cases of excision of a portion of the rectum for carcinoma. In these cases there was a mortality of 12% from the operation alone. In the last 18 cases, in 12 of whom he did Kraske's operation, there were no deaths. In the first 15 cases the coccyx was not removed and the peritoneum was not opened. In 17 cases the coccyx alone, or the coccyx and part of the sacrum, was removed and the peritoneum freely opened. He has seldom refused to excise a growth because it was too advanced, and not for many years because it was too high up, considering inoperable only cases of fixed growth when the part to which the growth is fixed cannot be removed with the tumor, and cases with secondary growths in the abdomen. In only one case has he found a preliminary colostomy necessary. He gives the details of his operation with the method for drainage. Half of his cases were sixty to seventy years of age. [J. B. H.]

The Edinburgh Medical Journal.

May, 1908.

1. *Beattie, J. M. *Acute Rheumatism; the Evidence in Support of Its Bacterial Origin.*
2. Jamieson, W. A. *The Eclectic Treatment of Skin Diseases.*
3. Littlejohn, H., and Pirie, J. H. H. *The Micro-Chemical Tests for Semen.*
4. *Bannerman, W. B. *Recent Researches into the Etiology of Plague in India, with an Account of the Work of the Plague Commission Recently Appointed by the Government of India, whereby it is shown that the Rat-Flea is the Cause of the Plague Epidemics in that Country.*

1. Beattie presents the results of his experiments on rabbits with the streptococcus rheumaticus compared with injections of various other strains of streptococcus, especially as regards arthritis and endocarditis. After the injection of 23 rabbits with the streptococcus rheumaticus, 76% showed arthritis, 56% endocarditis. After injections of other forms of streptococcus in 36 rabbits, 36% showed a purulent arthritis and 4% endocarditis. The writer concludes that the evidence in favor of acute rheumatism being a bacterial toxic disease seems to be overwhelming, and that the claims of the streptococcus rheumaticus cannot be easily set aside.

4. Bannerman, in a long and thorough article, describes recent researches into the etiology of plague in India, with an account of the work of the plague commission recently appointed, whereby it is shown that the rat-flea is the cause of plague epidemics in that country. His conclusions are: (1) Pneumonic plague is highly contagious, but, being rare (less than 3% of all cases), plays a very small part in the spread of the disease. (2) Bubonic plague in man is not infectious and is entirely dependent on the disease in the rat. (3) Infection is conveyed from rat to rat, and from rat to man, solely by means of the rat-flea. (4) The plague is usually conveyed from place to place by rat-fleas brought by people in their baggage and on their persons. [J. B. H.]

Münchener Medizinische Wochenschrift. No. 14.

April 7, 1908.

1. Moritz, F. *Functional Decrease in the Heart Area.*
2. v. Tabora, D. *Cardiac Irregularity.*
3. Kisch, E. H. *Sudden Death in Heart Disease.*
4. Lehmann, K. B. *Researches on Tobacco and Smokers.*
5. Schlecht, H. *A Simple Method of Testing the Function of the Pancreas.*
6. Dreyer, L. *Testing for Pus with Millon's Reagent.*
7. Jochmann, G., and Kantorowicz, A. *The Antiferments in Human Blood.*
8. Link, R. *Skin Reaction after Inoculation with Dead Cultures of Typhoid, Paratyphoid B., and Colon Bacilli. (Preliminary Report.)*
9. Groedel, F. M. *The Recognition of Calcification of Rib Cartilages by Means of the X-Ray.*
10. Fraenkel, E., and Much, H. *Perhydrase-milk-agar, a New Culture Medium.*
11. Piorkowski. *A Simple Culture Medium for Gonococci.*
12. Brandts, C. E. *The Relation between Lymphosarcoma and Tuberculosis.*
13. Hoffmann, R. *Continued Anesthesia in Tuberculosis of the Larynx.*
14. Krusinger. *Fibrolysin in Delayed Resolution of Croupous Pneumonia.*
15. Hildebrandt, W. *Diagram of the Trunk.*
16. Stieda, A. *Persistent Thymus and Apoplectiform Thymus Death.* (Concluded.)
17. Schmiz, C. *Carl Binz. On His Retirement.*

No. 15. April 14, 1908.

1. Link, R. *Accidental Heart Murmurs During Pregnancy.*
2. *Saathoff. *The Practical Value of the Opsonic Index.*

3. Lüdke, H. *Tuberculin and Antituberculin.* (Continued article.)
4. *Hohmeier. *The Treatment of Surgical Tuberculosis with Marmorek's Serum.*
5. Trautmann, H. *Contributions to the Epidemiology and Bacteriology of Epidemic Cerebrospinal Meningitis.*
6. Schereschewsky, J. *Serum Reaction in Scarlet Fever and Measles.*
7. Scheibe, A. *The Composition of Whale's Milk.*
8. Brewitt, F. *Some Conditions on the Borderland of Gynecology.*
9. Freund, R. *The Treatment of Heart Disease.*
10. Grube, K. *Intermittent Claudication.*
11. Friedmann. *Notes on Phosphaturia.*
12. Bondi, M. *Inflammation of the Eye following Work in Artificial Manure.*
13. Mühlenkamp, A. *A Rare Case of Tuberculosis of the Bones in an Infant.*
14. Waitz, H. *Freidrich v. Esmarch.* (*Obituary Notice.*)

2. Saathoff has been investigating the opsonic index, and finds that on account of its complexity and remarkably difficult technic the method is feasible only in the larger institutes, where at least one investigator is retained to perform this alone. On account of the great and unavoidable sources of error, the method is rarely of value as a diagnostic or therapeutic indicator. The value and the further development of the vaccine therapy are unaffected by the failure of the opsonic index.

4. Hohmeier, after considerable experience with Marmorek's serum, has never seen any ill effects from its use. In combination with the outdoor treatment, the serum undoubtedly hastens the cure in cases of mild bone tuberculosis. In medium or severe cases of bone tuberculosis not the slightest effect was noticed from the serum treatment. The claimed improvement of the general condition under the serum treatment was not noticed. [R. D.]

Berliner Klinische Wochenschrift. No. 14.
April 6, 1908.

1. Knapp, A. *Simulation of Imbecility Continued Over Years.*
2. Milchner, R. *Remarks on Syringomyelia.*
3. Marcus. *Antiferment Action of Human Blood.*
4. *Much, H. *Tubercle Bacilli Unstainable by the Ziehl Method.*
5. Blaschko, A. *Value of the Serum Diagnosis for the Pathology and Therapy of Syphilis.*
6. Sachs, H., and Altman, K. *The Influence of Reaction on the Wassermann Deviation of the Complement in Syphilis.*
7. Siemerling, E. *Symptomatology and Treatment of Cerebellar Tumors.* (Concluded.)
8. Küttner, H. *Surgery of the Brain and Cord.* (Concluded.)

4. The author has examined many forms of the tubercle bacillus and is convinced that there are certain forms which cannot be stained by the Ziehl method. He has found the organism with the Gram staining method when they were unstained after twenty-four hours in the carbol fuchsin. He believes that there are two distinct stages in the development of the tubercle bacillus, as he has been able to trace the development frome one stage to another. [R. D.]

Revue de Chirurgie.
May, 1908.

1. *Vautrin. *Treatment of Chronic Pancreatitis Complicated by Obliteration of the Common Bile Duct.*
2. *Delbet, P., and Chevassu, M. *Blennorrhagic Obliterations of the Epididymis, and Their Surgical Treatment.*
3. *Gallois, E., and Bosquette, J. *Study of the Internal Architecture of Bones, Particularly of the Upper Extremity of the Femur. Its Rôle in the Repair of the Skeleton, Fractures and Deformities.* (Concluded.)

1. Following the work of Cammidge and Mayo Robson in England, Vautrin believes that chronic pancreatitis is at the bottom of much disease of the biliary tract, and therefore much commoner than is generally supposed. Whatever the source of the infection producing it, the pathologic result is an increase of interstitial connective tissue in the pancreas, which, if interlobular, leads to obstruction or even obliteration of the common bile duct; if interacinar, to glandular sclerosis and glycosuria. In the treatment of the former class of chronic pancreatitides, Vautrin recommends, for cases complicated by cholelithiasis, cholecystectomy with choledochenterostomy; for cases without gallstones, mobilization of the duodenum, and drainage of the retroduodenal and subhepatic space.

2. The authors make an exhaustive review of the literature, establishing bilateral post-gonorrheal obliteration of the ductus epididymidis as a clinical entity and a cause of azoöspermia and sterility; and describe the gross and microscopic pathology of these blennorrhagic epididymitides, acute, subacute and chronic. They further report a series of animal experiments and of operations on man which seem to show that resection of the stricture and anastomosis of the vas with the testis or with the epididymis is safe, practicable and sometimes successful in the restoration of function. Operative indications are discussed and technic described with diagrams. [This article is a valuable sequel to one on the same subject which appeared in the Boston Medical and Surgical Journal for Nov. 8, 1906, vol. clv, No. 19, pp. 539–541.]

3. Continuing their study of the internal structure of bones, Gallois and Bosquette consider fractures of the diaphysis and rachitic curvatures of the long bones, undertaking to demonstrate by x-rays that after such lesions the osseous architecture is readjusted to meet the new requirements of skeletal mechanics. They conclude that bony structure is plastic rather than static, and conforms to the constantly changing conditions of functional form. [R. M. G.]

Zeitschrift für Klinische Medizin. Bd. 65,
Heft 3 and 4.

1. *Strauss, H., and Leva, J. *Investigations on the Motility of the Stomach by means of the Fat-Cake Test Breakfast.*
2. Bornstein, M. *Neurological Cases.*
3. *Granström, E. *Experimental Investigations on the Causation of Bronchial Breathing in Pleurisy with Effusion.*
4. *Reicher, K. *Chemical Experimental Studies on Narcosis.*
5. Engel, C. S. *The Histogenetic Relations between Diseases of the Blood and Malignant Tumors.*
6. *Bálint, R., and Engel, K. *On Paroxysmal Tachycardia.*
7. *Falta, W. *The Laws Governing the Excretion of Sugar in Diabetes Mellitus. Fourth Communication.*
8. Falta, W., and Gigon, A. *The Laws Governing the Excretion of Sugar in Diabetes Mellitus. Fifth Communication.*
9. Goldscheider. *Dicrotism in Aortic Insufficiency.*
10. *Klemperer, G., and Umber, H. *Lipemia in Diabetes. Second Communication.*

1. Strauss and Leva report the results of a series of determinations of the motility of the stomach by means of the "Fettzwiebach" breakfast. This consist of 400 ccm. of tea and 50 gm. of a specially prepared biscuit, which contains 5.6 gm. of fat. An hour after administration the gastric contents are aspirated, the stomach thoroughly washed out and the wash water added to the original contents. The total amount of fat is then determined after a short abstraction with ether by means of the refractometer. This method is rapid and sufficiently accurate for clinical purposes, except in the cases where there is a high degree of fat-splitting in the stomach. The acidity of the contents is determined by the usual methods. In this way the motility and the secretive power of the stomach can be simultaneously determined. The authors have found that the values .8 gm. to 2 or possibly $2\frac{1}{2}$ gm. of fat correspond to normal motility, values below .8 gm. indicate hypermotility, and values above $2\frac{1}{2}$ gm. hypomotility. The latter may be subdivided into moderate hypomotility, with figures from 2 or $2\frac{1}{2}$ gm. to $3\frac{1}{2}$ gm.; and severe hypomotility, from $3\frac{1}{2}$ gm. to 5.3 gm. The

authors working with these methods find that the motility is absolutely independent of the secretive power of the stomach. In gastroptosis, a condition which is commonly said to be associated with hypomotility, they found in most cases normal motility, in some increased, and in others decreased motility. In achlorhydria and apepsia they found hypermotility in a considerable proportion of the cases, and the motility was diminished only in the minority. The majority of their cases of digestive hypersecretion showed normal motility. In 4 cases they found a hitherto undescribed condition, in which they assumed a large increase of the secretion of water without an increase of the acid secretion.

3. Granström's interesting experiments on dogs seem to show that the bronchial breathing often heard over pleuritic exudates is not due to compression of the lung, as has been heretofore supposed, but to transmission of the tracheal breathing directly from the walls of the primary bronchi through the fluid to the chest wall. He was able, by the injection of moderate amounts of oil of cocoa into the pleural cavity, to produce bronchial breathing with great regularity. The dogs were then killed and frozen and the condition of the chest examined. He found that the oil of cocoa had pushed apart the lobes of the lung and was directly in contact with that part of the primary bronchus that is not covered by lung. The lungs were not much compressed by the fluid, and floated in water, so that the bronchial breathing heard in these cases cannot be ascribed to solidification of the lung by compression. Furthermore, when the trachea was cut open, during life, the bronchial breathing which had been previously produced by the injection disappeared, showing that the bronchial breathing was dependent upon the transmission of the tracheal breathing and did not arise in the lung, as some have claimed. Another experiment, in which a rubber bag was introduced into the pleural cavity and inflated, produced marked compression of the lung, but failed to give rise to bronchial breathing.

4. Reicher, experimenting on dogs subjected to narcosis with ether and chloroform, found regularly a marked increase of the fatty substances in the blood, which in two instances went as far as the condition known as lipemia, in which the blood serum is rendered cloudy by the presence of fat. The increase involved not only fat, but also lecithin and cholesterin. He also found always an increase in the acetone excretion, involving mainly that portion excreted by the lungs. The increase in the nitrogen excretion was not sufficient to account for the increase in acetone, which he ascribes to the increase of fat in the blood. The condition of a patient after anesthesia is therefore comparable to that of a patient with diabetes, for increased acetone excretion and increased fat in the blood are common to both. The reason why coma not infrequently follows the administration of ether or chloroform to diabetics is therefore easily understood.

6. Bálint and Engel report 4 cases of paroyxsmal tachycardia which throw some light on this interesting condition. They regard it as a neurosis and not as due to organic changes in the heart, for in 2 of their cases there was no cardiac dilatation during the seizure, and in the other 2 dilatation supervened only after a long period of years, and must, therefore, have been secondary to the repeated attacks of tachycardia. The chief evidence in favor of its being a neurosis is the fact that it occurs in individuals who are neurotic themselves and often have a hereditary neuropathic disposition, and that the attacks themselves are accompanied by a great variety of nervous manifestations, especially affecting the vasomotor apparatus. One of their patients, for instance, during attacks showed a profuse eruption of vesicles symmetrically placed on the lower and upper extremities. Another frequently became unconscious at the beginning of the attack, and at the termination his face became very red and he suffered from great dizziness. Polyuria, hyperesthesia of the neck, intestinal colic with diarrhea, were other nervous manifestations seen in these cases. In only one of them could extra systoles either at the beginning or the end of the attack or in the interval be demonstrated. For the other three. there was no evidence in favor of the tachycardia being due to the interposition of extra systoles. The cause of the disease is assumed to lie in a temporarily increased irritability of the heart muscle.

7. Falta reports a very interesting case of juvenile diabetes, in which there was greater intolerance for proteids than for carbohydrates, i. e., the amount of sugar excreted was increased to a larger degree by an increased administration of proteids (casein) than by an increase in the carbohydrates. There was also in this case a very marked retention of nitrogen when the proteid constituent of the food was high, although the body weight remained constant. He does not attempt to explain this fact. In several other cases there was a marked increase of body weight when the patients were put on an antidiabetic diet. This was coincident with a great decrease in the amount of urine and sugar excreted, and was due undoubtedly to a retention of water, for there was no retention of nitrogen, and it is well known that in severe cases of diabetes the tissues are partially deprived of their water, owing to the large amounts required to carry off the sugar excreted. The increase of weight occurred very rapidly, so that it could not have been due to the deposition of fat.

10. Out of 10 cases of diabetes investigated by Klemperer and Umber, 8 showed the presence of lipemia, or milkiness of the blood serum due to fatty substances. These substances consisted partly of fat and partly of lecithin and cholesterin. Five of the patients with lipemia were in coma, all of them showed acidosis; 2 cases, however, which had acidosis, did not show lipemia. The authors attempted to trace the source of the fat and were able to exclude the brain and kidneys, but could not come to any positive conclusion. [W. T.]

Miscellany.

PRESIDENT GAY'S SPEECH AT THE ANNUAL DINNER OF THE MASSACHUSETTS MEDICAL SOCIETY, JUNE 11, 1908.

Dr. George W. Gay opened the after dinner speaking as follows:

It is once more my privilege as well as my pleasure to congratulate you upon the completion of another year of earnest endeavor and commendable success in caring for the sick and suffering in our midst.

The recovery of our chief magistrate from a critical illness is especially gratifying to our profession by reason of his progressive ideas and unflagging zeal in proposing and promoting various beneficent measures pertaining to public health. I feel assured that you will all join me in extending to Governor Guild our heartfelt congratulations upon his recovery, together with the hope that he may long be spared to serve the community in which he occupies so high and honorable a position. The physicians who managed this critical case so admirably are also to be congratulated upon the happy results of their efforts.

At the close of my term of office to which your courtesy elected me two years ago, it seems fitting that a brief report of my stewardship in the form of a valedictory be given you at this time.

With a single exception, every District Society in the state, eighteen in all, has been visited by your president at least once, and some of them have been attended several times. This custom, inaugurated by the late Dr. Cotting, is commendable in every way, gives much satisfaction to all concerned and is worthy of faithful continuation. It tends to stimulate the *esprit de corps* of the profession, to bind the district societies closer together and offers an opportunity for the interchange of ideas and methods and the diffusion of the latest advances made in our ever-advancing profession.

Your president has had every reason to be interested and pleased with the amount and character of the work being done in the several district societies. The attendance, as a rule, was good, the papers and discussions highly creditable and the spirit of the meetings excellent. Some of them are held in the evening; others in the daytime. One district was presided over by a lady in a dignified and satisfactory manner. Another society has adopted the very pleasant custom of taking the ladies to its midsummer meeting, making it more particularly a social occasion, to the apparent satisfaction of all concerned.

The custom of inviting prominent physicians from the medical centers to read papers at the different district meetings is quite prevalent and is highly commendable, as tending to bring out a larger attendance, thus adding to the professional and social interest of the occasion. It is to be hoped that this custom will not be allowed to flag as time goes on, for the benefits must be apparent to all observers.

After very careful consideration the medical defense proposition has been adopted as a standing the vote by the Council and approved by the society. This act will enable any active member of The Massachusetts Medical Society to obtain legal services, without expense to himself, in his defense in any suit for malpractice which may be brought against him, by making application to the president and secretary of the society. While any member is at libery to avail himself of the privileges of this act, it is designed especially for the benefit of those who may be unable financially to carry on a suit indefinitely without undue hardship to themselves and their families. Too often these suits are brought to avoid the payment of an honest bill for services rendered, to satisfy a foolish spite or fancied injury, and we are sorry to say that occasionally they are instigated by a jealous or vindictive professional neighbor. This act will undoubtedly tend to discourage fake and blackmailing suits, " contingent suits " as they are called in legal parlance. Such has been the result to a marked degree in New York, where a similar act has been in operation for several years, to the great satisfaction of the members of that State Society.

Legislation having to do with public health and other professional matters is coming to the front in our general court to a far greater extent than ever before. Upwards of a dozen important measures of this character have been before our legislature this winter.

Among the more important may be mentioned the following: Bills relating to the prohibition of compulsory vaccination; to medical expert testimony; to optometry; to osteopathy; to the registration of nurses; to the consolidation in one board of the Boards of Registration in medicine, dentistry, pharmacy, veterinary medicine, and embalming; to the state assuming the care of Boston's insane; to the establishment of an observation hospital for persons who may be mentally disordered; to the prohibition of advertising the symptoms of certain diseases; and to the method of recording births; to say nothing of several others of less moment.

One of the most pernicious of these bills had for its object the prohibition of compulsory vaccination. At the hearing before the Public Health Committee about sixty persons appeared in favor of the bill and only three against it, a fact that offers a curious commentary upon our appreciation of the ordinary blessings of daily life.

As a specimen of the arguments used by the petitioners for this bill, attention may be called to the statement made in all seriousness that tuberculosis, cancer and syphilis are all due to vaccination! Still more surprising was the fact that a member of the committee asked your president if that statement was true!

Under these circumstances it is certainly incumbent upon our profession to keep a constant, careful watch of the various measures relating to public health that are brought before the legislature.

This audience needs no reminder of the fact that should compulsory vaccination be abolished it would be only a matter of time when the horrible experience of Boston in 1872–3, of Montreal in 1885, of Cleveland in 1902 and of numerous other cities at various times in epidemics of smallpox would be repeated. That means the needless sacrifice of thousands of human lives, the infliction of an untold amount of suffering and the loss of many millions of wealth.

That portion of the community which admits without discussion that two and two make four can usually be convinced of the demonstrated fact that smallpox is a preventable disease; that the main factor in that prevention is vaccination; that vaccination is a reasonably safe procedure; that by reason of the negligence, the prejudice or the ignorance of a large class in the community, vaccination must necessarily be compulsory to insure the safety of the public, and finally, that the repeal of this clause of the law would be a calamity, the ultimate results of which cannot be comprehended by the present generation. Boston's experience during the past thirty-five years proves conclusively that epidemics of this disease are avoidable and that any community allowing it to gain a foothold has only itself to blame.

The present agitation has resulted in the repeal of that clause of the law which requires all infants with few exceptions to be vaccinated before the expiration of two years.

It is more than likely that these well-meaning but deluded agitators will regard the action of the legislature as an entering wedge in their favor and will, therefore, renew their efforts in the near future to obtain even more concessions to their peculiar ideas than they did this time. Eternal vigilance is the price of wise legislation, and it behooves all good citizens to see that the price is forthcoming upon all important occasions.

A vain effort has been made this winter to persuade the legislature to take some action tending to raise the standard of medical expert testimony. Two bills were introduced having this object in view. One sought to have power granted the judges enabling them to pass upon the merits of medical expert testimony, as is said to be the custom in England. The other bill would give the court, upon his own motion, the authority to call one or more experts to examine and testify at the expense of the county, thus rendering them independent of the parties at suit. While nearly all of the judges and very many of the leading lawyers of the state were in favor of the last measure, yet it failed to pass. It ought to be possible for the professions of law and medicine working in unison to frame a bill with this object in view that would appeal to the justice and common sense of a sufficient number of our legislators to enable it to be placed upon the statute books. Hitherto these efforts have failed. The subject is exciting a good deal of attention in various parts of the country, and it will be strange if some good does not come of widespread agitation in time.

The Massachusetts College of Osteopathy has no legal authority to confer the degree of M.D., Doctor of Medicine, upon any one. It has the power to grant the degree of "Doctor of Osteopathy," and yet many of its graduates are taking advantage of this degree and are practicing medicine in direct violation of the law. They presented a bill to the present legislature asking that two osteopaths be placed upon the Board of Registration in Medicine, thus increasing the number to nine. This was done ostensibly upon the plea that the osteopaths had no representation upon the board! As very few of them are graduates from any recognized school of medicine, it is difficult for one to understand why they should be represented upon the Board of Registration.

Massachusetts recognizes no schools of medicine in its act of registration. All schools and no schools stand upon precisely the same footing. No diploma nor certificate of study or acquirements is required of the applicants. Any one, without distinction of race, color, sex, attainments or occupation, may take the examination before our Board of Registration in Medicine provided he is twenty-one years of age, of good moral character and can raise twenty dollars! In the opinion of the profession our doors are too wide open. Forty of the forty-eight states and territories in this country require a certificate of graduation from some recognized medical school as a prerequisite to the examination for a license to practice medicine. Massachusetts and Rhode Island are the only New England states among the delinquents, and it is to be hoped that the efforts of the profession to place these states in line with the majority in the near future may be successful.

As no school of medicine has hitherto been recognized in this connection by Massachusetts, it would be difficult to assign any good reason for making an exception in the present instance.

Osteopathy, so called, has a field of usefulness in the community, but it is a limited and a subordinate one, similar in character to that of the surgical instrument-maker, the hydropathic attendant and the masseur, from which latter it differs very little. As its followers are not, as a rule, graduates in medicine, it is fair to assume that they can have but a very imperfect knowledge of diagnosis, which is the foundation of all rational or satisfactory methods of treatment.

By fulfilling the requirements of the statutes the osteopaths can obtain the license to practice medicine in this state upon the same conditions that any one else can. As a matter of fact, several of them have already passed the board, and although they may not be graduates of any medical school of recognized standing, yet the state has placed them upon an equal legal footing with the most accomplished physicians in the community. This is a deplorable fault in the statute and tends to place a premium upon ignorance at the expense of education and experience. It is to be hoped that no further mistakes will be made along these lines in the future legislation of this state. The bill in question has been referred to the next General Court.

A persistent effort has been made at the present session of the legislature by another class of men to gain an entrance to our profession through a side door, under the guise of "Optometry," or dealers in spectacles. The petitioners asked for a board of registration somewhat similar to the Board of Registration in Medicine, claiming that thereby the public would be protected from the shyster dealers in spectacles who are claimed to be so much in evidence at the present time.

In the opinion of a large proportion of the medical profession the provisions of the bill presented would not accomplish this result, but, on the contrary, would tend to give an air of respectability to the business without changing its character to any appreciable degree. The petitioners were given leave to withdraw.

As time and events move on, the character of our legislation demonstrates in a forcible manner the need of judicious and judicial medical men in our law-making assemblies. They are necessary to instruct, to advise and to guide legislators in professional matters and in matters relating to public health. This subject, too long neglected, is engaging the attention and the efforts of the profession to a marked extent all over the country.

The American Medical Association, through its Legislative Committee and by its affiliation with about seventy thousand physicians in all parts of the country, is doing efficient work in this direction, as was shown by its influence in the enactment of the pure food and drug law and in the reorganization of the medical department of the United States Army.

For many years The Massachusetts Medical Society has had in active operation a standing Committee on State and National Legislation, consisting of five members, with the president of the society for its chairman. This committee has rendered efficient service in watching and shaping medical legislation. Through an auxiliary committee composed of one physician in each senatorial district, 40 in all, the chief committee is enabled to reach most of the legislators in conference and give them any desired information and advice upon technical subjects relating to public health which may be essential to a wise decision in the question at issue.

Our legislators are honest men. They intend to act for the greatest good of the greatest number, according to their understanding. Many subjects of a technical or scientific nature are presented to them for consideration about which, from their training and experience, they can know but little. These statements apply with peculiar force to medical matters, and the law makers naturally turn to our profession for information and advice upon these subjects. It will always be our duty as well as our pleasure to render any assistance possible along these lines.

Drs. Wheatley and Faxon in the Senate, and Dr. Oliver in the House of Representatives, deserve high commendation for their faithful and persistent efforts in fostering and furthering wise legislation, as well as in opposing the pernicious measures that came before them for consideration. It is to be hoped that the state may be fortunate enough to receive further services from these gentlemen in the future.

When the members of our legislatures fully realize the fact that the medical profession has no axes to grind, no selfish ends in view, seeks nothing by legislation for itself alone, but is looking solely to the welfare of the general public, then our opinions and our advice will carry more weight than has been the result in the past. These facts should be pressed home to the minds of our law makers upon all proper occasions. They should be made to understand that by raising the standard of medical education and medical practice, and by protecting the people from ignorant and dishonest pretenders, we are serving the public rather than the medical profession, which neither needs nor seeks any protection.

Fellows of The Massachusets Medical Society: It only remains for me to extend to you my sincere thanks for the courtesy and consideration I have always received at your hands while holding the office of president, and to express the hope that the present high standards of the society will ever be maintained to the credit of itself and of the Commonwealth.

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THE MASSACHUSETTS MEDICAL SOCIETY.

MEETING OF THE COUNCIL.

THE Council met in Mechanic Building, Boston on Tuesday, June 9, 1908, at 5 P.M.

The meeting was called to order by the President, Dr. George W. Gay. One hundred and five councilors were present.

The secretary announced that 130 Fellows had been admitted during the past year, and that 51 deaths had been recorded.

The treasurer's report showed 'receipts, with the balance from the previous year, amounting to $40,255.90, and expenditures amounting to $26,338.97, leaving a balance on hand of $13,916.93.

It was voted, on recommendation of the Committee on Membership and Finance, that $4,500.00 of the surplus of the treasury be distributed among the district societies.

The Committee on Publications reported that Dr. E. W. Taylor, of Boston, had accepted the appointment of Shattuck lecturer in 1909.

Dr. Ernst reported that the Committee on Medical Education had held numerous meetings to consider what, if anything, could be done to strengthen the requirements for registration in medicine in this state. At present the condition of things in Massachusetts is not one to be proud of. No requirements of preliminary education or of medical training are made. The Board of Registration has no authority to reject applicants from low-grade colleges. The responsibility for the law in this state does not rest with the Board of Registration, which has repeatedly recommended changes and improvements that, if adopted, would have lessened some of the reproach that attaches to our present law. The committee suggested adding a practical test to the written examination, as for an applicant for registration to be required to show his knowledge of common laboratory methods of diagnosis, bandaging, etc., and, if possible, to come in contact with one or more patients. The committee further reported that the Board of Registration has been obliged to work without the active interest and encouragement that is due from powerful bodies that should support it, and the committee requested an approval of its report and authority to act as the representative of the Council in further efforts to improve the conditions of registration in Massachusetts, especially in the direction of a practical examination.

Voted, to accept the report and to adopt its recommendations.

Dr. Sears, for the Committee on State and National Legislation, reported that they have appeared before legislative committees in favor of a bill to regulate expert testimony; to establish an observation hospital for insane patients; and to turn the care of Boston's insane over to the state; and against bills to provide for the registration of osteopathy; to establish a board of registration in optometry; and to prohibit compulsory vaccination.

The optometrists were given leave to withdraw, and the osteopaths were referred to the next General Court. The present law regarding compulsory vaccination was so amended as to removed the fine of $5.00 for neglect to vaccinate children within two years of birth. The expert bill received leave to withdraw. The bills relating to the insane are before the legislature.

Petitions from the Essex North and Norfolk South District Medical Societies, requesting that action be taken as to medical contract work, were referred to Drs. Dolan, of Fall River; Gage, of Lowell, and Durant, of Haverhill, a committee to report at the next meeting.

Dr. Wadsworth moved, and it was voted, that a committee of five be appointed to consider what measures should be taken by the society to prevent the occurrence and secure the prompt and effective treatment of ophthalmia neonatorum.

The following were appointed the committee: Drs. O. F. Wadsworth, E. T. Easton, F. E. Cheney, David Harrower, J. W. Bartol.

The following were elected officers of the society for the ensuing year:

Silas D. Presbrey, Taunton, President; Daniel E. Keefe, Springfield, Vice-President; Francis W. Goss, Roxbury, Secretary; Edward M. Buckingham, Boston, Treasurer; Edwin H. Brigham, Brookline, Librarian.

James G. Mumford, of Boston, was chosen Orator for the annual meeting of the society in 1909.

The following standing committees were appointed:

STANDING COMMITTEES.

Of Arrangements: Lincoln Davis, L. W. Gilbert, C. C. Simmons, G. H. Francis, A. N. Broughton, F. C. Kidner.

On Publications: O. F. Wadsworth, G. B. Shattuck, H. L. Burrell.

On Membership and Finance: F. W. Goss, Walter Ela, C. M. Green, A. Coolidge, Jr., Samuel Crowell.

To Procure Scientific Papers: R. C. Larrabee, Charles Harrington, Christopher Seymour, E. W. Taylor, F. B. Lund.

On Ethics and Discipline: Leonard Wheeler, J. A. Gage, J. W. Bartol, Henry Jackson, G. de N. Hough.

On Medical Diplomas: H. E. Marion, O. F. Rogers, H. W. Newhall.

On Medical Education: H. C. Ernst, H. D. Arnold, C. H. Williams.

On State and National Legislation: S. D. Presbrey, G. G. Sears, D. D. Gilbert, C. H. Cook, C. F. Withington.

MEETING OF THE SOCIETY.

The society met in Mechanic Building at 9 A.M., Wednesday, June 10, for its one hundred twenty-seventh anniversary, the President, Dr. G. W. Gay, in the chair.

The important matters of business transacted were as follows:

The Council sent to the society the following, which had received its approval, and which, after discussion, was adopted.

AN ACT FOR THE DEFENSE OF SUITS FOR MALPRACTICE.

Active members of The Massachusetts Medical Society shall be entitled, on conditions hereinafter specified, to receive, without personal expense therefor, legal advice and court service of an attorney or attorneys-at-law in the employ of the society, for the purpose of conducting their defense in any court in this Commonwealth when they are accused of malpractice or of illegal transactions in connection with the commitment of persons to institutions for the insane.

The legal services herein provided for shall be granted only on the following conditions:

First: Active members of the society desiring to avail themselves of the privileges of this act shall make application therefor in writing to the secretary of the society, and shall show to his satisfaction that they are members in good standing in the society, and that all of their pecuniary obligations to the society by way of dues and assessments have been duly discharged. They shall also furnish the secretary at his request with a complete and accurate statement of their connection with and treatment of persons upon which complaints against them are based, giving dates of attendance, names of and residences of nurses and of other persons cognizant of facts and circumstances necessary to a clear and definite understanding of all matters in question, and shall furnish such other relevant information, if possible, as may be required of them by the secretary or the attorney of the society.

Second: They shall agree not to compromise the complaints against them nor to make settlement of them in any manner without the advice or consent of the society given through its attorney, nor shall they employ other counsel in aid of their defense without the consent of the society.

Third: In the event that they shall, without the advice or consent of the society, determine to settle or compromise complaints against them, they shall reimburse the society for the expenses incurred in undertaking their defense, and in default thereof they shall be deprived of further privileges under this act.

Fourth: In the event that members of the society shall make requests under the provisions hereof, the president and secretary acting together shall have the power to grant the same, or for cause to reject them, as the case may be, and to make such further provisions or requirements as may be deemed necessary for carrying out the purpose and intent of this act.

Fifth: The society shall not assume any responsibility for the payment of sums agreed upon by arbitration in the settlement of complaints or awarded by court verdicts, or for making payments for any purpose whatsoever, except as specified in this act.

Sixth: This act shall take effect upon its approval by the Council and adoption by the society, and shall apply only to suits based upon professional services rendered subsequent to its adoption.

Dr. Cabot presents the following, which was adopted:

Resolved, that the members of The Massachusetts Medical Society, and the medical profession in general, be requested to urge upon those with whom they are brought in daily contact the advisability of supporting by their votes those candidates only who appreciate the importance of protecting the public health by the enactment of laws directed against impure, polluted milk, and other causes of preventable disease.

NEED OF INCREASED HOSPITAL ACCOMMODATION IN NEW YORK CITY.

The State Charities Aid Association, through its standing committee on hospitals, is urging the need of increased hospital accommodation in the city of New York. A careful investigation of the subject has led to the conclusion that for present needs 600 additional beds and 4 new ambulance stations are required. For the needs of the city to 1920 it is concluded that 2,800 additional beds and 8 more ambulance stations will be required; making in all, for present and future needs, 3,400 beds and 12 ambulance stations. It is not suggested, however, that the city proceed at once to erect hospitals in every locality where it is stated there will be need of one in 1920, but it is recommended that the city officials should exercise sufficient foresight to make provision for these future needs and especially to secure hospital sites in the outlying sections of Brooklyn and Queens now when they may be purchased at a reasonable price. The association also recommends that all the ambulance service in each borough of the city, except that maintained by the health department for contagious disease, whether carried on by public or private agencies, should be under the general direction and control of one municipal authority; that municipal authority to be the authority which in each borough is charged with the administration of municipal general hospitals. The plan proposed contemplates the continuance of the existing system to the extent of permitting each hospital desiring to do so to maintain its own ambulance service (having a district assigned to it under definite contract) and to operate as a part of the ambulance system; leaving it, however, optional with any hospital desiring to do so to terminate its ambulance service, and authorize the municipal hospital authorities of the borough to substitute therefor an ambulance service under their direct control.

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CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 13, 1908.

A. E. Peck, passed assistant surgeon. Detached from the Naval Station, Cavite, P. I., and ordered home.

E. M. Blackwell, J. J. Snyder, passed assistant surgeons; J. L. Taylor, P. R. Stalnaker, assistant surgeons. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to report in that city, June 15, for examination for promotion, and then to await orders.

R. W. McDowell, assistant surgeon. Ordered to Naval Hospital, Philadelphia, Pa.

C. B. Wilson, surgeon. Detached from the course of instruction at the Naval Medical School, Washington, D. C., and ordered to the "Wabash."

G. H. Barber, surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to the Naval Hospital, Boston, Mass.

E. S. Bogert, surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to the Naval War College, Newport, R. I.

G. F. Freeman, passed assistant surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to the Navy Yard, Boston, Mass.

E. W. Brown, assistant surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to the Naval Hospital, Norfolk, Va.

J. T. Duhigg, assistant surgeon. Ordered to the Naval Recruiting Station, Los Angeles, Cal.

H. H. Lane, assistant surgeon. Ordered to duty in the department of government and sanitation, Canal Zone, Panama.

G. T. Smith, surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered to the Naval Hospital, New York, N. Y., July 1.

E. M. Brown, passed assistant surgeon. Sick leave extended three months from June 13.

C. W. O. Bunker, assistant surgeon. Detached from the Naval Academy and ordered to the "Arkansas."

F. E. Sellers, assistant surgeon. Detached from the Naval Academy and ordered to the "Nevada."

A. M. Fauntleroy, passed assistant surgeon. Detached from course of instruction at the Naval Medical School and ordered to the Naval Medical School Hospital, Washington, D. C.

H. W. Cole, Jr., assistant surgeon. Detached from course of instruction at the Naval Medical School, Washington, D. C., and ordered home, and granted leave for one month.

K. C. Melhorn, assistant surgeon. Detached from the "Wabash" and ordered to the "Yankee."

M. Donelson, assistant surgeon. Detached from the "Porter" and ordered to the "Biddle."

G. F. Clark, acting assistant surgeon. Appointed acting assistant surgeon from June 8, 1908.

W. W. Verner, passed assistant surgeon. Resignation accepted from June 10, 1908.

APPOINTMENTS.

A Continuous Medical Service at the Massachusetts General Hospital. — At a meeting of the Board of Trustees of the Massachusetts General Hospital held on May 1, it was "Voted: That Dr. Frederick C. Shattuck be appointed Continuous Service Physician at the General Hospital. Upon recommendation of the Nominating Committee Dr. Richard C. Cabot was duly appointed Assistant Continuous Service Physician at the General Hospital."

RECENT DEATHS.

Ebenezer Alexander Deane, M.D., M.M.S.S., died in Montague, Mass., May 31, 1908, aged eighty-three years.

Dr. William Hazard Sherman, a prominent surgeon of Yonkers, N. Y., died on June 11, in the forty-ninth year of his age. He was graduated at the College of Physicians and Surgeons, New York, in 1884, and afterwards served as interne both at St. Luke's and the Presbyterian Hospitals in that city. At the time of his death he was surgeon to St. John's Riverside Hospital, Yonkers, and consulting surgeon to the White Plains and Tarrytown Hospitals.

RECORD OF MORTALITY

For the Week ending Saturday, June 6, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	3	1
Chicago	483	129	Waltham	6	1
Philadelphia . . .	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	1	—
Baltimore	145	40	Brookline	9	—
Cleveland	—	—	North Adams . .	1	0
Buffalo	—	—	Chicopee	8	3
Pittsburg	—	—	Northampton . .	7	0
Cincinnati	—	—	Medford	5	—
Milwaukee	—	—	Beverly	6	2
Washington . . .	—	—	Leominster . . .	7	1
Providence . . .	54	19	Hyde Park . . .	2	0
Boston	188	53	Melrose	3	2
Worcester	41	10	Newburyport . .	—	—
Fall River	30	10	Woburn	2	—
Cambridge	21	6	Westfield	2	1
Lowell	33	9	Marlboro	6	1
Lynn	22	4	Revere	4	2
New Bedford . .	20	6	Attleboro	2	1
Springfield	26	4	Peabody	—	—
Lawrence	16	5	Adams	4	1
Somerville	10	3	Clinton	3	0
Brockton	10	4	Gardner	3	2
Holyoke	13	6	Milford	7	0
Malden	8	—	Watertown . . .	3	1
Chelsea	3	1	Plymouth	—	—
Newton	5	—	Weymouth . . .	1	0
Salem	12	6	Framingham . .	3	—
Haverhill	7	2	Southbridge . . .	1	—
Fitchburg	9	2	Wakefield	—	—
Everett	7	1	Webster	—	—
Taunton	12	1	Arlington	—	—

Address.

SURGICAL SHOCK.*

BY GEORGE CRILE, M.D., CLEVELAND, OHIO.

In previous communications, especially in the monographs entitled, "An Experimental Research into Surgical Shock," "An Experimental and Clinical Research into Clinical Problems Relating to Surgical Operations," "An Experimental Research into the Surgery of the Respiratory System" and "An Experimental Research upon Blood Pressure in Surgery," I have set forth in detail certain experimental and clinical data relating to surgical shock. With this published work, and certain experimental and clinical researches soon to be published in detail, as a basis I shall omit theoretic discussion and endeavor to discuss only certain phases of shock in their relation to surgical practice.

We shall assume as our premises that the fall in the arterial blood pressure is the essential phenomenon; that without a fall in the arterial pressure there is no surgical shock; that the fall in the blood pressure is due to traumatism of the nerve tissue and psychic stimuli. We further assume that the ultimate lesions of shock are the same as those of hemorrhage and that for all practical purposes the phenomena of shock are expressions of altered physiologic functions. We will assume that death from shock, like death from hemorrhage, presupposes the failure of the circulation, producing certain degeneration of the central nervous system; that there is, indeed, but little essential difference, except as to causation, between death from hemorrhage and death from shock. We will further assume that the fall in the blood pressure is mainly due to a functional impairment or breakdown of the vasomotor centers; that the heart and blood vessels themselves are only secondarily affected, principally by reason of the anemia of low blood pressure; that the cause of the functional impairment or breakdown of the vasomotor centers is due in part to the effect of excessive afferent stimuli and in part to the progressive anemia of these centers, there occurring a species of vicious circle. We will further assume that these shock-producing afferent impulses are but little influenced by general anesthesia, but are totally blocked by cocainization of their conducting paths. We shall dismiss without consideration the symptomatology of shock and shall now briefly consider the differential diagnosis between concealed hemorrhage and shock.

DIFFERENTIAL DIAGNOSIS BETWEEN CONCEALED HEMORRHAGE AND SHOCK.

In the absence of a history of either trauma or bleeding, without evidence of free fluid in cavities and without a blood examination, is it possible to differentiate with certainty between shock and hemorrhage? We believe it cannot with certainty be done. Are there any characteristic changes in the blood picture which will serve to differentiate?

In shock, the arterial circulation has failed because the blood has accumulated in the veins, especially in the venous trunks; in hemorrhage, the arterial circulation has failed because the blood has left the vascular system. In the one case there is an intravascular hemorrhage, in the other an extravascular hemorrhage. The circulatory phenomena are virtually identical. In a number of clinical observations of the donors during 51 transfusions, and in subjects of intentional bleeding, as well as in experimental research in which the blood pressure of two animals was simultaneously reduced at approximately the same rate by shock and by hemorrhage, and in which continuous observations were made, we were able to draw the following conclusions:

Hemoglobin. — In shock, there is either slight or no fall, or a rise in hemoglobin from the beginning to the end of the experiments; in hemorrhage, there is first a period during which there is little or no fall in the hemoglobin; this period may continue until the loss of a fourth, a sixth or a tenth of a fatal amount of blood. A steady fall in hemoglobin then begins and continues until death, though the total fall may be perhaps no more than 20%. The fall in hemoglobin may progressively continue as long even as twelve hours after cessation of hemorrhage.

Red Count. — The red count follows rather closely the curve of the hemoglobin in both hemorrhage and shock.

Leucocytes. — The leucocyte count in shock shows relatively slight changes, although a considerable fall is sometimes noted. In hemorrhage a rising leucocyte count is noted in every instance, beginning promptly, often before the hemoglobin or red count has altered. In the clinic and in the laboratory there are scarcely any exceptions to the rule of a rising leucocyte count in hemorrhage.

Summary. — Summarizing, then, in the beginning of an acute hemorrhage, the first and immediate change in the blood picture is a rising leucocytosis. A little later the hemoglobin and the red count begin to progressively fall, continuing up to twelve hours after hemorrhage has stopped. In shock, there is usually no rise in the leucocyte count and little or no change in the hemoglobin or red count.

Conclusion. — Therefore, repeated and accurate observations upon the blood picture may differentiate between hemorrhage and shock.

ON CERTAIN PREVENTABLE FACTORS.

Physical. — It is axiomatic to state that the better the physical condition the less the shock. In imperative surgery there is no opportunity for improving the physical state. In the surgery of opportunity the physical state may with great advantage be considered. The functional capacity of the important organs should be at their highest degree of efficiency. Hydrotherapy and massage and a sojourn at the seashore may make a safe risk of a doubtful one.

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* Lecture delivered before the Harvey Society, New York, Jan. 25, 1908.

Psychical. — The psychical factor in shock is usually greater than we are ordinarily disposed to credit. Most patients must necessarily know the risk they are about to assume for the purpose of deciding upon the operation. Once this has been fairly stated and is comprehended by the patient and the decision given, there should be a concerted effort by every one concerned in the operation — the surgeon and his assistants, the anesthetist, nurses and friends — to give the utmost confidence to the patient as to a favorable outcome. The ideal condition exists when the patient has implicit confidence in his medical adviser, the surgeon and the hospital, and places himself unreservedly in their hands. Even patients who apparently are stoical and are certain that details will not affect them unpleasantly may be seriously shaken by too much knowledge. Unless specifically desired, the less time for contemplation prior to the operation the better, and particularly the shorter time the patient is in the hospital for more than the necessary preliminary preparations the better. If not fatigued by the journey, entrance to the hospital the day before operation is ample. Over-preparation at the hospital is oftentimes quite as much at fault as under-preparation. From the time that the patient has accepted the operative advice until his discharge from surgical care he should be received by every one coming in contact with him in any capacity with the air of assured confidence which is always contagious. The early morning operation, without time for contemplation, with every preliminary worked out in a smooth running automatic system, without delays in the room when sent for, without a moment of waiting for the anesthetist to begin, with only a word of assurance from the surgeon, brings the patient to his anesthetic in the best possible psychic state. Then, too, the persons properly responsible should see to it that there are no messages, no business affairs, no arrangements after the patient's entrance to the hospital.

The antithesis of this is delay, an uncertainty of the hour, the last messages and arrangements, the discussion of the details of the operation, the presentation at the last moment of new phases, and problems and delays and uncertainties on the part of orderlies and assistants in the transportation of the patient to the operating-room, an inexperienced anesthetist, haste, bustle or confusion in the anesthetizing room and the clatter of instruments. This is sufficient to give the patient such a psychical shock that, were there no operation performed, the ordeal in itself might require months for recovery. Every one is familiar with the psychic state of the patient who has been wavering in doubt and indecision as to the operation or method, who has been told too much or too little, who is trying to manage the provisional details and whose psychic state has lost its equilibrium. One can scarcely overstate the importance of the correct surgical attitude of those in charge of the preparation of the patient and the correct attitude of the anesthetist and nurses, all of which plays a very important rôle in the favorable outcome. The shortcomings of nurses and anesthetists most frequently take the form of giving so much routine detailed advice as to frighten the patient. Strength lies mainly in sympathy and suggestion. In certain patients, notably the acute Graves' cases, the fate of the operation may be determined by what has occurred up to the time the anesthetic is begun. Not infrequently a hypodermic of morphia half an hour before the patient is to leave his room may prove of great value.

In certain emotional types of patients it is sometimes useful to keep them occupied by manicuring their nails, by detailed and long-continued toilet, or any attention that consumes time and beguiles away the thoughts of operation. The real test comes in the first stage of anesthesia. The infinite tact and skill which enables the anesthetist, by means of suggestion and a faultless technic, sympathy and assurance, to carry the patient to surgical anesthesia without a qualm, is indeed a rare gift. Its importance is attested by the esteem placed upon it by most medical men, especially surgeons who are themselves about to undergo a surgical operation. They usually show as much or more concern as to the skill and ability of the anesthetist as to that of the operator.

Among other predisposing causes of shock is that of exposure of the patient to cold, or what is worse, wet and cold. Warm blankets, ample chest protection, heated tables, preferably some form of hot water bed, all play a certain rôle in the conservation of the patient's vital energies. What would be the sensations of an unanesthetized patient if he were placed upon a cold glass or metal-topped table, covered by a cold, wet sheet, with a third of the body exposed for a period of an hour? Would not any one regard this as an ordeal, and would it not require several days to recover from such gross neglect and exposure? Because a patient is anesthetized and cannot protest gives us no license to needlessly expose him.

Anesthetic. — It is abundantly established both experimentally and clinically that the effects of over-anesthesia, which seriously embarrass the respiration and the circulation, by no means cease when the patient has again returned to a normal surgical anesthesia. The resistance of the patient to shock is reduced thereby for a period of many hours. Such a miscarriage of anesthesia, then, distinctly handicaps the operation and must be seriously considered. This is a forcible plea in favor of expert anesthetists. In the surgical risks in which the margin available for safe surgical trauma of the procedure in question is ample, ether anesthesia is for the present probably the best, but there are groups of surgical risks in which the margin of safety is so small, or in which it is doubtful if it exists at all, that the greatest amount of finesse in anesthetics becomes necessary: for example, in acute toxic Graves' cases, in the seriously acute infections, in subjects of prolonged infection and abscess, in diabetic gangrene, in intense arterial sclerosis, in the senile heart, in cases of myocarditis, in pulmonary tuberculosis, in advanced nephritis, in the cases of increased intracranial tension, in operations upon the respiratory tract, in operations within the throat and ear, in certain traumatic cases, in obstruction of the bowels and in many other cases, the anesthetic problem becomes individualized and will be discussed in some instances in connection with these operations.

The principle underlying this is that full surgical anesthesia by the routine method is frequently not the best method, and in the cases in which it is administered it must be given with special modifications. The surgeon and anesthetist should be able to skillfully employ nitrous oxide and oxygen, local anesthesia, cocain, morphin and modified ether anesthesia, even psychic anesthesia, according to the requirements of the case. For example, in acute or chronic pulmonary disease, local anesthesia, intraneural anesthesia or heavy morphin with light ether anesthesia should, if possible, be used, adapting the method to the operative problem. In strangulated hernia with vomiting, morphin-cocain anesthesia should be used; in certain acute traumatic cases, especially of the lower extremities, in deep shock, spinal anesthesia; in grave acute suppurations in which but little technic is required, nitrous oxide anesthesia; in exploration for diagnosis in which there are internal lesions, such as gastric carcinoma, morphin-cocain anesthesia; in grave cardiac lesions, morphin-cocain and intermittent ether anesthesia. Our anesthetic resources now are so numerous, and modifications and combinations may be so effectively made, that operations that were once unsafe may again be reclaimed.

RELATION OF LOSS OF BLOOD TO SHOCK.

In the normal state in adult life in the horizontal posture, a large amount of blood, often up to 3%, may be lost with little or no change in the blood pressure, in the pulse rate or in the respiration. In infancy and senility, this proportional amount that may be lost with so little apparent effect diminishes in inverse ratio, so that in infancy and old age but little blood may be safely lost. Likewise, as we leave the normal state of health to enter the various grades of many diseases, the margin of safe loss of blood is diminished. In the head-up position hemorrhage is not so well endured. Advantage of this was frequently taken by the phlebotomists of the past, by bleeding their patients standing until they fell. In shock itself the loss of blood is less well endured. The value of hemostasis, then, varies with the predominance of one or more of these predisposing factors. Why is the loss of such large quantities of blood without material change in the blood pressure, the pulse rate and the respiration possible? It is due to the normal physiologic factor of safety in the circulatory system. This factor of safety is dependent upon the power of the vasomotor center to automatically increase its nerve impulses, so that the vascular system as the blood escapes is contracted, thereby maintaining a normal blood pressure; also upon the rapid transference of fluids from the tissues into the blood vessels. By reason of this compensation, the circulation through the coronary artery supplying the heart, and through the centers in the medulla, including the vasomotor, the brain and other parts of the body, is maintained at or near the normal. There are other minor factors in this compensation which for our present purposes need not be discussed.

There is, then, in hemorrhage a beneficent physiologic circle: namely, an increased vasomotor action sustains the general blood pressure; hence the circulation of the vasomotor center is sustained, enabling it to continue its extraordinary work. In time, however, the vasomotor center and other factors of compensation have reached their maximum effort in vain and the circulation becomes deprived of so much blood that a fall in the blood pressure results. The circulation through the vasomotor center is diminished and with it a reduction in the function of this center, which in turn cannot continue its strong influence upon the blood vessels, thus permitting a further fall in the blood pressure, etc. A vicious physiologic circle is then established. Now in surgical shock there is an impairment or breakdown in this same mechanism. If these centers are partially impaired by shock, hemorrhage is obviously less well borne. Conversely, if these centers are taxed to maintain the blood pressure to compensate for blood loss, shock is less well borne.

It is abundantly established both experimentally and clinically that the combination of shock and hemorrhage is most disastrous. It is not well to take the position that the loss of blood is of little consequence because it may be reproduced in a few days, for the patient may never live to see those few days; his death may be due to the want of blood that was heedlessly lost. The factor of hemorrhage is a most important one viewed from every standpoint, for the safety of the patient, the better execution of the precise technic, the training of the surgeon and the maintaining of operative ideals. The various details of special importance in particular operations will be considered elsewhere.

In the acute pathogenic infections there is a pathologic increase in the arterial blood pressure. In some other acute infections, notably typhoid, there is a pathologic decrease in the blood pressure. The full, high-tensioned pulse of an acute infection by no means warrants the inference that the patient will well endure shock-producing operations. The vasomotor centers are seriously overworked in addition to their being poisoned and, therefore, have a smaller range of potential power than normal, thus leaving a smaller margin for emergencies. The vital margin of safety is, therefore, diminished in acute pyogenic infections.

THE OPERATIVE TECHNIC IN RELATION TO PREVENTION OF SHOCK.

It may be accepted as proved that the traumatic factor, as opposed to the psychic and predisposing factors, may be accurately measured in physiologic values. Traumatic shock is due to the mechanical excitation of nerve tissues. Each contact produces an effect in direct ratio to the number of nerve fibers or nerve endings involved and to their intensity. The strictly traumatic factor in surgical operations, then, is the sum total of the contacts multiplied by the intensity of application. Prevention lies in minimizing the number and intensity of contacts. Each patient is presumed to have a strictly limited margin of vitality which may with safety be destroyed during operation. A certain responsibility then attaches to each contact. Since the physiologic result of these contacts is subtracted from the available amount, it becomes a question of physics and mathematics to determine how far an operation may be extended. Herein, too, lies the reason for the personal factor of the surgeon. The precise, gentle operator, thoroughly trained to recognize the physiologic values of trauma of the various tissues and organs, will succeed most often in the great hazards of surgery.

REGIONS.

In the application of clinical and experimental research to operations upon the head and neck, separate consideration will be given to anesthesia and hemorrhage.

In operations upon the brain, venous hemorrhage assumes a greater rôle than arterial. It is obvious, then, since nitrous oxide produces more marked venous congestion, that this anesthetic is strongly contra-indicated. Ether causes less venous congestion than nitrous oxide, but more than chloroform. Were they equally safe, chloroform would be the preference. Unfortunately, chloroform has inherent dangers hitherto uncontrollable. Sir Victor Horsley prefers chloroform anesthesia, on the ground that in the hands of an expert under his guidance he is able with apparent safety to lower the blood pressure; hence, minimize the hemorrhage at will. I have verified these observations in the experimental laboratory. The less the hemorrhage, the less the manipulation, the less the shock. Since there are other efficient means of controlling hemorrhage in extracerebral operations, one would here choose the safest anesthetic, ether. While the skilled anesthetist may, by the method of Horsley, markedly diminish hemorrhage by a careful manipulation of the anesthetic, it is also true that expert ether anesthesia by the open-drop method may likewise greatly diminish venous congestion.

In operations upon the mouth, throat, face and neck, ether anesthesia, by tubage of the pharynx through the nares, greatly facilitates the operative technic, the opportunity for the control of hemorrhage and the maintenance of an even anesthesia.

Percussion of the brain brings out a physiologic response from the circulation and respiration. The blood pressure and the respiratory rhythm become uneven. In opening the skull the burr drill and the trephine, therefore, have the preference over the mallet and chisel. In the use of the latter the method of application is a greater factor than with the trephine or drill. If the chisel is sharp and is held at a correct angle and used in the manner of a skilled artisan, driven by light taps, its effects are minimized. The sum total, however, cannot be so small as the effect of opening the skull by means of the saw or drill.

While these fine distinctions may not be of importance in the average case, in critical ones they become so. In the further cutting of bone, in the fashioning of osteoplastic flaps, the method that offers the least contact with the dura and the least percussion produces the least shock. After the skull is opened and the further technic involves the brain itself, the operative problem becomes the most delicate known to surgery. The rougher methods used in other parts of the body must be discarded. Here every contact counts, and not only every contact, but the intensity of each contact. A slight touch here might set up a greater number of impulses than that of traumatizing the entire nerve supply of a cross section of both thighs. Here there is a concentrated opportunity for damage, and here, too, the surgeon must bear in mind constantly the evil effect of contact with the air. One needs only to remember how difficult it is in making electrical stimulations of the cortex to maintain excitability without irritability when the brain is exposed for a few minutes to the air. First there is excitability, then irritability, then no response to stimulation.

In operations for the relief of increased intracranial pressure the life-controlling centers are in the midst of a struggle for functional existence. The blood pressure may be high. In an increased intracranial tension the bone-encased brain is unable to escape from the direct pressure, except to a limited extent, by the displacement of the cerebrospinal fluid. As Horsley and others have shown, the brain itself is inelastic and incompressible; therefore, when a clot, depressed fracture, an abscess or a tumor occupies intracranial space, it is first at the expense of the displaced cerebrospinal fluid, then the circulating blood and lymph. Now pressure is exerted in all directions undiminished. Among other portions of the brain whose blood supply, hence its function, is thus threatened, are the life-controlling centers of the medulla. Nature attempts to meet this emergency by raising the blood pressure by vasomotor contractions over other areas, especially the splanchnic, thereby causing a rise in the general blood pressure, tending to drive back the blood to the anemic brain. The extent of the increase in the blood pressure, then, in the presence of an increased intracranial tension, may, in a rough measure, be an index of the height of the intracranial tension. If the intracranial tension rises there comes a time when the margin of physiologic compensation is exceeded, the vasomotor centers yield, the blood pressure falls, anemia of the brain is complete and death follows. It is obvious that when the vasomotor center is under such stress of over-work, if operative therapy is applied it is vitally important not to reduce the blood pressure. The blood pressure may be reduced by the anesthetic, by shock or by hemorrhage. If these cases are unconscious, it is by all means the safest to enter and cut away the skull under local anesthesia. After relief of tension physiologic readjustment may be awaited. It is in this class of cases (to be more fully discussed later) that if the blood pressure is lowered by anesthesia, shock or hemorrhage for a period of a few minutes (six or more) the patient cannot recover. The pulse, the high tension and the apparently sound circulatory state give no idea of the narrow and dangerous operative margin. In such cases it would be well to fortify the circulation by other efforts at raising the blood pressure, such as bandaging the extremities and trunk up to the costal borders, the application of the rubber suit under tension, the administration of stimulants, the head-down posture, in order that the blood pressure may be maintained during the operative manipulation at a sufficient height to insure a safe cerebral circulation. It is well to bear in mind the fact that the higher centers of the brain may be, and probably are, under a stress for the necessary circulation as great and important as the medulla. Other experiments have shown that the brain itself cannot endure complete anemia beyond six or eight minutes. This is, I believe, the explanation of the sequence after the successful relief of the brain of pathologic tension, — the expected consciousness never returns, and after a few days or weeks the patient succumbs.

In the cases, then, of operation upon the entire group of increased intracranial tension, the method of procedure should be quite contrary to that of intracranial operations under normal tension.

While the circulation in increased intracranial tension presents problems of such extraordinary delicacy, the respiration must not be forgotten. Long ago Horsley and Spencer showed that in intracranial lesions, such as gunshot wounds, the respirations are more rapidly arrested than the circulation.

Among 105 personal operations upon the brain I have in four instances encountered arrest of respiration. These occurred in the earlier part of the series, when I routinely anesthetized the patients. In two of these, by maintaining artificial respiration, I was able to rapidly cut away the skull and secure relief to tension, after which normal respirations were resumed. I have not seen a single instance of respiratory failure in such operations since I have taken into account the pathologic physiology above described.

In operations upon the mouth, face and neck, the shock-producing factors in the main are hemorrhage, anesthetic accidents, cardio-inhibitory reflexes and rough contact. We have already sufficiently discussed the avoidance of anesthetic accidents by tubage of the pharynx, permitting even anesthesia and preventing inhalation of blood. There are now methods whereby the loss of blood may be so greatly minimized as to scarcely take its place as a factor. This may be done by temporary closure of the carotid artery, head-up posture and careful dissection after sequestration of blood. By these means the field may be kept free from blood and hence so clear that even the lymphatic vessels may be clearly seen. The prevention of cardio-inhibitory reflexes, which may occur as a result of traumatism of the superior laryngeal nerve, the vagus or the laryngeal mucosa, may be obviated by a preliminary hypodermic injection of atropine, by the cocainization of the laryngeal mucosa or the superior laryngeal nerve trunk and as far as possible by avoiding contact. Sharp dissection, minimum retraction and sponge contact have happily reduced the rough contact of the past, in which the maxilla was evulsed by brutal mechanism for the extraction of a tooth. I have not seen a single case of death from shock in the last three hundred operations on the face and neck.

Operations on the larynx, by reason of the rich supply of inhibitory terminals of the superior laryngeal nerve, present special problems. Intubation, laryngotomy for foreign bodies, intralaryngeal manipulations, or laryngectomies, may be done without risk of collapse provided a sufficient dose of atropine be previously given, and provided further that the laryngeal mucosa be cocainized. In laryngotomy (an operation to be as far as possible avoided), after the incision has been carried through the cartilage to the mucosa the latter may be readily cocainized by means of a hypodermic syringe along the entire line of the proposed opening. The larynx may then be entered without producing cough or even an altered respiratory rhythm. Through this opening, then, the laryngeal mucosa may be cocainized by spray or swab and a quiescent larynx obtained.

Some years ago, while interested in intubation for laryngeal stenosis in diphtheria, I encountered cases of sudden collapse with arrest of respiration. I at first erroneously supposed it to be obstruction due to forcing membranes down ahead of the tube. In my efforts to extract the supposedly obstructing membranes I made death doubly sure.

Upon investigating this subject in the laboratory it was at once observed that, (1) reflex inhibitions could account for all the symptoms, and (2) that the respiratory mechanism never yields instantly to obstruction but makes a struggle with increasing respiratory force, bringing into play all the extraordinary muscles of respiration until either the obstruction is overcome or death ends it. At a later time I was able to verify in two cases the correctness of this view as follows: Children in desperate straits were intubated as quickly as possible. Sudden collapse with failure of respiration and disappearance of the pulse from the wrist quickly followed. These children were at once inverted, head-down, with their backs resting against my knees, an assistant holding their feet, while I pressed rhythmically and rapidly upon the thorax over the heart. There quickly appeared a slow cardiac rhythm, gradually becoming more rapid, finally reaching a safe status, followed by spontaneous respiration and complete recovery. In 210 intubations I encountered but two deaths from reflex inhibition and a number of temporary depressions, all clearly due to the direct stimulation of the terminals of the superior laryngeal nerve and the larynx. Had I thus understood the cause they could have been prevented. Nerve endings having the power of producing inhibition are by no means confined to the laryngeal mucosa. The rima glottidis is also sensitive and may respond to such impulses. The posterior nares, though to a less degree, may exhibit such responses to trauma. In operations for adenoids these reflexes should be borne in mind. I have no doubt that sudden depressions occasionally attributed to the anesthetic were in fact reflex inhibitions from the operative trauma. In performing these operations I always cocainize the pharynx and give a preliminary injection of atropine.

Thorax. — But little need be said on the prevention of shock in operations upon the thoracic wall, as the problem here is covered by general principles. However, in operations within the thorax, the problem becomes more specialized. In empyema, in hemorrhage into the pleura, in large transfusions, it is well to bear in mind that in removing the pressure, the flow of blood in the large vascular trunks, notably the veins, is subjected to a great interference, resulting sometimes in acute dilatation of the heart. This is, I believe, not usually recognized. The sudden heart failure or collapse that has been attributed to that vague etiological factor described as a displacement of the heart, or the heart shifting its place, is probably a question of an acutely dilate heart. In many of these cases the heart is already overtaxed and its muscles poorly nourished either by poisoned blood or by insufficient blood. The gradual reaction of increased intrathoracic pressure is a line of safety. Manipulation within the chest causes many important changes in the respiration and the circulation, and operations in this field must, for the present at least, be most carefully planned.

Abdomen. — Every contact with the parietal or visceral peritoneum acts as a shock factor; contact with the omentum, on the contrary, causes no fall in the blood pressure. The upper part of the abdomen is more shock producing than the lower. It is needless here to refer to the necessity for precision and gentleness. In the routine operations but little shock is seen in the good clinics of the world, but in acute, or in chronic infections, when the patient is toxic or greatly reduced, the problem does become an acute one. In acute infection with abscess in the peritoneum, the gall bladder or the kidney, nitrous oxide anesthesia, while not so satisfactory to the surgeon, is far safer for the patient. In abdominal operations it is well still to call attention to the necessity of protecting the viscera as far as possible from the air. Unless contra-indicated, a hypodermic of morphia in extensive intra-abdominal operations is of benefit, first, because of the splendid relaxation; second, because less anesthetic will be required; third, because the psychic factor is diminished. I think my surgical colleagues will agree that among other good results that have followed increasing experience in abdominal surgery is the almost complete disappearance of post-operative obstruction, once supposed to be so materially promoted by morphia, even when morphia by the same surgeon was given as a remedy for mechanical obstruction. In anemic, emaciated, hence poor surgical risks, in long-continued suppurations, in which it is apparent that if surgical relief is not obtained the patient will die, and if the effort is made it seems equally certain that he will die, — in these cases I have found that, happily, the direct transfusion of blood will so much exalt the general vitality and strengthen the circulation as to convert these risks into relatively safe cases.

In operations upon the extremities I have substituted progressive hemostasis for tourniquets. An amputation is performed by precisely the same rules of dissection as excision of the breast. The nerve trunks are blocked by injecting cocain before dividing them. In amputation of the arm or shoulder the brachial plexus is first exposed and blocked with cocain. No shock whatever then attends the operation, at least none until the cocain effect wears off. In senile gangrene, requiring amputation of the thigh, I use precisely the same instruments as in excision of the breast, except the addition of the Gigli saw. The operative trauma is spread evenly over about twenty minutes so as not to overwhelm the nerve vascular system by a flood of stimuli in a short period. The total amount of blood lost is, by this method, diminished, as the vasomotor oozing is entirely obviated.

ON THE TREATMENT OF TRAUMATIC SHOCK.

The depression in the majority of the traumatic cases is due to both shock and hemorrhage. In the absence of a clear history it is not easy to to determine their relative importance. Fortunately, the treatment of each is virtually the same. In traumatic cases demanding operation, should one operate immediately or should one wait for reaction? In my judgment the question may be answered either way. Immediate operation may be performed if the operative field can be blocked by cocain, thus preventing further shock, as, for example, the lower extremities by spinal anesthesia, the arm by blocking the brachial plexus, or if, as will be later explained, the patient is treated by a transfusion of blood. On the other hand, if these circumstances do not exist, it is, in my opinion, better to await reaction. At all events, while operating on such cases, the nerve trunks supplying the field in question should, whenever possible, be blocked, even when general anesthesia is administered. In these cases, in which sensitive tissue in quantities is mangled, especially in the compound fractures, when the soft parts are no longer supported, the greatest gentleness must be exercised.

Collapse. — While we believe that there should be a distinction made between collapse and shock, this distinction in practice is frequently not recognized. We will consider the treatment of collapse.

The principal causes of collapse coming to the attention of the surgeon arise from anesthetic accidents, asphyxia, reflex inhibition and hemorrhage.

The consideration of collapse presupposes cases of suspended animation. As we soon shall see, we must also consider resuscitation of parts of the brain.

Total anemia of certain essential parts of the central nervous system is safely endured but little beyond six minutes. There is a marked difference in the length of time that the various tissues and organs of the body can endure total anemia with safety. The bones, tendons, skin, muscles, the cardio-vascular system, the various organs and glands and the central nervous system show an individual resistance to anemia. The excised heart, for example, may be made to beat after isolation for forty-eight hours. We are, however, more particularly concerned with the central nervous system in its bearing upon the anemia of collapse.

In a research made by Dr. Dolley and myself, we found that animals whose animation was suspended by asphyxia or by anesthesia and then resuscitated at various intervals of time, from one minute up to twenty, showed clearly the susceptibility of the various parts of the central nervous system. We made absolutely certain that there was no circulation and then resuscitation was accomplished by the combined effects of the infusion of Locke's, Ringer's or normal salt solution into an artery, directing the stream toward the heart by the immediate injection of adrenalin into the rubber tube near the canula by means of a hypodermic syringe, by rhythmic pressure upon the chest over the heart and by artificial respiration. By these methods oxygenated blood, with a pressure of from 40 to 60 mm. mercury, was made to circulate through the coronary artery, which caused resumption of the cardiac beat. Following this, in the favorable cases, there was a resumption of the functions of the various organs of the entire body. The return of these functions varied considerably. The description of these phenomena, although of great interest, would, for our present purpose, carry us too far afield. It is sufficient to say that up to six minutes the central nervous system in almost every instance regained its normal functions. The proportion of failures of the restoration of the entire central nervous system to resume its normal functions after six minutes rose rapidly; and after seven minutes in but few instances was there a resumption of function; after eight minutes resumption was very rare and in no instance after ten minutes.

For our present purpose we will consider only the respiratory centers, the vasomotor centers and that part of the brain presiding over conscious or psychic life. The central nervous system of younger animals endures anemia better than that of the older. Of all the functions of the central nervous system, that of respiration is most persistent; moderate respiratory action of this center was obtained after as long as forty minutes of suspended animation from total anemia. The vasomotor center was frequently resuscitated after fifteen minutes, occasionally after eighteen, once after twenty, and once, in a puppy, after thirty minutes, but that part of the brain presiding over conscious life (the psychic and mental state) was in no instance resuscitated after total anemia of eight minutes, but always after four. We kept animals for one or two months whose hearing, sight, smell, cerebration and consciousness were lost. May this not have a practical bearing in the consideration of shock and hemorrhage in the presence of increased intracranial pressure? Who has not operated upon cases of increased intracranial pressure due to hemorrhage, tumor or abscess and found that while entirely successful in safely relieving the pressure, consciousness never returned? In these cases, if the patient before the operation was totally unconscious, we do not know but that an essential part of the brain had been already subjected to a total anemia of six minutes or more and that at the time of operation no possible chance of cure existed. The operator, therefore, may never precisely know whether or not the fatal result was due to operation. In another group of cases he may fairly well assume his responsibility; viz., those cases in which there is at the time of operation a high degree of increased intracranial tension but the patient is still dimly conscious. If the patient never regains consciousness following operation in such a case, it is fair to presume that during operation, as a consequence of the anesthetic of the shock, of hemorrhage, of the posture of the patient or of all combined, the slight margin of circulation supplied to the brain, giving it its flicker of function, was lost for six minutes or more.

If these conclusions are correct, then in such cases of an increased intracranial pressure every effort should be made not only to sustain, but, if possible, to increase, the general blood pressure so as to make certain of the necessary circulation during the entire operation. Shock and hemorrhage here have a specialized significance.

ON TRANSFUSION OF BLOOD IN THE PREVENTION AND TREATMENT OF SHOCK.

As a result of experiments on over-transfusion, we found that if transferred rapidly, that is, by a full head stream from the carotid artery of the donor into the jugular vein of the recipient, an edema of the lungs in some instances followed. In one experiment, within four minutes after starting the flow from the large donor, froth and serum rapidly poured out of the nose and mouth of the small recipient. On the other hand, when the over-transfusion was done more slowly so as not to embarrass the right heart and the pulmonary circulation, a huge donor and diminutive recipient being utilized, the blood was successfully transferred from the pulmonary to the systemic circulation, the abdomen in time becoming enlarged and gradually increasing until it became so tense that the diaphragm and movable ribs were immobilized and the animal died of asphyxia. The autopsy findings proved that both the liver and the spleen may be ruptured by excessive transfusion.

Transfusion in the normal animal caused an immediate rise in the blood pressure. This rise continued until from 15 to 110 mm. mercury had been gained. After the maximum had been reached there was usually a decline, though the pressure as a rule remained higher than normal. This was in direct contrast with the effect of intravenous infusion of normal saline solution, which we found to be capable of raising the pressure of a normal animal but a few millimeters mercury even when the solution was infused from a high column, through a large tube, under a strong head pressure. Whereas, normal salt solution will not sustain the blood pressure at a higher level than normal, direct transfusion of blood usually does. It was found that at death an over-transfused animal showed a residual pressure of from 15 to 30 mm. mercury. It was also found that animals recently killed, then subjected to a transfusion, may exhibit a rise in carotid pressure as high as 60 mm. mercury. This contrasts with the rise under parallel conditions of 10 to 15 mm. mercury by saline infusion. Blood transfusion exerts a greater influence upon the blood pressure than saline infusion.

After having found that the blood of normal animals of the same species is physiologically interchangeable; that the blood pressure may, in the normal animal, be raised and sustained; that if the transfusion be given with too great rapidity the pulmonary circulation may be so embarrassed as to precipitate an acute and even fatal edema of the lungs; that if the transfusion is given more slowly the blood may be transferred from the pulmonary to the systemic circulation in safety; that an excessive transfusion thus given may cause serious damage to the abdominal viscera, even causing immediate death; and after having established a safe technic and the limits of safety, we then experimentally inquired whether or not, by the transfusion of blood, its volume may be sufficiently increased to fill up the relaxed vascular system, to cause more blood to reach the heart, and so increase the outflowing stream, hence, help to overcome the cerebral anemia of shock, which in turn would be followed by an increased activity of the vital centers, thus supplanting the vicious circle of anemia by the beneficent circle of hyperemia.

It was shown experimentally that the influence of transfusion upon the blood pressure in every grade of shock was sufficient to raise it, frequently to the normal, occasionally even above it, and to so sustain it for at least a number of hours.

After the striking effects of transfusion in the treatment of shock were fully established, we undertook another series of experiments to determine what effect, if any, a careful over-transfusion in the normal animal might have in the prevention of shock. It was found that animals carefully over-transfused so as not to embarrass the pulmonary circulation on the one hand, or over-charge the abdominal viscera on the other, then subjected to shock producing procedures, could not be killed by shock alone. The blood pressure could be reduced to a certain degree, lower than which, by trauma alone, it was not possible to reduce it.

Extending our experiments, we found that traumatizing the spinal cord produced either a rise or no material effect. We then destroyed the medulla, after which, by maintaining artificial respiration, the circulation still went on. We then made the supreme test of decapitating such over-transfused animals, and found that the blood pressure was still evenly sustained without other assistance than artificial respiration. Even when respirations were not given, the height of the pressure was not changed until affected by asphyxia. One animal lived for over three hours by merely keeping up artificial respiration. This remarkable circulatory state is readily understood by considering for a moment the physiology of the heart-beat. The heart may be removed and kept on ice for a day or more, then, if oxygenated, defibrinated blood under pressure of from 80 to 100 mm. mercury be circulated through the coronary vessels, it will beat again and continue to beat for a number of hours. Even a coronary pressure raised to that height by metallic mercury may cause the inauguration of the heart beat. Now in the over-transfused animal the vascular system may be so filled with blood that its elasticity is utilized to create a resistance against which the heart may act, resulting in a pressure of from 80 to 140 mm. mercury in the aorta, hence, in the coronary artery. There is no reason why, therefore, the heart should stop beating so long as the elasticity of the vessels gives the necessary resistance, despite the loss of the head.

It is perfectly obvious that in utilizing a transfusion of blood for the purpose of establishing a static circulation, the heart must be equal to its good share of the work. In the senile heart, in myocarditis, in essential heart lesions, an acute dilatation or paralysis of the heart or pulmonary edema might occur. Our experimental evidence refers only to the normal heart.

In the clinical cases of uncomplicated shock treated by transfusion the symptoms of shock disappeared in a manner so remarkable as to suggest its being a specific treatment. Equally successful were the preliminary transfusions in cases that for one reason or another were in such a low vital state as to appear to be unable to endure the necessary surgical technic. This was especially true in the cases in which hemorrhage was the important factor in producing such depressed vitality. Thanks to transfusion the yesterday of our lost opportunity may be reclaimed.

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Since June 15, four new cases of plague have been reported at Port of Spain, resulting in three deaths. The fourth case is in the isolation hospital.

Original Articles.

ACHONDROPLASIA.

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THE word "achondroplasie" (achondroplasia) was first used by Parrot in 1878 to describe this condition. Since then many other terms have been used. The commonest and the best of these is "chondrodystrophy," or chondrodystrophia fetalis, and under this heading many articles on this subject may be found. For some years the term "fetal rickets" was used, as, for example, by Osler, to denote this affection, but this expression has now generally lost its former significance as a synonym for achrondroplasia, and signifies a disease similar to the ordinary rhachitis, but occurring before birth.

The pathological condition in achondroplasia was described by Kaufmann in 1892. He spoke of it as "a disturbance of the endochondral ossification while the ossification on the side of the periosteum is perfectly normal." He distinguished three forms: (1) Chondrodystrophia hypoplastica, — in which the principal element is a simple cessation in the growth of the cartilage; (2) chondrodystrophia malacica, in which the arrest of the growth is dependent on (abgeleitet von) the softening of the cartilage; (3) chondrodystrophia hyperplastica, in which we are concerned not simply with an arrest of the growth of the cartilage, but with an excessive growth abnormal in its direction. How far these divisions are of importance is yet to be shown.

Apert in 1901 also gives a short description of this pathological condition.

Durante (1902) describes the condition at the epiphyses as follows: "The line of ossification is irregular and toothed. Above, the indifferent cartilage shows more marked vascularization than normal. It is separated from the border zone by a vascular fibrous band. This band diminishes in breadth inwards and towards the center of the epiphysis, is often represented only by an interstitial sclerosis of the layer of the cartilage cells which are disposed parallel to the line of ossification. Below this the proliferation and arrangement of the cartilage (cells) is very defective. The cells, well separated in the midst of an interstitial substance suggesting fibrous tissue, are as a rule not disposed in columns even partially. Most often there is no trace of cartilage columns and the cells lie isolated and scattered without order even up to the edge of the line of ossification. From this results the formation of bony lamellæ, small, thin and essentially irregular, or rather a series of points of calcified nodules irregularly disseminated in the marrow of the bone. A certain number of projections of marrow occupy the line of ossification and extend towards the fibrous band. Below the line of ossification the medulla is represented by a very close, dense areolar connective tissue, with fibers decidedly more thick than normal. In short, there exists an intense sclerosis with disappearance or at least absence of normal medullary cells."

While the cartilaginous ossification is insufficient and defective, the periosteal ossification appears active, though equally pathologic under certain aspects. On a transverse section of the diaphysis of the femur we perceive the eccentric position of the medullary canal, which is diminished in size. We nowhere find compact bone. The body of the bone is constituted not of systems but of a spongy tissue with thick lamellæ not far apart but irregularly arranged. These bony partitions may run parallel to the surface of the bone or elsewhere may be perpendicular thereto and by their peripheral end become lost in the internal fiber-bundles (faisceaux) of the periosteum. Where the periosteal layer begins to bend inwards and calcify there is transformation of the periosteum into fibro-cartilage and then ossification.

Résumé: Sclerosis of the epiphyseal cartilage while in preparation for multiplication. Lack of serial arrangement of the cartilage cells and deficiency in cartilaginous ossification while processes from the marrow cross the line of ossification. Abundant periosteal ossification produced as well by means of osteoblasts as by direct calcification of the fibrous lamellæ, but only eventuating in the formation of a spongy bone with thick resistant lamellæ. Sclerosis of the bone marrow.

This condition is totally distinct from that known as osteogenesis imperfecta. In the latter the periosteal ossification is specially defective. Müller's case of osteogenesis imperfecta shows that the endochondral ossification is wholly normal. In this case no real periosteal bone formation has been anywhere established. A section through a prominence or exostosis on the diaphysis of the femur is thus described: "The bone tissue can be cut with considerable ease, the central parts indeed can even be marked with the finger-nail. The periosteum which surrounds the bone on all sides as with a thick selvage appears very rich in cellular elements, in which are seen clear portions containing few cells, in contrast with other narrower, dark blue spots which have this appearance as a result of their richer content of spindle cells. In places the thick layers of the periosteum divide into several parts and then include cartilage masses. The latter show a fully homogeneous hyaline ground-substance (matrix) which, however, appears little in comparison with the numerous cartilage cells. The cartilage cavities are inflated. Where this separation of the periosteum does not occur the cartilage (of essentially the same character as that described above) adjoins it directly.

"The whole preparation offers a very unusual picture. Cartilage appears without transition layers in the midst of bone tissue; connective tissue rich in cells extends deep into parts which should be ossified; the ring bone formed from the periosteum is wholly absent. The activity of the periosteum as formed and created of the bone substance has ceased." Müller, 1893. (Translation.)

The patient was first seen when ten months old, on the fourteenth of July, 1904. He had been since birth under the care of Dr. M. F. Hobart, of Boston.

The family history was not remarkable. The parents, natives of New York, were both healthy, the father fifty-four years old; the mother thirty years old. The mother had had five pregnancies: (1) boy eight years old, well; (2) girl seven, well; (3) miscarriage at fourth month; (4) boy four and one half, well; (5) patient.

The labor was at term (not instrumental). The pains were severe only three or four hours. It was not known whether the child was asphyxiated. Breast fed. First tooth came one month ago and is cutting second. Says a few words. Has not tried to sit up or crawl. Has never been ill except for varicella in March, 1894. Has never had any fever or any symptoms of meningitis. No convulsions. Takes breast well. Bowels regular. Head perspires much. It is reported that his head has always been large. Four months ago, parents began to notice a slight angle in the spine which has increased since.

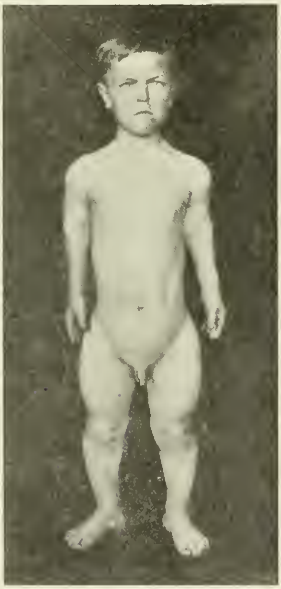

Fig. 1. Note shape of head, retracted nose, extremely short arms, long body, short thigh and legs.

Physical examination. — Fairly developed and nourished. Head rectangular, large; anterior fontanelle wide open. Bridge of nose absent. Lower nostrils broadened. Absence of thyroid. Slight rosary. Moderate development of distal epiphysis of radii and tibiæ. Extremities extraordinarily and disproportionately short in comparison to body. Upper arms and thighs short in comparison with forearms and legs. Palms of hands very broad and short. Feet slightly broadened. Prominence of several spines in the lumbar region with some rigidity. Knee jerks good. No deformity or absence of genitalia. Patient was put upon a Bradford splint and was given cod-liver oil.

November, 1895. Thyroid extract was given and this was continued intermittently for years.

June, 1896. Improvement is noted several times since January.

July, 1896. No thyroid to be felt. No fat masses. Nates appear waxy. Muscles very flabby.

November, 1896. Bright. General condition good. Prominence in back diminishing.

April, 1897. Going to New York to live.

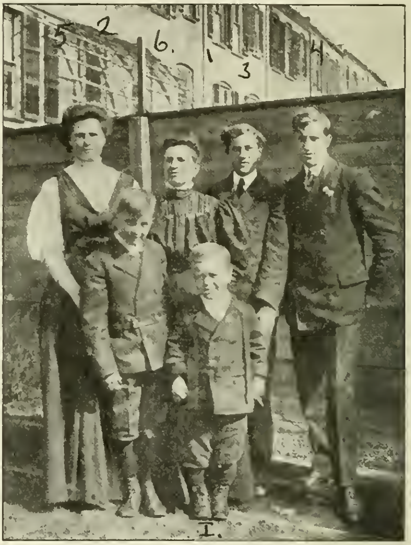

Fig. 2. Photograph of family of patient. (1) patient.

December, 1897. Appears of normal intelligence. Skin normal. Hair fine. No pads of fat over clavicles. Moderate rosary. Lower aperture of chest broadened. Epiphyses at wrist and ankles enlarged. Muscles flabby. Rachitic curve of spine. S-curvature of all long bones, most marked in femur, humerus and tibia. Lies most of the time with thighs abducted and flexed on trunk. Head does not perspire as much as formerly.

May 20, 1899. Has grown a good deal and walks well. Some curve of spine on sitting, but none on standing. Intelligent. Skin and hair normal.

1900. Is taking bone-marrow.

Aug. 1, 1906. Is bright and in same grade at school as other boys of his age. Very active. Plays ball with the other boys. Features intelligent. No evidences of myxedema. Head square; rather large. Double coxa vara.

Is taking thyroid extract, gr. x. t. i. d.

THE RÖNTGEN EXAMINATION.

The examination by the Röntgen method of cases of achondroplasia is as characteristic as are cases seen clinically (Fig. 1) though varying in certain details of bone changes which take place. A description of the Röntgenological

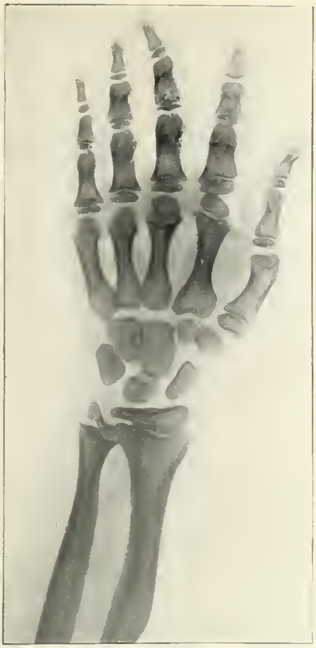

Fig. 3. Compare the epiphysis and shape of bones of hand with normal hand of child of twelve years.

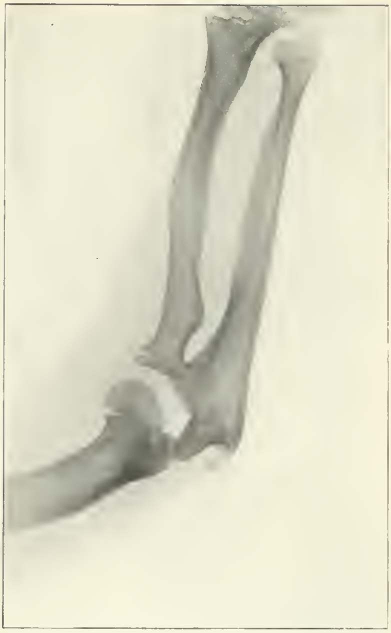

Fig. 5. Forearm and elbow joint of case showing irregular outline of shaft of the bones with varying amount of cortical bone.

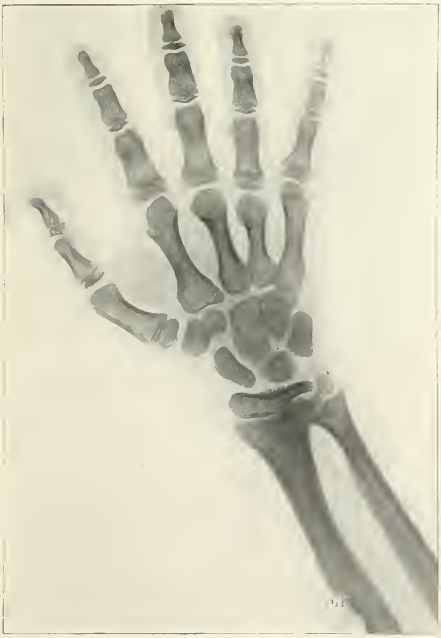

Fig. 4. Hand of patient examined one year later than Fig. 3. Note irregular outline of metacarpal bones and phalanges, irregular development of all the epiphysis, poorly developed cortical bone of the phalanges with coarse and irregular arrangement of the bone structure. Compare with normal hand.

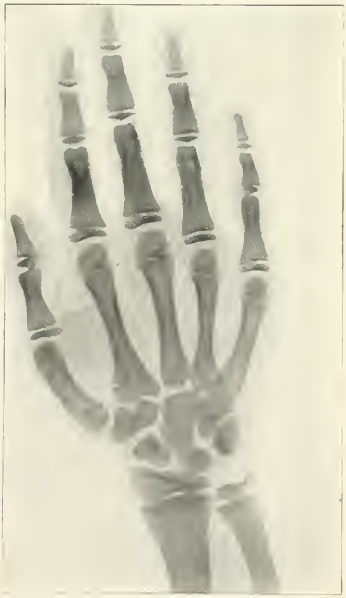

Fig. 6. Normal hand of child of twelve years.

picture of these cases is not definite unless we divide them into two groups and at the same time take the age of the individual into consideration.

1. Those cases which are seen up to puberty without marked deformity.

2. And cases with marked deformities of the limbs, or those cases in which there is a secondary joint lesion apparent. (Kaufmann.)

In the first group of cases the typical Röntgen picture of a given bone, the tibia, for instance, will show it to be shorter and wider than that of a normal child, but having a well-developed ossific center for that given age. The shadow produced by the bone generally compares well with that of a normal child. Deformities of the shaft, with the exception of bowing, are rare in this group. The cortex is thicker, particularly in the middle of the shaft, showing considerable deposit of bone and thinning out towards the epiphyses. At the same time the medulla, though small at the middle of the shaft, is increased in width proportionately with the thinning of the cortex; the bone structure in some cases is practically normal as compared with that of a normal child, but in the majority of cases a coarser and sometimes a more irregular deposit is apparent (Fig. 4), particularly in the diaphyses.

The most characteristic appearance of a long bone under examination in chondroplasia is that near the epiphyseal ends the diaphyses become cup-shaped, producing a T-shaped outline without any disturbance of the epiphyseal line or zone of proliferation, though they may be uneven and take on more or less fantastic shapes as compared with those of a normal individual. They are not, however, as uneven as in the diseases of nutrition, such as rhachitis, where there is a definite disturbance of the zone of proliferation, but, as has been stated, the ossific centers have been well formed and the epiphyses are apparently fitted into the cuplike diaphyseal ends. In this first group of cases there is nothing seen in the Röntgen plates which could be confused with rhachitis.

The second group of cases which we meet with in a large clinic is characterized by the large rectilinear head, extremities extraordinarily shortened in comparison to the bodies, the upper arms and thighs shortened in comparison to the forearms and legs, but distinguished from group 1 in that the osseous system shows more definite pathological changes such as scoliosis, kyphosis and lordosis of the spine, coxa vara, genu valgum or varum, and ankylosis, partial or complete, of one or more joints, due either to a mechanical inhibition of joint motion or to pathological changes within the joint.

In the Röntgen examination of these cases, though the underlying appearance of the bone is that of group 1, we have a more definite change of the articular surfaces of the joints, or of the epiphyses in general, to such an extent that one would hardly identify the given joint; there is a great distortion of the bone generally, with a tremendous increase in the size of certain portions, such as the great trochanter of the femur. The joint surfaces are practically absent, with a partial or complete erosion.

It is to be noted that the epiphyses in this case are all delayed in their development, particularly as these children approach puberty, when there seems to be very little, if any, development of the epiphyses beyond a certain point. This will be noted in comparing Fig. 3 with Fig. 4, there being one year's difference in the time of the examination.

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ALPHAMONOBROM-ISOLVALERYLUREA. A NEW NERVE SEDATIVE AND SOMNIFACIENT.

BY WILLIAM HENRY PORTER, M.D.,
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Before attempting to analyze the therapeutic value of any substance, its composition and the possibilities of its decomposition must be thoroughly understood.

In addition to this, the underlying etiological factors of the diseased process to be treated must be accurately determined. At the same time it is absolutely essential to have as concise knowledge as can be obtained in reference to the exact nature of the disturbed physiological phenomena or pathological changes that are causing the symptoms.

Each etiological factor and pathological condition must be given due consideration and its relative importance established beyond question of doubt. Anything short of this method of procedure places therapeutics upon an empirical and not upon a sound scientific foundation. While it is true that the empirical use of therapeutic agents has, in the past, given many substances and compounds used in medicine a strong position in our pharmacopeas, our advanced knowledge in chemistry and chemicopathology is constantly demonstrating that many, if not all, medicinal agents can be transferred from the empirical class to the more truly scientific. Therefore, before attempting the elucidation of any agent that may be called into play in the management of diseased process, these factors must be given full consideration. This is especially true in that great class of vague conditions included under the common terms, nervousness; nervous irritability or nerve inactivity, that is, comparing the imperfect with the perfectly acting nervous system; neurasthenia, insomnia, somnolence, etc.

Before attacking these conditions therapeutically, we must, if success is to follow our efforts, determine the exact cause and the pathological lesions that are to be eradicated. The accomplishment of this result in this class of cases is usually no easy task because very often there is no macroscopic lesion, the conditions being more frequently of the so-called functional type. The true functional condition, however, is not lesionless, but the changes are chemico-pathological in their nature and thus far have, in a large measure, eluded all our efforts to determine the exact changes that have been produced in structure as well as in function. That such changes do exist in the nerve structures is certain, for it is not logical nor scientific to argue that absolutely normal conditions can act in an abnormal manner. The abnormality, however, is of such a delicate nature that it can only be determined by a close comparison clinically of the abnormal with the normal. Hence, the persistence in the use of the term "functional."

With this brief outline relative to the possible chemico-pathological changes in the system, the two principal points to be determined before attempting the application of our therapeutic remedies are, *first*, What are the etiological factors entering into the case in question, and in what manner can they be most effectually removed. This accomplished, we are in strong position to study the *second* problem with some hope of success, to wit, the almost imperceptible chemico-pathological changes in the nerve structures that are causing the symptoms — symptoms which are often aggravating both to the patient and to the physician in attendance.

With these two points well in hand, we can feel assured, if we have a concise knowledge of the remedy to be employed and its possible action upon the chemical activity of the system, that it can be used with scientific accuracy and that the results will be certain.

Taking up first the etiological factors entering into the production of nervous conditions, we find that they are similar to those which produce all the varied forms of metabolic disturbances.

First. — Dietetic, such as eating and drinking too much food, even though it be of good quality; and, on the other hand, a deficiency in quantity, or an impairment in composition.

Second. — Poor hygienic surroundings and the lack of sufficient out-of-door exercise.

Third. — Overwork, or severe strains placed upon the nervous system.

With a defective food supply, the nutrition of the system at large, and the nervous system in particular, may become impaired in one of two ways. When eating and drinking too much food and liquors, the composition and quality of which may be perfect, the only fault is that the system is oversupplied from a physiological standpoint. Too large a supply of food alone has a tendency to overtax the power of the digestive ferments and, in consequence, the food stuffs are imperfectedly transmuted. Too free use of alcoholic beverages tends to inhibit the transmuting power of the digestive ferments and thus renders the digestion imperfect. In either instance there is a strong tendency for the pathogenic bacteria infesting the intestinal tract, noticeably the colon bacilli, to cause decomposition of the proteid constituents of the food elements, and especially those of the animal class. When this occurs, we have the condition produced that is so well-known under the common term indicanuria, made evident by the appearance of indoxyl potassium sulphate in the urine. Indican in the urine, however, is only an easily recognizable danger signal, which indicates that in the intestinal canal there is a varying degree of putrefactive, instead of a perfectly normal fermentation of the food elements. Now, instead of getting the full quota of normally transmuted constituents of the food, there is introduced into the system together with the deficient supply of food an innumerable number of toxic products which have been produced from the proteid molecule in conjunction with its putrefactive disintegration. It matters little whether these by-products are toxalbumins or oxidation reduction substances, they all act according to the composition and toxicity. The intensity of the poisoning and the nature of the symptoms produced is governed by the quantity introduced as well as by the nature of the toxic substance which has gained access to the animal economy.

The decrease in the nutritive pabulum alone greatly reduces the metabolic activity of the system as a whole. Added to this are the more or less irritating effects of the toxic substances, and they still further lower the nutritive activity of all the tissues and organs of the body, the combined effect of which results in an inhibition or overstimulation of the nervous mechanism; so much so that the pronounced balance of the nervous activities is greatly disturbed and often rendered very irregular in action. Under these circumstances the innervating and inhibitory influences of the nervous system upon all the glandular activities and functions of the body are profoundly disturbed. This in turn reacts unfavorably upon the digestive organs and still further impairs the digestive secretions and thus the condition tends to grow progressively worse, one condition reacting continually upon the other and vice versa, until in many instances life becomes an unbearable burden and finally the suicidal act cures the disease. Viewed in this light alone it is an easy matter to appreciate fully the complex nature of these conditions that we are continually called upon to modify and cure. It shows conclusively that they, therefore, are entitled to a classification far beyond pure functional derangements.

If we turn for a moment to a still more aggravated form, or to that class of cases which occur in those unfortunate beings who have come to our land from foreign countries, the problem is a still larger one both as regards its etiology and chemico-pathology. In these unfortunate subjects we have a class in which for generations, if not for centuries, humanity has been poorly fed and at the same time subjected to all forms of hardships until only the survival of the fittest remain on the face of the earth. With this great class of unfortunates there is no tendency to race suicide, but they continue to multiply with a rapidity which gives small chance for improvement, so that from their very infancy they are little short of complete nervous wrecks. Add to this unhygienic surroundings, lack of out-of-door exercise and fresh air, close confinement and long hours of hard work in poorly ventilated factories and sweat shops and the etiological is practically complete and just about as bad as it can be made. Between these two extremes we have all grades.

After settling in this country, many who were born and brought up under the most adverse conditions often see poverty give place to affluence. When this occurs, over-indulgence in food and alcoholic beverages, both of which may be of the best quality, becomes the controlling causative agent in the maintenance of these nervous disorders in the present and is the cause in the succeeding generation.

In both classes overtaxation of the nervous system, no matter how produced, must never be lost sight of as playing a large part in producing these nervous conditions. It may be in the form of simple worry, or repeated shocks to an already over-wrought and poorly nourished system, — one in which the nervous system is already irritated almost beyond endurance by a highly toxic state of the physiological economy. Under these conditions a superficial glance at the case might lead one to believe that the nervous system was the sole cause, or at least chiefly responsible for all the abnormal phenomona present. This is not true, however, even though the nervous element is largely a controlling factor at all times. The deteriorated digestive functions and disturbed metabolic processes in a large measure almost always precede and act as the more important condition, etiologically speaking. At the same time one must never loose sight of the fact that the three conditions are so intimately bound together in the production and maintenance of these abnormal states of the nervous system that the one cannot be divorced from the other. Failure to recognize this fact and to cope with it in a triune fashion is largely the cause of the many failures in the management of this ever-increasing class of cases. When the three etiological factors are removed together success usually crowns our efforts.

Even with this array of etiological factors acting upon the animal economy, many nervous affections present no microscopic lesion of the nervous system. In fact, the microscope often fails to show sufficient change to establish uniform lesions that can be classified as truly pathological conditions. Hence, what the physician is called upon to cope with most frequently is abnormal chemical changes which do not produce pronounced lesions in the nerve structures, but which do prevent perfectly normal actions on the part of the nervous mechanism. What these minute changes are, has not been determined with sufficient precision to enable the therapeutist to formulate an absolutely accurate working basis in every instance. The biological chemists, however, have, in recent years, suggested the possibility of the existence of intrinsic enzymes within the cells and tissues as the active agents that produce normally all these more or less intricate changes constituting metabolism; such, for instance, as hydrolysis, isomerism, mechanical anabolism and oxidation reduction.

Assuming such a theory to be the correct one, it is very doubtful, however, if these bodies can ever be isolated and tested for in a manner that can be practically applied by the practitioner and therapeutist. This much seems clear, however, that we have a normal chemical state of the system, controlled by some mysterious force or forces, which is often caused to act in a most irregular and abnormal manner by these varied etiological factors. When this is the case there is either an inhibition or over-excitation of these enzymes or other forces and thus there is produced the varied train of symptoms classed as nervous phenomena or functional disease. The more probable method of action is by inhibition, resulting from deficient nutritive activity, which naturally causes a lower, imperfect and irregular action of the nervous system, evidenced by pain, anesthesia, hyperanesthesia, irregular action of the mental faculties, insomnia, somnolence or the one alternating with the other, etc. Thus we find that the nervous manifestations in a large class of these cases are due to a weak and imperfect action on the part of the nervous system rather than to over-activity.

In this connection the question naturally arises as to what sleep is, and also, what is insomnia, somnolence, etc.

To understand any of the nutritive changes in the system and the train of phenomena resulting therefrom, we must first have a clear conception of the manner in which all substances are probably utilized within the animal economy. Briefly stated, all food elements, and medicinal substances as well, may in general be brought into three classes: First, the inorganic substances, all of which simply act mechanically, passing in and out of the system under their own form. Second, those compounds composed alone of carbon, hydrogen and oxygen which are more or less quickly oxidized, thus furnishing heat and energy to the nervous mechanism, and third among the food products is the proteid group, which, by a series of transmutations, enter into and leave all the structures of the body until they are no longer of any service to the animal economy. After having served their purpose in this manner, however, the proteid molecules are taken up into protoplasm of the cells constituting the excretory glands of the body together with active oxygen and in these cells are reduced by a process of oxidation into the various excreta which represent normally the utilization of the proteid groups. As a rule it is not until after the proteid elements have served their purpose throughout the various structures of the body in this isomeric fashion that they are brought back to the various excretory organs to be reduced by oxidation. When they are thus transmuted they are eliminated from the system under the form of excretory products, all of which are less complex in their chemical construction than the proteids which entered the body and from which they are derived.

What is true of the food substances is equally true of all medicinal substances, to wit, they act as mechanical irritants, as heat-producing agents, or by a process of oxidation reduction. In every instance their action must be explained along one of these lines, acting either mechanically or chemically.

Acting upon this theory of isomeric chemical transmutation of the proteid constituents, we can find a possible explanation of " being asleep and awake." In a similar manner we find an explanation for the almost imperceptible chemical changes that constitute normal nerve activity and its disturbances or deviations from the perfectly normal standards. By a slight modification of these normal processes many, if not all, of our nervous affections are produced. Moderate deviations producing the so-called functional types, while more pronounced deviations, result in easily discernible structural changes.

When the proteid constituents which constitute the protoplasmic structures of the cerebral cells and fibers that enter into the nervous tissue, and especially those that are supposed to preside over the higher faculties, are in a state of active isomeric transmutation, the individual is awake; when they are held in moderate abeyance the somnolent state results, but when there is decided lessening of these chemical activities, or almost complete arrest of this isomeric activity, the phenomenon known as sleep is produced. Arrest the activity absolutely and coma and death will speedily follow.

Why these changes from activity to inactivity, or from waking to the sleeping state, come in perfect health with a certain degree of rhythmical periodicity cannot be explained any more than the phenonemon of life and death.

This method of interpreting the phenomenon of sleep is not essentially new, for a similar explanation is given in Carpenter's, Foster's and other works on physiology. Foster[1] says: " The essence of the condition is rather to be sought in purely molecular changes, though we cannot, however, at the present make any definite statement concerning the nature of these molecular changes." That external surroundings have much to do in producing sleep is clearly shown when Foster says: " When we wish to go to sleep we withdraw our automatic brain as much as possible from the influence of all external stimuli." In other words, we practically resort to every device that has a tendency to lessen the chemical activity of the body and especially as regards the nervous mechanism. We raise the head upon lying down. It is often advisable also to take a warm drink when ready to retire. Conditions which tend to lessen the volume of blood distributed to the cerebral structures in a measure lessen the cerebral chemical activities. In a similar manner the production raising and lowering of the chemical activities of every portion of the nervous system and, in fact, of all the structures of the body, can be explained. Lower the nutritive activity of the nervous mechanism, its actions become imperfect, irregular or irritable. Carry the arrest of activity still further in connection with the cerebral functions and a state of almost complete inactivity is induced, or the condition known as the semi- or comatose state is produced.

When these countervailing influences are unduly prolonged there is always a tendency to the development of perceptible structural changes in the nervous system. Pathological lesions developed in this manner may be reparable or irreparable, depending upon the amount of damage produced in the structure of the nerve cell of fibers before it is recognized and appropriately treated.

(To be continued.)

THE LOCAL TREATMENT OF ACUTE INFLAMMATIONS OF THE THROAT FROM THE STANDPOINT OF PATHOLOGY.*

BY J. L. GOODALE, M.D., BOSTON.

In acknowledging the kind invitation of your chairman to speak to you, I have first to render explanation for the largely hypothetical nature of my remarks. If they seem to be based upon theory rather than upon definitely proved facts, my apology is that speculation regarding the unsolved phenomena of our work is a healthful mental stimulant and often the prelude to their final elucidation.

The recent great advance in medical knowledge, accomplished by studies of immunity, leads the laryngologist to inquire how far this new information may be utilized in his own department. Among the various subjects here comprised, that of acute pyogenic inflammations of the throat has seemed to me a fruitful one for renewed investigation.

In selecting this well-worn subject, I have been influenced by the analogy existing between staphylococcus infections of the throat and those of the skin, which have been especially investigated by students of immunity.

In both conditions we find the same organism generating toxin at the point of inoculation and giving rise to a localized inflammation. While we cannot perhaps transfer precisely the deductions obtained in the case of cutaneous infections to their analogues upon the mucous membranes, it seems to me, nevertheless, worth while to examine again our own information and modes of treatment in the light of this outside and recently acquired knowledge.

In making these comparisons between the staphylococcus infections of the two regions, we must, of course, bear in mind that several other species of bacteria are frequently the causative agents in acute inflammations of the throat. Nevertheless, it will, I think, be admitted that we are unable to formulate fundamental points of distinction between the local phenomena excited by staphylococcus, the streptococcus, the pneumococcus, the influenza and the diphtheria bacillus. All are acute, self-limited affections, dependent upon the local invasion of the tissues of the throat by a specific micro-organism, and the clinical differences depend upon strength of the toxin generated. Thus an attack of diphtheria, due to a weak strain of the diphtheria bacillus, may be indistinguishable clinically from a staphylococcus infection, or the pneumococcus may closely approximate the streptococcus in the phenomena induced.

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[1] M. Foster: A Textbook of Physiology. Macmillan & Co., New York and London, 1895, p. 1156.

* Read before the College of Physicians, Philadelphia, Feb. 19, 1908.

In the following paper I wish to present the result of an examination into the effects of local applications upon infectious processes of the tonsils and pharynx. These investigations were made with special reference to the effect of antiseptics upon the course of the clinical phenomena and have led me to inquire into the value of the time-honored use of antiseptics, spray and gargle in these conditions.

Before describing these cases, I should like to review briefly the histological phenomena of acute tonsillitis.

You will remember that this affection occurs in two forms: first, a simple proliferative inflammation, with or without the formation of exudate, and, second, a suppurative form, characterized by the presence of multiple abscesses within the interior of the follicle. Both forms of tonsillitis are characterized by the multiplication of one or more species of pathogenic bacteria into the crypts of the tonsils with consequent production of toxin. In the proliferative type of tonsillitis, the toxin makes its entrance into the tonsillar tissue and gives rise to the ordinary manifestations of acute inflammation, namely, dilatation of blood vessels and proliferation of the tissue cells with increased emigration of leucocytes. No bacteria are, however, found in the tonsillar tissue proper. The dilatation of the blood vessels is responsible for the reddening of the parts, and this together with the cellular proliferation produces inflammatory swelling. As a result of the toxin formation in the crypts, polynuclear leucocytes are attracted by positive chemotaxis from the blood vessels into the lumen of the crypts and there enter upon the work of phagocytosis. Lymphoid cells from the follicles make their way into the crypts in increased numbers, while the lacunar epithelium desquamates very freely. Its cellular material accumulates in the crypts and corresponds to the white spots which are found. If the production of toxin is greater or the toxin itself stronger, there is, in addition, a coagulation of fibrin in the crypts in the interstices of the epithelium. Longitudinal sections of the lacunæ show that the greatest activity of the process is near the orifice of the crypts. Bacteria are most abundant here and gradually diminish in numbers towards the base of the crypt, which at times seems nearly free from them. Near the orifice the phagocytic leucocytes are seen to be largely in a state of disintegration, while shortly below this they are actively engaged in incorporating bacteria, while toward the base of the organ leucocytes are found in great numbers free from bacteria.

In the second type of tonsillitis, namely, the suppurative form, multiple foci of suppuration are found in the interior of the follicles. These abscesses contain micro-organisms in their interior, as may be shown by proper staining. The abscesses proceed to enlarge and extend beyond the confines of the follicle, evidently in the direction of least resistance, discharging usually into the crypts. At times, however, they may be seen to rupture in the direction of the efferent lymph channels; and in the cases of this, which have come under my observation, there has been evidence of beginning circumtonsillar abscess.

We will pass now to the consideration of the cases of acute tonsillitis which were treated by various antiseptic preparations. About forty cases in all were examined.

Bacteriological examination was made only for the purpose of excluding diphtheria, and it was therefore not possible in most of them to specify whether the organism was a staphylococcus or streptococcus or pneumococcus. For our present purpose this does not, however, matter. The cases varied naturally greatly in severity as well as in duration when first seen, so, for purposes of space, I shall endeavor to summarize them in the following way.

About one half the cases came under my observation early, when the tonsils were more or less reddened and swollen, without white spots in the lacunæ, the balance showing all gradations from one or two white spots to an extensive filling of the lacunæ by white detritus, in some cases accompanied by marginal fibrin. It is naturally difficult in such a series of acute infections to determine definitely how much effect is accomplished by a given line of treatment, and in the following résumé it is not claimed that the alterations observed are the result of treatment; nevertheless, when one has observed carefully a sufficient number of cases, the impressions of the pathological alterations may be considered as representing definite results, so far, at least, as practical points are concerned. It was observed in a number of cases of acute reddening of the pharynx and tonsils that local applications of various remedies were followed by complete subsidence of the local inflammation. How far this was due to the effect of the treatment cannot be said with certainty, for we have all observed localized inflammations in the throat disappear apparently spontaneously. Nevertheless, it has seemed to me that the local application, especially of the silver salts, has resulted in checking the attack in a definite number of cases.

In a further series of early cases, these applications, particularly the silver salts, were followed by disappearance of the local acute inflammatory manifestations and the patient appeared for a few hours or a day apparently well, at the end of which time inflammation appeared in a neighboring region as in the naso-pharynx or nasal passages or in the larynx, and in several cases which were carefully studied it seemed that the total duration of these inflammatory manifestations was more protracted than would have been the case if a simple, acute tonsillitis had been allowed to take its natural course.

Where the local manifestations were more advanced and accompanied by general symptoms, as fever and prostration, no improvement was noticed from the employment of local antiseptics. In two cases of severe lacunar tonsillitis, the crypts were irrigated several times with permanganate of potash and with hydrogen peroxide, with the object of sterilizing as far as possible the focus of infection. On each occasion, the immediate effect of the irrigation was to produce pain and swelling in the cervical lymph nodes, which lasted for several hours and then subsided.

In other cases where applications of argyrol or collargol were made into the interior of the crypts, increased local irritation followed, together with evidence of more systemic absorption of toxin.

We may, therefore, summarize the results of these clinical examinations as follows:

1. Acute tonsillitis in the early stage before the appearance of white spots or systemic depression was apparently aborted in some instances by local antiseptics.
2. In some cases acute tonsillitis when seen early was apparently checked by local antiseptics, but inflammation appeared in neighboring organs and seemed to be of protracted duration.
3. Where systemic disturbance exists and white spots are present in the lacunæ, no checking of the inflammatory process was observed from the application of antiseptics.
4. The introduction of antiseptics into the crypts was followed by a heightening of the local inflammatory process and in some cases by increased systemic absorption.

With these facts in mind, let us examine into the phenomena in the light of information derived from recent studies in immunity. We know that the development of pathogenic micro-organisms in the system stimulates certain agencies in the host which produce antibacterial substances. Among these protective substances we may mention bacteriolysins, agglutinins and opsonins.

These are the substances present in the blood of every individual which influence the invading micro-organism in such a way as to prepare it more readily for incorporation and destruction by phagocytic leucocytes. The machinery of this process is set in motion by the penetration into the system of a bacterial toxin, and as the result of its influence a specific antitoxin is produced, neutralizing eventually the toxin of the infection and thus bringing the disease to a close. In acute infections in vigorous individuals, the natural agencies of the body generate the requisite amount of the antibodies and convalescence is established after a definite period. If the infection, on the other hand, is slow to generate antitoxin, or to stimulate slowly the resisting powers of the system, the disease may thus be correspondingly protracted. In such conditions, as, for instance, recurrent and obstinate boils, the injection into the system of staphylococcus vaccine will set more readily into motion the resisting powers of the body and, in consequence, hasten recovery. We may say in brief that a given infection of a vigorous host will be more rapidly brought to a close if a large amount of toxin enters the system in a given period of time and that, conversely, if we limit the amount of absorbed toxin, we shall correspondingly prolong the time required for the formation of the antibodies.

Applying these facts now to the conditions encountered in acute tonsillitis, we see that the absorption into the system of the specific toxin generated into the crypts will of itself limit the duration of the disease. Theoretically, therefore, any interference with the production of toxin in these situations will correspondingly prolong the period required for the formation of the requisite amount of antitoxin.

It may be argued that a complete sterilization of the tonsils should terminate the infectious process and that if this could be accomplished we should not need to wait for natural convalescence.

In order to determine whether the sterilization of the mouth for a given micro-organism was possible, I undertook a series of experiments, in 1900, at the Brookline Contagious Hospital, in convalescents from diphtheria. Twenty cases were studied where the diphtheria bacillus had persisted for a longer period than ten days in the throat after disappearance of the exudate. The results of the experiments may be thus briefly summarized.

Strong solutions of different antiseptics were employed as gargles and mouth washes, the patient at the same time being required to carefully cleanse the teeth and gums with the fluid. In addition to the usual antiseptics, as peroxide of hydrogen, carbolic acid and creolin, two antiseptic mouth washes described by Miller in his work of bacteriology of the mouth were employed. These were found by him after many experiments to be the most effective compositions for the sterilization of the mouth and they were employed after the manner described. Where the attempted sterilization was made in the morning, cultures taken a few hours afterwards often failed to disclose the presence of the diphtheria bacillus, but in every case the organisms were recovered in numbers on the following day. In several instances I made a painstaking cleansing of the tonsillar crypts in addition to the regular procedure, by washing out as far as possible each crypt with the antiseptic, but with no effect upon the result. In three cases prolongation of the period of bacterial growth extended over a month, one case still showing organisms of diphtheria after six weeks and another after ten weeks, although the mouth had been sterilized daily with great care. It did not seem to me that the final disappearance of the organisms was attributable to local treatment.

These experiments render it probable that the complete removal of a given micro-organism from the mouth by chemical antiseptics is virtually impossible. When next we consider the conditions present in acute tonsillitis, the pain produced by movement of the throat and the swelling of the tonsils, such a sterilization is still less to be looked for.

It seems therefore reasonable to assume that we cannot completely destroy all the pathogenic bacteria present in the tonsils in acute inflammations of these organs, except, perhaps, in the earliest stage. Here there is reason for believing that if a given pathogenic micro-organism has developed in the mouth and about the orifices of the tonsils, its activity may be checked by suitable antiseptic applications, if the process has not gone too far. If, however, the multiplication of the organisms has extended beyond a certain point so that tissue changes are involved, or the system exhibits evidence of toxic absorption, it is improbable that antiseptic applications could destroy completely the organisms present; furthermore, we have reason to believe, in the light of studies in immunity, that they are productive of actual harm.

In this connection it is interesting to note the experience of A. E. Wright in the vaccine treatment of infections of the skin from the staphylococcus aureus. Localized surface infections, such as boils, carbuncles and septic wounds, improve rapidly under injection of aureus vaccines, but antiseptics appear to nullify the action of the opsonins. In the throat we have certain distinct analogies between acute tonsillitis and pyogenic infections of the skin. The same organisms are present in both cases. There is a local response to the presence of toxin and, under certain conditions, a systemic disturbance from general absorption. We may note, however, this point of distinction that, whereas in surface infections of the skin the amount of toxin which can be generated is relatively small, with a corresponding postponement of immunity in the throat, on the other hand, we have a relatively large surface of infection in direct communication with the lymph spaces, so that here a large amount of toxin may enter the system in a brief space of time. There would, therefore, be no need of adding to the amount of toxic products in the system by vaccine treatment, since the natural absorption of toxin from the tonsils is ample.

For the explanation of the preceding observations, we may offer the following hypotheses, not, to be sure, as conclusive, but, nevertheless, as measurably adequate.

1. In a beginning tonsillitis antiseptic applications may perhaps be used with benefit and their effect, if any, will be to abort the local infection. If the disease is not checked at the outset by the sterilization of the parts, but if it proceeds to the formation of white spots in the crypts with systemic involvement, further application of antiseptics may not only be useless but harmful.

It would appear possible that antiseptics may retard convalescence in two ways; first, by diminishing the number of bacteria in the crypts which are generating toxin and consequently prolonging the period required for the formation of the requisite amount of antibodies, second by their destructive action upon the tissue cells and phagocytic leucocytes of the host.

2. Forcible application of antiseptics may be followed by increased fever and cervical adenitis, indicating heightened absorption of toxin into the system. This phenomenon may be compared to the depression which follows the injection of too large a dose of vaccine in cases undergoing opsonic treatment.

3. In certain cases where acute tonsillitis appears to be aborted by local antiseptics, inflammatory manifestations may follow after a day or two in the neighboring regions and last for a number of days or several weeks. Here the possibility is suggested that the checking of the tonsillitis checked also the establishment of immunity, and that for its final accomplishment a longer period of growth of the organism upon the membranes of the nose, larynx, trachea or bronchi was necessary. In this connection we may recall the protracted duration of nasal diphtheria, as compared with the relatively brief time occupied by the pharyngeal disease.

In closing, I would suggest that here is a fruitful field for further study. If the conclusions to which I have come prove, on fuller investigation, definitely established, we shall have to modify our time-honored treatment of these affections. If I may venture to prophesy, our procedure will be approximately as follows: active early local treatment as at present with guaiacum, silver preparations, etc., the avoidance of antiseptics when once the disease is definitely under way and, above all, complete local and general rest. It may be said with truth that the most vigorous and active measure that we can adopt in acute infections of the throat is a consignment of the patient to his bed, with avoidance of meddlesome interference.

Clinical Department.

EXTRA-UTERINE PREGNANCY TWICE IN THE SAME PATIENT: PATIENT APPARENTLY MORIBUND AFTER THE SECOND OPERATION: TREATED BY DIRECT TRANSFUSION: RECOVERY.

BY L. R. G. CRANDON, M.D., BOSTON,
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A nullipara, thirty years of age, was seen in consultation with Dr. C. N. Cutler, of Chelsea, Aug. 31, 1907. Three weeks before she had had a menstrual flow, excessive in amount and ten days late. Since then there had been considerable left pelvic pain, worse on sitting. Examination showed pale skin, pulse 100, temperature 98°, papules on the nipples, and bimanually a soft cervix, sharp anteflexion and a left pelvic mass big as a plum. In the succeeding five days pain and the mass increased. A median celiotomy was done; the pelvis contained about eight ounces of old liquid blood, and a left tubal mass about 2 in. by 5 in., mostly all blood clot, was removed. Diagnosis: left tubal pregnancy. The appendix was also removed.

Six months later (March 21, 1908), the patient having missed her second period by fifteen days was again taken with acute pelvic pain, this time on the right. Extreme pallor and collapse.

Examination showed the patient pale and gasping, and with pulse 180. Abdomen tender but not spasmodic. Diagnosis: Sub-peritoneal rupture of right extra-uterine pregnancy. The patient was in too great collapse to operate.

In twenty-four hours the pulse came down to 140, but twelve hours later there was another collapse. Pulse 160. Abdominal spasm and slight distention and dullness in the flanks. Temperature 101°, gasping respiration. It seemed best to operate at once.

Operation. — Median celiotomy. A right pelvic mass involving tube and broad ligament was found ruptured. The abdominal cavity contained about two quarts of blood, old and new, on the top of which floated the ovum big as a thumb nail. The mass was tied off, the abdomen emptied of blood clot and left filled with salt solution, and the wound closed hastily by through and through sutures. At the beginning of operation adrenalin 1-50,000 was started under the breasts, and in all one quart was injected.

The patient was put to bed, with no pulse at the wrist, gasping respiration, heart sounds good, but about two hundred in rate, cold extremities and nose — the complete picture of extreme shock. Preparations for direct transfusion had been made before operation and every detail was arranged. Following the technic of Crile, the left radial artery of the patient's brother was connected with what was probably the left median cephalic vein of the recipient. The transfusion continued without interruption twenty-five minutes, at the end of which a clot formed, probably due to the drying of the vein, though an attempt had been made to keep it warm and wet. A new connection was not made because the patient's pulse was now 156, and of distinctly good volume. There was a slight pink tint to the face. Respirations were slow and regular.

The convalescence was uninterrupted.

As in all clinical experiences it is impossible to say what element in the stimulation and after-treatment was the essential one. One can hardly say that the patient would have died without the transfusion. The quick appearance of a pink tint in the skin, however, and the almost immediate change in the circulatory condition, from no pulse at the wrist down to 156, with good volume, made a clinical picture of events taking place in twenty-five minutes which in such cases usually appears, if at all, only after many hours.

Medical Progress.

REPORT ON PEDIATRICS.

BY THOMAS MORGAN ROTCH, M.D., AND JOHN LOVETT MORSE, M.D.

(Concluded from No. 25, p. 943.)

SPLENOMEGALY IN CHILDHOOD.

RIST[13] considers that it is premature and foolish to try at present to make a rational classification of the splenomegalies and that it is necessary to be contented with separating out certain types. They may be divided first into those accompanied by modifications of the blood and those in which the blood is normal, and the enlargement of the spleen constitutes, or seems to constitute, the whole trouble. He thinks it is a mistake to speak of anemia pseudoleukemia, splenic anemia, splenomegaly with anemia and myelemia, etc., because all forms of transition exist between these different hematological types. All these cases really deserve the term of splenomegaly with myeloid anemia because the most striking thing about them is the presence of a great number of nucleated red corpuscles in the circulation, witnessing to an erythrocytic hyperactivity of the marrow. This primordial symptom associated with anemia and splenomegaly is accompanied by a variable leucocytic reaction which is sometimes largely myelocytic, sometimes lymphocytic, sometimes mixed, sometimes even eosinophilic. Luzet and Lehndorff believe that this condition is a leukemia whose special characteristics are due to the early age of the patients. This position is not tenable at present, however, as the existence of a typical myeloid leukemia in infancy, although exceptional, does exist. Moreover, the syndrome of Luzet has been found by Weil and Clerc in all its details in the adult. It is distinct from myeloid leukemia and seems to constitute a distinct morbid entity. He states that various authors believe that all the varieties of anemia are merely modifications of the same disease and that the splenomegaly is an epiphenomenon of secondary importance. He thinks that the supposition that there is but one anemia, and that the presence, absence and degree of splenomegaly merely represent a variable reaction to various banal causes, is too simple an explanation and that it dodges the question rather than answers it. He believes that the study of the anemias and splenomegaly is still in the analytic period and that the period of legitimate synthesis is a long way off.

It is certain that there are symptomatic anemias and that the various causes enumerated may produce them, though indirectly. It is very possible that in the infant the prolongation of an anemic condition due to some cause or other may lead to a notable enlargement of the spleen. There remain, nevertheless, a considerable number of enlarged spleens which cannot without violence to the facts be attached to any definite causal affection. To attribute them indifferently to an intoxication or to an ordinary infection is merely to prevent oneself from seeking further. To say that we are ignorant of their etiology is to tell the truth in presenting the problem and attempting to solve it.

PATHOGENESIS AND THERAPY OF THE SECONDARY ANEMIAS OF INFANTS.

Although it is generally believed that the spleen cannot be the primary seat of disease in anemia splenica infantum and that it cannot be concerned in the regeneration of the blood because it often diminishes in size before the blood picture has improved and because the size of the tumor does not correspond to the severity of the anemia, Wolff, on the ground of a very unusual case of his own, comes to very different conclusions. An eighteen months' old baby, suffering from the severest form of splenic anemia, was admitted to the hospital with complete depression of all the vital functions and after the failure of all attempts at nourishment. The hemoglobin was 40%, the red corpuscles 467,000, the white corpuscles 37,800. Splenectomy was performed. Ten days after the operation the blood showed hemoglobin 51%, red corpuscles 2,500,000 and white corpuscles 36,000. The child had gained 2 pounds during the same period. The number of red corpuscles continued to increase, while that of the leucocytes diminished. A year after the operation the baby was in perfect condition, the red corpuscles numbered 2,665,000 and the white corpuscles 25,800.

The spleen weighed 500 gm. The histological examination showed a marked induration due to thickening of the walls of the lacunæ of the pulp. There was also an infiltration with hemoglobin-free blood cells of very different forms, among which large cells with a divided nucleus similar to the myelocytes predominated. There was no recognizable increase of the lymphocytes and no enlargement of the Malpighian corpuscles. On the other hand, there was a large number of lymphocytes in the blood in the larger blood vessels, especially in the arteries.

Wolff [14] concludes from this case that the spleen, which is probably physiologically one of the seats of the destruction of the red corpuscles, may become so active in destruction that nothing can avail against its work except its removal. If the destruction of the red corpuscles in the spleen is not accepted, the assumption still remains that poisonous substances are formed there which in other places, perhaps in the path of the portal vein in the liver, exert their deleterious action upon the red cells.

He believes that as the improvement in the general condition and the blood in this case immediately followed the extirpation of the spleen that there can be no doubt that this organ stood in a causal connection. He believes, moreover, that these cases have their origin in a primary disease of the spleen and that they present, therefore, of disease, a completely characteristic picture. While he is far from identifying this disease with the so-called Banti's symptom-complex, yet they touch each other at so many points that they are worthy of mention. The enormous tumor of the spleen is characteristic of both affections. The histological picture shows a trabecular hyperplasia in both. Banti found a swelling of the follicles. There was none in this case, but there might have been if the case had been older. Both conditions show a hard, although not very marked, cirrhosis of the liver and ascites. The conception of the spleen as the primary cause of the trouble is proved in both by the striking results of operation.

LEUKEMIA IN CHILDHOOD.

Benjamin and Sluka [15] report a case in an infant of sixteen months in whom an acute myeloid leukemia developed secondary to a splenic anemia. They have found 10 other similar cases in infants between eight and sixteen months old, but have not been able to find a single genuine case of acute myeloid leukemia in literature. They believe that the relation between splenic anemia and leukemia is the same as that between chlorosis and other anemias and pernicious anemia, or between anemia and leukemia; that is, one may change into the other. They claim that infancy has shown only cases of acute leukemia, either lymphatic or myeloid, and that during childhood the acute form is also the more common. The lymphatic form is much more common than the myeloid, the relation being 35 to 10. In childhood the lymphatic form is always acute.

Zilberlast [16] and Méntérier and Aubertin [17] have recently reported cases of acute myeloid leukemia, Whipham,[18] Larrabee [19] and Potpeschnigg,[20] cases of acute lymphatic leukemia, and Meunacher,[21] a case which can possibly be classed as chronic lymphatic leukemia in infancy. A considerable number of cases in children have also been reported.

THE BLOOD CHANGES IN MYXEDEMA IN CHILDHOOD.

Mennacher [22] examined the blood in seven children from one to fourteen years old suffering from myxedema, and drew the following conclusions:

1. The severity of the pathological changes in the blood in myxedema is parallel to the severity of the other symptoms, but it is greater in the congenital than in the acquired form. Age has no influence.
2. The blood picture shows the type of an earlier stage of development, also further anomalies due to the presence of pathological blood cells, which show an affection of the blood-forming organs in the diseased process.
3. The leukopoietic system is more affected than the erythropoietic.
4. The neutrophilic blood picture is always changed moderately to the left.
5. Complications only partially change the blood picture.
6. The influence of treatment with thyroid preparations is more evident in congenital than in developed myxedema.

HEMOPHILIA IN THE NEWLY BORN, WITH REPORT OF A CASE.

Larrabee [23] states that so much attention has recently been given to the infectious cases of hemorrhage in the newborn that the occasional occurrence of the disease as a manifestation of true inherited hemophilia has been to a degree lost sight of. Some, indeed, have denied that hemophilia ever occurs in the first days of life. It is true that the first manifestations generally appear in later infancy or early childhood. This rule is subject to frequent exceptions. Together with his own case he has found 37 cases of true hemophilia in the newborn, representing 24 families. He has accepted a case as hemophilia if there was a distinct history of this disease in the family, or if the baby recovered from the first hemorrhage, but in after life remained a bleeder. An analysis of the table shows that in 22 cases the baby died, but there was a clear family history of hemophilia. In four the family history was negative or unknown, but the child recovered and continued to be a bleeder. The remaining 11 were positive by both criteria. The mortality was 60%, which should be compared with the mortality of 62% in Townsend's infectious cases. The occurrence as to sex followed the usual rule for hemophilia, all but 6 of 33 being males, in contrast to the commoner infectious cases in which the sexes are about equally affected. The most common site of hemorrhage was the umbilicus or the umbilical cord (23 cases). Other sites were the skin (7 cases), nose (6 cases), bowel (4 cases), joints and genito-urinary tract (2 cases each), operation wound, gums and stomach (1 case each). He found but 1 case in which circumcision was responsible for the first hemorrhage.

He reports a fatal case in which there was a history of hemophilia in 6 generations. There was a history of 4 other infants in this family dying of hemorrhage within a few weeks of birth. In this family the transmission was not according to the usual rule. There were 15 known cases, of which 6 were in females. Ten of these cases inherited the disease through a male parent.

He concludes that while most cases of hemorrhagic diseases of the newborn are of bacterial origin, there is at least one class of cases sharply to be distinguished from them, namely, those due to hemophilia. It must be repeated and emphasized, however, that this paper deals with the exceptional cases and that hemophilia is but a rare cause of uncontrollable hemorrhages in the newly born. The importance of this is obvious. Given an infant suffering from this condition, the chances are all in favor of its being due to a cause which is but temporary. No effort should be spared to save the child, since if it survives for a few days, there is every probability of continued health.

TREATMENT OF HEMOPHILIA.

Weil[24] has studied 11 cases of hemophilia, besides a number of purpura and various forms of anemia, getting the blood for investigation from the veins with a needle.

He believes from the study of these cases that there are two distinct forms of hemophilia; one, the family, or hereditary, form, and the other a spontaneous, acquired condition. He calls attention to the fact, however, that it is not always easy to separate pure hemophilia from other hemorrhagic conditions with spontaneous loss of blood, and that it is impossible to separate certain forms of chronic purpura from certain cases of acquired hemophilia.

In the spontaneous, autogenous form of hemophilia the blood flows uninterruptedly without any tendency to clot when the needle is inserted into the vein. The blood is normal in every way, except in coagulation, the clot forming too slowly and in a special non-compact manner. He calls this type of coagulation plasmatic. The coagulation is also retarded. Blood coming from the surface-cut ultimately forms clots *in situ*, but beneath these clots it continues to ooze out and will not stop flowing. *In vitro* the addition of small doses of calcium chloride to the blood hastens coagulation, but large doses delay coagulation. When a little human serum is added to the blood both plasmatic coagulation and retarded coagulation disappear entirely. When the hemophilic serum is added to normal blood no disturbance of coagulation ensues. It is evident, therefore, that in this form of hemophilia the trouble is an absence or alteration of the substances that favor coagulation, probably of the coagulating ferment, since the addition of a little normal serum corrects the defect. The serum of cattle, horses and rabbits has the same effect, but is less active than human serum. Clinically, the intravenous injection of 15 to 20 ccm. of human serum transforms the pathological condition completely and renders it normal both in form and time.

The condition of the blood in the family, hereditary form is very different. In this, the blood does not flow freely from the needle, because the viscosity of the blood is greater than normal. *In vitro*, plasmatic coagulation takes place, but more slowly than in the spontaneous form; the blood is not chemically normal and the clot is abnormal in appearance. The white cells are very low, the fibrinogen is modified both quantitatively and qualitatively. Calcium chloride in small doses accelerates coagulation, but does not alter its mode. Human or animal serum has little more effect than calcium chloride. When the serum of these patients is added to normal blood it interferes with coagulation. Clinically, an intravenous injection of human or animal serum has a favorable effect.

In allied conditions, especially in purpura, plasmatic coagulation and delayed coagulation occur. These disturbances are lessened *in vitro* by the addition of small doses of serum or of calcium chloride. Intravenous injection of serum is followed by amelioration, but not by disappearance of the blood disorder. Favorable results are obtained in purpura, both acute and chronic, also in Weil's disease.

The treatment is the same in all of these groups. Any fresh blood serum can be used. Human serum is preferable. Cattle serum should not be used, as it sometimes causes accidents. Any fresh antitoxic serum may be used, but plain serum is better. The injection may be given either subcutaneously or intravenously. The method may be used as a preventive the day before operation or as a curative during the hemorrhagic stage. Its action begins at the end of twelve to twenty-four hours and lasts from one to three months. The serum has a local action as well as a general. It was thought in the beginning that the effect of these injections was only palliative. It has been found, however, that by continued use that it also modifies the fundamental pathological condition.

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Reports of Societies.

THE ONE HUNDRED AND SEVENTEENTH ANNUAL MEETING OF THE NEW HAMPSHIRE MEDICAL SOCIETY AT CONCORD, MAY 14 AND 15, 1908.

The one hundred and seventeenth annual meeting of the New Hampshire Medical Society was opened at Concord, N. H., on Thursday morning, May 14. After the appointing of committees and the introduction of visiting delegates, the President, John H. Neal, M.D., of Portsmouth, delivered the annual address. His subject was, "Some of the Relations of the Medical Profession to the Public." While giving due credit to advances made in the treatment of disease, Dr. Neal thought that preventive medicine is the branch which has led the profession into a field in which it has become a great factor in the industrial world. Through this the profession has performed a service which could not have been accomplished by any other agency. "I heard," he said, "Secretary Taft say, before the Washington State Medical Association in Seattle last spring, that the medical profession had made it possible for the United States to construct the Panama canal, and that is the most gigantic proposition that has been contemplated in this age of progress."

Another subject considered was hospital abuse, so-called, the responsibility for which Dr. Neal placed squarely upon the physician himself. Contract medicine was another subject referred to, attention being called to the iniquities of the practice, and the statement was made that the only remedy to be applied was the same as that for hospital abuse. The speaker then took up medical expert testimony. Though recognizing that the results from medical expert testimony are far from satisfactory, and that the knowledge of this condition of affairs is a source of regret and shame to every honest physician, for which he has no apologies to offer, yet the responsibility rests only in part with the physician himself. In conclusion Dr. Neal said: "My suggestions and recommendations are: First, let us be fair and honest with ourselves. Second, having arrived at that position and condition, let us insist that others shall be fair and honest with us. Are we equal to the emergency?

Dr. Joel E. Goldthwait, of Boston, then presented a paper upon

OUR PRESENT UNDERSTANDING OF NON-TUBERCULOUS JOINT DISEASES.

He first directed attention to the fact that the largest number of cases which the general practitioner sees in the course of his work are spoken of as rheumatic, but it is most important to remember that rheumatism is not an entity. There are many different conditions producing the results thus designated. Some are diseased conditions; some are simply conditions of mechanical strain. All such cases should be studied with care and thoroughness and then classified. This having been done, the physician is then in a position to consider intelligently the question of treatment. The type of this disease, in which there has been the most marked increase in our knowledge in the last few years, the most common type of all is probably an infectious form of arthritis, which may be dependent upon various organisms. The point of concealed infection from which absorption has taken place should, if possible, be discovered. Another type of disease entirely different, but which furnishes a large number of our cripples and a large number of patients suffering from what is called rheumatism, is due not to an inflammatory condition, but purely to mechanical strain, perhaps to faulty standing or sitting; but whether of the one type or the other, all of these cases require careful study; and if all of us were as faithful and thorough in some seemingly unimportant conditions as we are usually in the major things, the results would be more satisfactory both for patient and physician.

Dr. S. S. Dearborn, of Nashua, discussed Dr. Goldthwait's paper, and expressed hearty appreciation of the points which had been made.

Dr. Henry Ladd Stickney, of Manchester, read

A GYNECOLOGICAL REPORT.

This was discussed by Dr. George C. Wilkins, of Manchester, and Dr. H. N. Kingsford, of Hanover. He later dwelt upon the advisability of removing the appendix at the time of any operation upon the pelvic organs.

Afternoon Session.

Dr. A. Noel Smith, of Dover, opened the session with a paper on

THE LOSS TO PHYSICIANS FROM HOSPITAL WORK.

The reader stated and denounced in no uncertain terms the evils of the hospital abuse, so-called. "Hospitals," he said, "are a blessing to the community; indeed, there is very little doubt that they are a necessity, and that they are becoming more and more indispensable. Of course, the large cities and towns are quite well supplied with them, and the smaller cities and towns are also getting to be well equipped. The race for supremacy seems to be well on between the Carnegie libraries and the cottage hospitals. It is all right for the Brighams, the Morgans, the Rockefellers and the Wentworths to give of their abundance to found and maintain hospitals, but I am firmly convinced that it is all wrong for the average physician to contribute so much of his means, his time and his ability toward the success of these institutions. Men and women give of their abundance a single gift, therewith furnishing a hospital room or ward, and their names are engraved upon tablets to perpetuate the fact. And this is well. The physician or surgeon bestows his gifts of time and labor, which represent money, and does this perennially. However, no note is taken of it, except an occasional vote of thanks, and thanks never yet bought shoes for the babies or purchased horses, carriages and automobiles, which are the doctor's necessities. Our only tablet is the possible gratitude of the patient who recovers, and a threatened suit for malpractice if the patient dies." In the judgment of Dr. Smith, and, he believes, in that of many other physicians, it is high time to consider and to act upon the subject of some form of remuneration for the medical and surgical staffs of hospitals. He urged that something be done to remedy the situation, and that the members of the New Hampshire Medical Society fear not to be pioneers in this matter, as in other things, not waiting for the Rockefeller Institute to take the initiative.

Dr. Louis W. Flanders, of Dover, opened the discussion. He agreed with Dr. Smith that the only person to blame for the unfortunate state of affairs in regard to hospital service is the physician himself, and he thought that if physicians could only be induced to act together unanimously, which, however, seems impossible, the abuse might be stopped.

Dr. John W. Parsons, of Portsmouth, upheld Dr. Smith in his views. Before any step is taken toward reform there should be a settled unanimity among physicians to unflinchingly support the proposition that physicians doing work at hospitals shall charge the same fees as in work outside the hospital, collecting their bills, if they can, as in ordinary business. Dr. Parsons said: "When I do charity work I wish to know it at the time. I do not like to find out afterwards. Compulsory charity is not charity, it is theft, and is obnoxious and irritating. Voluntary charity is felicitous, beatifying and inspiring, and there is no class of men who give so much of their time and skill as the medical profession."

Dr. A. H. Harriman, of Laconia, had found the discussion interesting, but stated that they had lately started a hospital in Laconia, that those who entered had been taken care of and the charges had been just the same as if they had been taken care of at their homes or anywhere else. He did not think that much was lost by charging fees, and he did not see why there should be.

Dr. A. C. Heffenger, of Portsmouth, stated that at the Portsmouth hospital he believed that there was very little of the abuse of free hospital service, and that whether the patients go into the wards or private rooms, if they are able to pay, they pay.

Dr. James T. Greeley, of Nashua, said that the poor have always been treated gratuitously in Nashua, but the physicians have always insisted that it shall be only the poor who receive gratuitous treatment. Emergency cases are received in the hospital without question, but are investigated afterwards. The city and county poor receive gratuitous care. All others pay their physicians independently of the hospital according to their ability.

Dr. A. W. Mitchell, representing a small town without a hospital, about equally distant from Dover, Portsmouth, Nashua and Manchester, discussed the question from quite another point of view.

Dr. Frank Blaisdell, of Goffstown, described his own experience with one of his patients whom he proposed to charge $25.00 for an operation. She visited various towns and physicians' offices where smaller fees were asked and finally found a surgeon who was willing to operate upon her for nothing. She then returned to him, reconciled to the original fee, and saying that it seemed to her that doctors who would do the operation for nothing were not worth having.

Dr. Ernest L. Bell, of Plymouth, read a paper on

MOVABLE KIDNEY,

in which he defined the condition, the symptoms, and discussed the various operations which had been proposed. He described several cases, and closed with a list of authorities on the subject.

Drs. Gile, of Hanover; Frank Blaisdell, of Goffstown; Wilkins, of Manchester; Heffenger, of Portsmouth, and Lathrop, of Dover, discussed the paper.

Dr. Charles L. Scudder, of Boston, read a paper on

THE TREATMENT OF ACUTE INTESTINAL OBSTRUCTION.

Dr. Scudder divided intestinal obstruction into two groups, the non-mechanical and the mechanical. In the non-mechanical group are included those cases of obstruction following contusion of the abdomen; associated with abdominal inflammatory processes; associated with pneumonia; associated with acute nephritis; after clean laparotomy wounds. The mechanical group includes those occasioned by bands; adhesions; kinks; intussusception; volvulus; stones within the gut; tumor within and without the gut. The mechanical conditions are of less importance than the local and general vital conditions. Dr. Scudder discussed the surgical procedures in the treatment of acute intestinal obstructions, and submitted a report with an analysis of 121 cases of acute intestinal obstruction from the Massachusetts General Hospital clinics.

Dr. H. L. Smith, of Nashua, opened the discussion, dwelling particularly on that class of cases in which the question of advisability of operation is doubtful, and upon the great difficulty for the doctor, who sees only now and then a case, to get such a mental picture as to enable him to meet the case as it should be met. However, rarely, if ever, is an operation performed where there is not reason to be thankful that it had been done.

Dr. Kean, of Manchester, continued the discussion.

Dr. August Guertin, of Nashua, read a paper on

SISMO-THERAPY IN GYNECOLOGY,

in which he defined sismo-therapy as really mechanical massage, having the action of an aspirating and compressing pump upon the lymphatics and veins, thereby increasing or diminishing the circulation or congestion of the parts treated according to the firmness and rapidity of the vibrations employed.

Dr. I. G. Anthoine, of Nashua, spoke warmly in favor of this method of treatment.

Dr. Philip H. Greeley, of Farmington, read a paper on

THE DUTY OF THE PHYSICIAN AS A TEACHER,

in which he urged upon the profession the necessity of recognizing and fulfilling their duty as teachers of the people along the lines of the prevention of disease and the preservation of vigorous health.

Dr. F. L. Keay, of Rochester, in discussing the paper, laid stress upon the duty of teaching the children in the public schools the principles of physiology and hygiene, together with the causes and prevention of preventable disease.

Dr. G. A. Tolman, of Dover, thought it better to instruct the children less and look more closely after the sanitary condition of the school houses in which they are instructed.

Friday, May 15.

Mr. C. D. Howard, of Concord, state chemist, opened the session with a paper entitled

TWO YEARS OF PROGRESS UNDER THE FOOD AND DRUGS ACT,

in which he gave a complete résumé of the work accomplished by his department during the last two years in the enforcement of the law relating to pure food and drugs. Mr. Howard, in closing, said that "while progress is necessarily slow and there is a tendency in some quarters to find fault, some going so far as to declare the law a failure, nevertheless it is undeniable that an inconceivable amount of good has been accomplished."

This paper was discussed by Dr. I. A. Watson, of Concord; Mr. W. F. Purington, of Concord, and Dr. Charles Duncan, of Concord.

Dr. C. H. Holcombe, of Brookline, presented a paper entitled,

SOME CONDITIONS OF MIND AND BODY WHICH MAY PERSIST AFTER MUTILATING OPERATIONS ON FEMALE GENERATIVE ORGANS, WITH CASES.

The paper was discussed by Drs. Ella B. Atherton, of Nashua; Shea, of Nashua; Gile and Wilkins.

Dr. Marion L. Bugbee, of Concord, read a paper on

ACUTE INFECTIOUS JAUNDICE.

He gave a complete history of this disease, known also as abortive typhoid, endemic yellow fever, bilious fever, relapsing fever, and described 4 cases.

This paper was discussed by Dr. J. M. Gile, of Hanover, and Dr. A. W. Mitchell.

Dr. J. G. Quimby, of Lakeport, read a paper on

ACUTE RHEUMATISM.

He confined himself to acute articular rheumatism, and discussed its etiology, pathology, symptoms and treatment. In closing he said, "After all is said and done, let us remember that acute articular rheumatism is a self-limited disease, and will generally recover in from one to six weeks." The paper was discussed by a considerable number of the members present.

Dr. D. R. Chase, of Orford, read a paper entitled,

ECZEMA AND ALLIED CONDITIONS.

In speaking of treatment, he said: "There are no specifics for eczema. Such remedies only should be given as are indicated by the general condition of the individual. Over-medication and dosing with blood medicines is a common error in the management of this disease. The chief object of the constitutional and also the local treatment is to remove all sources of irritation to the inflamed skin."

Dr. Gile, of Hanover; Dr. A. K. Day, of Concord; and Dr. Anthoine, of Nashua, discussed the paper.

The meeting, which had been attended by one hundred and thirty-three members of the society, then adjourned.

Proceedings of the House of Delegates.

The House of Delegates had its first meeting the night before the opening of the sessions of the society, with a very creditable attendance. The report of the secretary contained some valuable suggestions, which were referred to a special committee. The committee subsequently recommended an approval of the election of alternate delegates by the component county societies, the publication in one volume of the earlier transactions of the society, and advised the appointment of a committee on the subject of education and enlightenment of the public on sexual matters and venereal diseases. The last recommendation was laid on the table by the House, and the matter of organization of a branch association referred by the secretary of the American Medical Association was deemed unadvisable at present.

The principal topic of discussion was the report of the Committee on Revision of the Constitution, appointed one year ago. Dr. Ira J. Prouty, the chairman, reported a number of amendments, the leading one being the adoption of the component county society idea. After a free interchange of opinions, the amendments as a whole were adopted, to go into effect May 1, 1909, the beginning of our next fiscal year. So that, on that date, the New Hampshire Medical Society, after five years of consideration of this very important question, will place itself in complete harmony with the great central organization.

It was unanimously voted to send the secretary, at the expense of the society, to the meeting of the state secretaries, at Chicago, June 1, and a liberal appropriation was made for clerk hire for his office in view of the increased work necessitated by the new order.

In 1902, the society, through a representative committee, heartily advocated legislation by the state, establishing a state sanitorium for consumptives; but, notwithstanding early and favorable action by the legislature, not even a site for its location has yet been accepted by the governor and council. A strong resolution introduced by Dr. John W. Parsons, of Portsmouth, and unanimously adopted by the House of Delegates and the society in general session, called upon the executive officers for immediate relief for these unfortunates. Drs. Smith, of Hanover; Parsons, of Portsmouth; Crossman, of Lisbon; Morse, of Newmarket, and Flanders, of Dover, were appointed a committee to carry into effect the purposes of the resolution.

The reports of the treasurer and trustees showed the financial condition to be sound and substantial, there being to the credit of the society more than forty-five hundred dollars.

Twenty-nine new members were elected; 6 died during the year, and 3 were dropped for non-payment of dues; a net gain of 20.

The Committee on Medical Defense was continued for another year, and specific instructions given the Committee on Legislation to secure a law providing for the appointment of the court of expert medical witnesses.

The next meeting will be held at Concord, May 13 and 14, 1909.

OFFICERS FOR 1908–9.

Drs. John M. Gile, Hanover, President; Frank Blaisdell, Goffstown, Vice-President; D. E. Sullivan, Concord, Secretary; D. M. Currier, Newport, Treasurer; William T. Smith, Hanover, Delegate to American Medical Association, with F. A. Stillings, Concord, Alternate; A. H. Harriman, Councilor, Belknap County; M. S. Woodman, Councilor, Grafton County.

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ASSOCIATION OF AMERICAN PHYSICIANS.

Twenty-third Annual Meeting held at Washington, D. C., May 12, 1908.

(Concluded from No. 25, p. 946.)

PHYSICAL THERAPEUTICS.

Dr. R. Tait McKenzie, Philadelphia, said that exercise as a therapeutic agent should include all means by which the body may be acted upon by movements, active or passive, performed by the patient himself, with or without the aid of apparatus, by the hand of an operator, or by a machine devised to replace it. Active exercises included games which preserve and cultivate the old co-ordinations of throwing, catching, striking, climbing, running and leaping, necessary for the complete development of the individual, difficult to get naturally under city conditions. These were subdivided into exercises of effort and of endurance. Exercises of effort — muscular action, violent concentration of attention, enormous increase of blood pressure going down rapidly. Contra-indications — arteriosclerosis and advanced age, valvular heart disease, active tuberculosis of the lungs. Exercises of endurance — easy movements, repeated until the onset of fatigue; blood pressure rising slowly and remaining high, pushed to toxic dose; fatigue fever from accumulation of waste products. Contra-indications — anemia or cachexia from any cause. In sound young men exercises combining both, like boat racing, showed no evil effects. After-history of varsity crew men showed increase of two to four years over expectation of selected lives as estimated by life insurance tables. Duplicate movements — direction of movement controlled, resistance prescribed, dose measured. Advantages — accuracy, specialization and isolation of muscle groups; stretching of contracted parts beyond voluntary power of patient. Passive movements — no will power required. Acts on muscular nutrition mechanically — massage, stroking, kneading, pinching, striking and shaking. Mechano-therapy — Zander's machines for massage and vibration. Under posture, the writer called attention to the faults seen in the spine and arch of the foot, treatment consisting in stretching of contracted parts and development of normal muscular control. Under the division of heart and circulation, the writer referred to Oertel's demonstration on himself and the possibility of climbing exercises, accompanied by limitation of fluids and the drying out treatment for heart and obesity cases; also to Schott Brothers' treatment by carbonated baths In obesity, reduction course was best undertaken up to the age of forty. Exercises should be trunk flexions and rotations, thigh abductions, flexions, etc., using the large muscle masses; hill climbing where possible. The writer also considered the proper exercises for constipation, hernia, diseases of the nervous system, as neuralgia, headache, neurasthenia, infantile paralysis, stammering and tabes dorsalis. In conclusion, he said that exercise in its application to pathological conditions must depend for success on accuracy of dose, persistence in following out course of treatment and a careful observation during the progress of such a course.

In the discussion of this symposium on therapeutics, Dr. Hare, of Philadelphia, thought that what most impressed the active practitioner was that there is still a very wide difference between experimental pharmacology and bedside practice; a large amount of our success depends still upon empiricism, and the success of the older man over the younger one depended upon his wider experience in empiricism. We could not afford to throw aside those remedies which had been born out of empiricism. He thought that the extraordinary ability of the body to recover from the onslaughts of disease was hardly more than the ability to recover from the onslaughts of medication against disease. He felt that there was no doubt that psychotherapy was of great value in practice, but the danger was that it might be used to the exclusion of other remedial measures and he thought the paper on the psychic treatment of constipation illustrated this. It was more rational to use psycho-therapy in connection with other remedial measures. It would be wrong to give up some of the methods of treatment that had proven good in the hands of our forbears until we could prove that others were worthy of replacing them.

Wednesday, May 13. Afternoon Session.

THE CLINICAL VALUE OF THE TESTS OF PIRQUET AND CALMETTE BASED UPON PERSONAL OBSERVATIONS.

Drs. Chas. L. Greene and Frank E. Burch, St. Paul: The paper was written from a purely clinical point of view of the general practitioner. The experiments were confined almost entirely to individuals about the age of eight years. In 21 of 83 in which tuberculosis was known to be present, they had gotten one or both reactions; in 15 suspected tuberculosis cases, 8 gave positive reactions to one or both tests. They conclude that the reaction runs parallel to the old injection test, inasmuch as the percentage of reactions closely approximates those found by the old method. The more vigorous reaction seemed to indicate more vigorous resistance. Late reaction was more common in arrested tuberculosis. Advanced cases of low resisting power gave slight reaction or none at all. Positive reactions in general clinical cases were so numerous as oftentimes to be merely suggestive.

A COMPARISON OF THE VON PIRQUET, CALMETTE AND MORO TUBERCULIN TESTS AND THEIR DIAGNOSTIC VALUE.

Drs. S. McC. Hamill, Howard Childs Carpenter and Thomas A. Cope, Philadelphia, presented this paper, which contained a review of the technic pursued n the carrying out of the various tests, a description of the class of cases in which they were used, the results as applied to each class, a statement as to the relative merits of the three tests, a report upon some experimental work on rabbits and a review of some points of interest from the literature of the subject. Practically all the cases were under eight years of age.

THE OPHTHALMO-TUBERCULIN REACTION, —A WARNING.

Drs. M. J. Rosenau and John F. Anderson, Washington, called attention to some experiments made with this reaction — the facts being, in brief, that the normal conjunctiva of the non-tuberculous individual may be sensitized by the instillation of the tuberculin. The reaction was marked by the rapidity with which it came on and the severity that characterized it. The lesson to be drawn was that such a reaction has no clinical significance, the tissue is able to respond so quickly to a poison or organism and shows how nature's immunizing forces may be concentrated at the point most needed.

TRONCHIN. A SKETCH OF HIS LIFE.

Dr. F. C. Shattuck, Boston, read this paper, which does not admit of abstraction, but should be read in full.

FATIGUE IN SCHOOL CHILDREN AS TESTED BY THE ERGOGRAPH.

Dr. R. G. Freeman, New York, read this paper. After a description of different forms of the ergograph which have been used, and a review of previous work with the ergograph to test fatigue, the results of work by the writer in both public and private schools during the past three years is reviewed. He reviewed the work done some years ago by Dr. Christopher in Chicago, showing the fatigue coming on up to the noon hour, return after the noon recess, and increasing to the end of the school day. He thought the school day should be so modified that such fatigue should not result. He thought the Crampton method — taking the blood pressure and pulse rapidity — of no value in these tests. The ergograph was valuable in testing for fatigue, but in the public schools of New York he had not found such fatigue as described by Dr. Christopher in Chicago.

ASCITIC EXUDATE IN TYPHOID FEVER.

Dr. Alexander McPhedran, Toronto. The condition was first observed in 1905. He cited but one case, the most typical of all. Case of a woman, extremely ill, temperature 105°; marked bronchitis; had had asthma for some years. The diagnosis was not cleared up for several days, when it proved to be typhoid fever, typical in every feature. The third week the abdomen became distended; quite soft, however, nonresistant, but fluid could be demonstrated in both flanks. The fluid persisted for three or four weeks and then the abdomen assumed the position of retraction. It represented one of a type of four cases seen since 1905. Nothing to indicate any inflammatory process in the abdominal cavity. In one case there was considerable tension of the abdominal wall with much tenderness. It was a small group of cases presenting an unusual phenomenon.

FURTHER OBSERVATIONS ON PLEURAL REFLEXES.

Drs. Joseph A. Capps and **D. D. Lewis**, Chicago, read this paper, which consisted of a comparative study of the effect on blood pressure of irrigating with various antiseptics the pleural cavity of healthy dogs and dogs with pleurisy, and a series of experiments to determine the effect on blood pressure of various irritants applied to the parietal pleura. They had pointed out a year ago that certain irritants applied to the cavity would cause fall in blood pressure and in the past year had carried on a group of experiments in which irrigation had been used. They took a series of dogs and washed out the pleural cavity with various fluids and antiseptic solutions and noted the effect upon blood pressure. Amount of fluid usually used, about 50 cm. When an irritating fluid was employed it was washed out soon after with water. They conclude that even in the normal pleural cavity such irrigations may cause fall of blood pressure: in the case of pleurisy the reaction is more marked. The average fall of pressure was decidedly more marked in the case of pleurisy than in the normal animal. They believe that it is not altogether safe to use the solutions in the pleural cavity.

Dr. F. C. Shattuck, Boston, thought if Dr. Capps pursues further his interesting experiments, perhaps he will determine the influence on the blood pressure of a solution of chlorinated soda, which has been used for many years by A. T. Cabot, as an irrigant in operated empyema cases and with admirable clinical results.

Dr. S. J. Meltzer, New York, said stimulation of most sensory areas produced rise in blood pressure and was a little surprised at the uniform fall in blood pressure that the writers had gotten. In pleurisy one would expect the surface to be covered with fibrin, so that it might not be stimulated. It would be interesting if this were true of the pleural cavity alone.

Dr. J. A. Capps, in closing, said the method of tabulating and the limitation of time had prevented discussing the other phenomena; the table was intended to boil down the matter. It was not true that the charts showed a uniform fall of blood pressure; there were rises a number of times. It was intended only to show the possible danger of using the solutions.

ACUTE PANCREATITIS.

Dr. Joseph Sailer, Philadelphia, had produced pancreatitis by the injections of oil into the duct of Wirsung and described the completeness and rapidity of the process. There was apparent absence of any specific toxic substance in the pancreas itself. The manner in which pancreatitis is produced was still unknown. Injection of most any substance would produce it; obstruction of the duct seemed to predispose. There were three views held at present: that it might be bacterial; that it is a ferment infection, due to the escape of trypsin; that we are not in a position to make any definite statement. The writer concluded that the serum of dogs suffering with pancreatitis was more toxic than normal blood; it had been injected into guinea pigs and a parenchymatous necrosis of the pancreas was produced, with no evidence of bacterial infection. Dogs dying from the disease showed definite lesions. It was probable that it would be found possible to produce immunity from the toxic effects. It was impossible at present to say whether the toxin was trypsin or some other element of the pancreatic secretion, or an abnormal product from disease of the pancreas, or from disturbance of the metabolic processes.

SOME CLINICAL FEATURES OF PANCREATITIS.

Dr. John H. Musser, Philadelphia: Dr. Musser referred to a number of clinical possibilities. He said pancreatitis with hemorrhage may occur and be the cause of death in the course of typhoid fever. There may be renal calculus at the same time as the pancreatitis. Patients may recover from acute pancreatitis. Of 9 cases there had been shock in 8; usually upper abdominal symptoms; in 7 epigastric tumor present. Diarrhea in 6 of the 9 cases. In no instance symptoms of intestinal obstruction. Subnormal temperature occurred in 6 cases. Dyspnea in 8. Increased pulse rate in all. No opportunity to make positive observations of the stools. Two deaths occurred after operation; three without operation.

Dr. Fitz, Boston, thought the doctor had had an enviable experience in having the opportunity of seeing so many cases in which diagnosis was confirmed by operation or death. Many see cases suspected to be pancreatitis and the difficulties of making the diagnosis had not been much cleared up by recent investigations. He thought Dr. Sailer's work might give us a new aid in making diagnoses. If the results proved as in his experimental cases, it would be valuable.

Dr. W. H. Welch, Baltimore, asked Dr. Sailer if he had tested the toxic action of the serum on dogs. The dog's serum is normally toxic to the guinea pig, but, of course, not in the doses he used. The serum of the dog with acute obstructive pancreatitis becomes increasingly toxic. In pneumonia in the human, the serum is highly toxic to the rabbit, but that is not evidence of specific toxin. The human serum becomes toxic to lower animals. The experiments would be more convincing if they demonstrated that the serum of the dog, the subject of pancreatitis, was toxic to normal dogs.

HYPERNEPHROMA OF THE KIDNEY, WITH METASTASIS TO THE STERNUM, SIMULATING ANEURISM OF THE AORTA.

Dr. Augustus A. Eshner, Philadelphia, said that hypernephroma is a tumor of adrenal structure, involving the adrenal gland itself, or situated in some other organ or tissue. It might be small and benign and remain encapsulated, or large and malignant and give rise to metastasis. The primary growth was often situated in the kidney, while secondary growths have been observed in many structures, and especially in the bones. The symptoms did not differ essentially from those of other forms of neoplasm. In the case reported by Dr. Eshner, a pulsatile elastic tumor of the manubrium sterni, in the course of the aorta, and yielding a systolic murmur on auscultation, was found after death to be a metastatic growth, secondary to a hypernephroma of the kidney. There were growths also in the lung, uterus and liver.

Dr. C. G. Stockton, Buffalo, said the symptoms were not unlike those of other malignant tumors. He had this winter a case of remarkable irregular intermittent fever that had continued for nearly a year. The patient had been in a malarial climate and was suspected of having malaria. Tumor was discovered in the region of the neck; enucleated and proved to be a hypernephroma.

THE IMPORTANCE OF THE CONSIDERATION OF NEGATIVE RESULTS IN BLOOD CULTURES.

Dr. E. Libman, New York, said that in all the blood culture work up to the present time stress had been laid upon the positive findings. As a result of a study of a large number of blood cultures, the writer had found that the absence of bacteria is very often significant in giving diagnostic and therapeutic indications. Negative blood cultures were particularly important in determining the presence of certain intra-abdominal diseases and in the diagnosis of endocarditis. He had studied upwards of 1,500 cases.

Dr. W. H. Welch, Baltimore, commented on the great value of these studies. A large number of routine examinations analyzed in this way would bring out conclusions of the greatest clinical importance. One thing, he said, stands out particularly as confirmatory of the idea entertained now by most bacteriologists — that in the human infections from bacteria in the blood we were not dealing with a condition like septicemia in the lower animals. They may be there accidentally, particularly where the focus of infection is so located that there is easy entrance of the bacteria into the circulation. The result of tying the jugular vein in cases of sinus infection, the prompt disappearance of the bacteria from the blood, was very significant. The bacteria are simply washed into the circulation and are not increasing and multiplying there. It depends on whether the focus of infection is so located that the bacteria are readily carried into the blood stream.

Dr. Libman, in closing, agreed with Dr. Welch, that in most cases the bacteria are swept into the circulating blood stream and multiplication there is not frequent. As regards the mastoid cases they are a most instructive example of this view. They had had a series of cases showing prompt disappearance of the bacteria from the blood after ligation of the jugular vein; they had disappeared entirely in two days after ligating the vein. What we were dealing with generally is an invasion of the blood current and not a multiplication there; not a true septicemia.

OBSTRUCTION OF VENA CAVA SUPERIOR IN GRAVES'S DISEASE.

Drs. C. G. Stockton and A. E. Wochnert, Buffalo: The writers reported a case which was rather unique in the history of Graves's disease — to find a thrombus in the vena cava, and a very extensive one. The thrombus occurred about a month before death, beginning in the right subclavian and extending through the innominate. There was no definite reason to explain the occurrence of the thrombus. Other cases had not been found in the literature after a very careful search.

Dr. Jacobi, New York, asked if the thyroid was large enough to interfere with the venous circulation.

Dr. Stockton replied that it was enlarged, but it did not enter into the obstruction. From the beginning of the thrombus to the end, it could be followed.

THE RELATION OF THE AUDITORY AREA TO APHASIA.

Dr. Adolph Meyer, New York, presented this paper, illustrated by the stereopticon. He said that nature's experiments with man are largely injuries, vascular lesions and the like, that is, very coarse interference, almost inevitably subcortical as well as cortical. Similarly, the convolutional patterns commonly used in descriptions are far from allowing sufficiently reliable specifications. Descriptions are especially loose, and, therefore, interpretations difficult for the temporal lobe in which the essential receiving station is hidden, and, therefore, usually poorly described or pictured. The study of the cases of sensory aphasia in the collection of the Pathological Institute of the New York State Hospital showed: (1) The possibility of easy and efficient reconstruction from serial sections, rendering accurately the relation of the lesions to both the fiber paths and especially also to definite cortical areas, which are as easily demonstrable in the adult as with Flechsig's method in the infant's brain. (2) The probability that the extent of the lesion of the narrower auditory zone (the transverse temporal gyri) and its fibers goes parallel with the extent of auditory word imperception.

PATHOLOGY OF GRAVES'S DISEASE, ETC. STUDIES BASED ON ABOUT 300 CASES OF GRAVES'S DISEASE OPERATED ON DURING THE LAST DECADE IN ST. MARY'S HOSPITAL, ROCHESTER, MINN.

Dr. Louis B. Wilson, Rochester, Minn., read this paper, which was illustrated with lantern slides and stereoscopic photographs of patients, glands and microscopic sections. It included an analysis of the gross anatomy and histology of glands in each case; the percentage of recurrence of various phenomena. The cases were grouped from a pathological standpoint into two series: Series 1. Those showing marked increase of the total number of parenchyma cells within given alveoli. Series 2. Those showing an increased number of alveoli only without extra alveolar increase.

Series 1 was again divided into four groups, according to development of process, and series 2 also divided into four parallel groups in similar manner. The relationship of these series to each other was considered and of each group to the clinical histories of the patients. The clinical groups were approximately parallel to the pathological groups. The various hypotheses of function perversion in Graves's disease, as examined in the light of the author's cases, were discussed and a combination of the several hypotheses proposed, which would seem to explain the data of the present series of cases and of cases reported by other observers.

ERYTHROMELALGIA, RAYNAUD'S DISEASE, AND ALLIED CONDITIONS IN THEIR RELATION TO VASCULAR DISEASES OF THE EXTREMITIES.

Dr. B. Sachs (in association with Dr. L. Buerger), New York, read this paper. From a study of 20 cases it was attempted to show that these disorders cannot be maintained as distinct clinical entities; that they constitute in the majority of instances symptom-groups merging into one another and often representing varying degrees of the morbid process in the blood vessels. Dr. Buerger's studies on the pathology of the blood vessels in these conditions proved that the pathological process is not an obliterating endarteritis, but an obliterating thrombo-angeitis.

The association elected the following officers for the ensuing year: President, Victor C. Vaughan; Vice-President, Henry Hun; Secretary, George M. Kober; Recorder, S. Solis Cohen; Treasurer, J. P. Crozer Griffith. Councilor, S. J. Meltzer. Representative on the Executive Committee of Congress of American Physicians and Surgeons, F. H. Williams; Alternate, W. S. Thayer.

Adjournment.

Book Reviews.

Scientific Nutrition Simplified. By Goodwin Brown, A.M. New York: Frederick A. Stokes Company. 1908.

A book of this sort is certainly useful. It is an expression of personal experience on the part of the author, who, instead of continuing to go "painfully down the wrong side of the hill of life," was enabled, through attention to the recently developed ideas of Fletcher, Chittenden, Fisher and others, to secure an increase of the energy which was apparently departing.

A Text-Book of Surgical Anatomy. By William Francis Campbell, M.D., Brooklyn, N. Y., Professor of Anatomy, Long Island College Hospital; Attending Surgeon to the Methodist-Episcopal, Swedish and Bushwick Hospitals; Consulting Surgeon to the Jamaica Hospital. With 319 original illustrations. Philadelphia and London: W. B. Saunders Company. 1908.

"Anatomic facts are dry only as they are isolated. Translated into their clinical values they are clothed with living interest."

Such is the admirable statement with which Campbell attacks his comprehensive problem, and his book carries out admirably the purpose of this suggestive statement.

The book is a considerable volume of 695 octavo pages. It is divided in the usual conventional fashion into six parts, dealing with the head and neck, the thorax, the upper extremity, the abdomen and pelvis, the spine, and the lower extremity.

The writing is lucid, incisive and at times interesting. The author has an excellent command of his subject and treats it with the freedom and the conviction of the experienced anatomist. He is an admirable clinician also. His statements abound in correct perspective, that perspective which the modern student, with his great press of work and shortened anatomical studies, is wont to lose in these overcrowded days. There is also much excellent surgical teaching in the book, which seems at times to develop into the field of an operative surgeon even. It is a book which should appeal especially to the active surgeon and the general practitioner.

The numerous plates are clear and diagrammatic, but do not rise to the high standard of excellence which has been set by the few leading illustrators of surgical textbooks.

The publishers have done their work well and have given us a book of unusual attraction.

Diseases of the Breast, with Special Reference to Cancer. By William L. Rodman, M.D., LL.D., Professor of Surgery in the Medico-Chirurgical College of Philadelphia; Professor of Surgery in the Woman's Medical College of Pennsylvania; Surgeon to the Medico-Chirurgical Hospital; Fellow of the American Surgical Association, etc. With 69 plates, of which 12 are printed in colors, and 42 other illustrations. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1908.

Since the advent of Marmaduke Shields' admirable treatise on "Diseases of the Breast," published by the Macmillans in 1898, this book of Rodman's is the most comprehensive and satisfactory work on the breast which has appeared in English. The author in his preface refers to the elder Gross, whose admirable work on "Diseases of the Breast" is still remembered by every well-read surgeon. Rodman served under Gross in the Jefferson Hospital, and offers this publication as a supplement, in some sense, to the instruction of his distinguished teacher.

Charles W. Bonney contributes the chapters on Anatomy and Syphilis.

The book contains 385 octavo pages, with an excellent index, and is divided into eighteen chapters.

More than one half of this matter is concerned with breast cancer, as it should be. Such general subjects as anatomy and physiology, inflammations, tuberculosis, syphilis and actinomycosis receive brief and satisfactory treatment, while the considerable class of benign tumors is satisfactorily considered. Rodman adopts the classification of J. C. Warren, which was first published in 1905 and is growing in favor with the profession. These chapters are well-written, admirably concise, but readable. The illustrations are adequate and the descriptions of treatment lucid.

The section on Carcinoma is important, though obviously the writer can supply us with little new information regarding the etiology of the disease. He agrees with Halsted in accepting Handley's views on the dissemination of cancer. His paragraphs on treatment are complete and satisfactory, and he goes with the most radical operators who advise early and extensive dissection with invasion of the neck. We are interested to see his appreciation of J. N. Jackson's admirable method of incision, which is gaining converts among us, as it should.

The book is produced in attractive form, is not too large for convenient use and should be in the library of all American surgeons.

Hernia: Its Etiology, Symptoms and Treatment. By W. McAdam Eccles, M.S. (Lond.), F.R.C.S. (Eng.), Assistant Surgeon to and Demonstrator of Operative Surgery at St. Bartholomew's Hospital; Examiner in Surgery to the Society of Apothecaries; Examiner in Anatomy for the Fellowship of the Royal College of Surgeons of England; Late Hunterian Professor of Surgery, Royal College of Surgeons of England, etc. Third edition. New York: William Wood & Co. 1908.

The third edition of Eccles' book varies little from the first edition, which we reviewed some six years ago. The volume is convenient in size, handsome in letter-press and abounds in reproductions of indifferent photographs, though the photographs convey their meaning efficiently.

The author's teaching is sound and conservative and should serve as a comfortable counterpoise in the minds of students and general practitioners to the somewhat radical givings-forth which we are wont to hear on this side of the water. Especially the author descants upon trusses and shows how those useful old instruments still should be employed in many cases. He makes no mention, however, of the well-known water-pad truss, which is the comfortable and favorite device of this community.

There is nothing especially new to be said about hernia, but this writer tells the old story and describes the conditions of diagnosis and treatment in an extremely satisfactory manner. This is a useful book for students and for general practitioners.

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HUNTINGTON'S CHOREA.

IT is a common failing to accept the results of investigation or study and to neglect or forget the person responsible therefor. We are inclined to think that comparatively few of our readers are aware of the fact that the man who first described and definitely established the disease, hereditary chorea, as an entity, is still living and active. We refer to Dr. George Huntington, who for many years has carried on a practice in a small town in New York state, and who is at the present time health officer of the township of East Fishkill, visiting physician to the Matteawan General Hospital and a member of many medical societies. He was graduated in 1871 from the College of Physicians and Surgeons of New York, now a department of Columbia University, and became his father's assistant in practice at Easthampton. During this period his attention was called to an extraordinary nervous disorder which had been recognized by his grandfather, Dr. Abel Huntington, had been further studied by his father, but was finally brought to the attention of the medical world by an article published by him in 1872. The disease, as is generally known, is characterized by choreiform movements occurring in adult life and attended by mental enfeeblement, ultimately resulting fatally, and of peculiarly distinct hereditary character.

A recent number of a periodical edited by Dr. William Browning, of Brooklyn, N. Y., entitled *Neurographs*, is devoted to Dr. Huntington and the disease with which his name is associated. In addition to an excellent editorial review of the affection, a biographical sketch of Dr. Huntington is given, together with articles by Professor Strümpell, Drs. Lannois and Paviot, of Lyons, both in the native tongues of the authors, an historical note on "Hereditary Chorea" by Dr. Osler, and other interesting papers by Jelliffe, Tilney, Diefendorf and several others. The pamphlet contains also a carefully prepared bibliography.

Considering the confusion existing regarding various affections characterized by abnormal and involuntary movement, it was an accomplishment of no small significance to select out and characterize a group of signs and symptoms which have completely stood the test of time and to which little has been added in the way of description since Huntington's original paper on the subject. Whatever the advantages or disadvantages may be of appending a man's name to a disease which he has brought into notice, it will not be doubted that Huntington is well deserving of such distinction, if distinction it may be called. The term "Sydenham's chorea" has taken a place in the literature which is not likely to be altered, and this affection, occurring in children as a rule, stands in marked contrast to the adult chorea described by Huntington and usually bearing his name. We cordially recommend this admirable review of an important, distressing and very fatal disease to the attention of our readers, and especially of those who are about entering upon the practice of medicine, for whom it is sometimes hard to realize that many established diseases have been described within the lifetime of the present generation.

MEDICINE IN THE FAR NORTH.

IN this issue of the JOURNAL we publish a letter from Dr. John M. Little, Jr., which throws much light on the life in general, and particularly upon the conditions of medical practice in certain of the northern parts of this country. We have for some time been more or less familiar with these conditions through the communications in the daily press and in periodicals from the pen of Dr. Wilfred Grenfell, and from articles written about his work in the general exploitation of Labrador on its medical and social sides. Dr. Little's letter will no doubt be read with much interest, as indicating, in the first place, the prevalence of diseases which we are perhaps inclined to regard as peculiar to more temperate regions, and, in the second place, as showing the very great need for skilled medical attendance if this hardy population is not ultimately to be exterminated. It is furthermore worthy of note from the viewpoint of the physician himself that the experience in self-reliance and resourcefulness which such a practice demands should be an asset of much value in later life. It is at least possible, if not probable, that many young men in whom the spirit of adventure is not wholly dead may be inclined to undertake the work which Dr. Little describes for a year or more following their hospital studies. Such a graduate school as this has many advantages with difficulty obtainable elsewhere, and we have no doubt, as the work and its necessity for the welfare of the inhabitants become better known, that many men of capacity will be found who will enter upon it, for a time at least, with avidity and enthusiasm. Dr. Grenfell has much reason for satisfaction, not only in the success of his personal efforts among these people, but also for the interest which he has excited in others toward prosecuting and extending the work which he has on many occasions so vividly described.

THE HARVARD DENTAL SCHOOL.

The desire of the Harvard Dental School for more adequate recognition by the medical department of the University has apparently resulted in renewed and successful efforts toward raising the money necessary for the construction of a suitable building. As is generally known, the school already has acquired land adjoining the new buildings of the Harvard Medical School, and a much-needed building is likely soon to be erected thereon. At a dinner of the alumni of the Dental School, held in Boston, June 22, the response to requests for added funds proved most gratifying. Approximately $145,000 is now available for building and equipment, but at least $30,000 more is necessary. Pledges of money ranging all the way from $10,000 to $250 were made, showing a liberality and determination on the part of the subscribers to carry out completely the plan which has been long maturing and which now appears about to be fulfilled. It is not to be questioned that the generous attitude of the medical faculty toward the Dental School has indirectly been of great assistance in the plan to develop a school of dentistry on broader and more comprehensive lines.

MEDICAL NOTES.

Rabies. — A death from hydrophobia has recently occurred at Pittsburg, Pa. There are said to be thirty persons at the Mercy Hospital, in that city, undergoing the Pasteur treatment. The prevalence of rabies in New York has led the Board of Health to pass a resolution that stray dogs found in the streets unmuzzled after June 24 will be killed.

Appointment of Dr. Adolph Meyer. — It is announced that Dr. Adolph Meyer, of New York, has been appointed by the Johns Hopkins Hospital and University to the directorship of the new Henry Phipps psychiatric clinic and to the professorship of psychiatry. Dr. Meyer has long been indentified with the most progressive work in psychiatry in this country.

American Pediatric Society. — At the annual meeting of the American Pediatric Society, held at the Delaware Water Gap, May 25 and 26, the following officers were elected: President, Chas. P. Putnam, Boston; Vice-President, Isaac A. Abt, Chicago; Second Vice-President, T. S. Southworth, New York; Secretary, Samuel S. Adams, Washington, D. C.; Recorder, L. E. La Fetra, New York; Treasurer, J. Park West, Bellaire, Ohio; Member of Council, Alfred Hand, Jr., Philadelphia; Delegate to the Congress, A. Jacobi, New York; Alternate, J. P. Crozer Griffith, Philadelphia. The next place of meeting will be at Lenox, Mass.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston. — For the week ending at noon, June 23, 1908, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 40, typhoid fever 8, measles 216, smallpox 0, tuberculosis 49, cerebrospinal meningitis 2.

The death-rate of the reported deaths for the week ending June 23, 1908, was 14.92.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, June 20, 1908, was 203, against 204 the corresponding week of last year, showing a decrease of 1 death and making the death-rate for the week 17.31. Of this number 106 were males and 97 were females; 195 were white and 8 colored; 134 were born in the United States, 62 in foreign countries and 7 unknown; 51 were of American parentage, 120 of foreign parentage and 32 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 41 cases and 3 deaths; scarlatina, 30 cases and 6 deaths; typhoid fever, 12 cases and 2 deaths; measles, 217 cases and 8 deaths; tuberculosis, 43 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 18, whooping cough 0, heart disease 34, bronchitis

2 and marasmus 5. There were 8 deaths from violent causes. The number of children who died under one year was 42; the number under five years 59. The number of persons who died over sixty years of age was 47. The deaths in public institutions were 78.

One case of cerebrospinal meningitis was reported.

Officers of the Massachusetts Medico-Legal Society. — At the annual meeting of the Massachusetts Medico-Legal Society, held June 9, the following officers were elected: Dr. Frederick E. Jones, of Quincy, President; Dr. A. Elliot Paine, of Brockton, Treasurer; Dr. Oliver H. Howe, of Cohasset, Recording Secretary.

The Hospital Music Fund. — The hospital music fund, to provide for music at various institutions and hospitals throughout the city and in the neighborhood, has been sufficient for a considerable number of concerts. The managers of this charity desire to make the work permanent through adequate endowment, which is not as yet forthcoming.

NEW YORK.

An Alcoholic Giant. — A veritable giant was recently admitted to the alcoholic ward of Bellevue Hospital, a man, thirty-three years of age, who measured 7 feet 2 inches in height. In order to accommodate him comfortably it was found necessary to use three cots, two of which were placed crosswise.

Verdict against a Christian Scientist. — After an extended trial in the New York Supreme Court, Solomon Raisler, on June 19, obtained a verdict of $6,000 in a suit to recover $25,000 from Julius Benjamin, a Christian Science healer, for the loss of his right foot, which, it was alleged, had to be amputated in consequence of improper treatment by Benjamin.

Mercantile Inspection Bureau. — Governor Hughes has signed the bill which provides for a mercantile inspection bureau in the State Labor Department and transfers from the local health departments to the latter department the power of enforcing the child-labor law in department stores of cities of the first class. There appears to be no good reason for making this change and the bill met with vigorous opposition when it was before the legislature.

Opening of Strauss Milk Depots. — The Nathan Strauss milk depots in the tenement districts and public parks were opened for their sixteenth season on June 16. The work of the laboratory supplying the modified and pasteurized milk, and the medical supervision of the various stations, will, as heretofore, be in charge of Dr. Arthur Randolph Green, who was graduated from the Cornell University Medical College in 1903. It is stated that since the closing of the summer milk depots, on Sept. 15 last, one third more milk than in any year previously has been dispensed in the Strauss stations, which remain open throughout the year.

Anticipation of Fourth of July Injuries. — In anticipation of Fourth of July injuries, the State Health Department has issued a notice to all health officers urging them to have a sufficient supply of immunizing doses of tetanus antitoxin on hand. It is recommended that those having antitoxin dated prior to 1907 should apply to the State Hygienic Laboratory for the fresh preparation. The notice concludes with the statement that " the injection of an immunizing dose of tetanus antitoxin at the time an injury is first dressed is a practically sure preventive of tetanus intoxication; not to use this preventive agent is almost criminal."

Decision Regarding Damages. — The Supreme Court of New Jersey has rendered a decision to the effect that a husband has no right to damages for injuries received by his wife prior to her marriage. Two years ago a young woman who was engaged to marry Wilton G. Mead was injured by the giving way of the railing of a platform at a picnic ground near Paterson. Shortly afterwards she married Mead and both sued the manager of the place, as she continued to suffer from her injuries. When the case came to trial the jury awarded the wife $1,500, and the husband $500 for the loss of her services, but, an appeal having been taken, the Supreme Court upheld the verdict in favor of the wife, and reversed that in favor of the husband, ruling that he could not sue rightfully, and that when he married he took his wife as she was, without any claim for injuries she received previous to the marriage.

New Anti rabic Serum. — Dr. George Gibier Rambaud, chief of the New York Pasteur Institute, a nephew of Dr. Paul Gibier, the founder of the institute, who returned from Europe on June 19, has brought with him a supply of a new serum against rabies which has been devised by Dr. August Marie, chief of the laboratory of the Pasteur Institute in Paris, and is said to have been employed with marked success at that institution. Dr. Rambaud states that it is prepared by mixing fresh rabies virus in certain pro portions with a serum obtained by inoculating sheep with rabies. The great advantage claimed for this new serum over the original Pasteur antidote, which requires five weeks for the establishment of full immunity, is its much greater rapidity of action. This is of special value in cases of severe bites in the face and its vicinity, where rabies may develop in three weeks or less. Dr. Marie, he says, who has for several years been experimenting with modified methods of inoculation, has found that two injections of the serum described are sufficient to render a dog immune against rabies for a year or more.

Ruling in Relation to the Tenement-House Law. — An important ruling in regard to the tenement-house law was recently made by Justice Gerard in the New York Supreme Court. Thomas Krekeler applied to the court for a preemptory writ of mandamus to compel tenement-house commissioner Butler to approve of certain alterations in a four-story flat building, under the contention that the tenement law, passed in 1903, did not take cognizance of alterations in existing houses, but only of the construction of those built subsequent to the passage of that act. The alterations for which authority was asked involved the reduction of the air-space in two bedrooms in each of the sixteen flats in the building to 64 square feet, while the minimum allowed by the tenement law is 70 square feet. The application for the mandamus was promptly denied by Justice Gerard, who ruled that buildings erected before the passage of the tenement-house act were not exempt from its provisions. In concluding his opinion he said: "It was urged in the argument that the construction contended for by the tenement-house commissioner would affect injuriously millions of dollars' worth of property. In construing this act no attention can be paid to such contingencies, but it might be noted that the other construction would affect the well-being of thousands of tenement dwellers."

Rescue by a Cripple. — One of the most remarkable and heroic feats ever performed by a cripple is reported from Morristown, N. J. On June 19, Joseph Gilligan, eighteen years of age, with only stumps for legs and a stump for his right arm, and with three fingers gone from his left hand, swam to the aid of two boys of twelve whose boat was upset in a pond ten feet deep, and succeeded in rescuing both. When the boat was overturned by the frolicking of the boys, one of them clasped the other about the neck and both sank together. When Gilligan reached the spot they had just come to the surface for the second time. Pushing them apart, he propelled one of them in safety to the shore and managed to get back in time to save the other in the same way. The rescuer was run over by a trolley car in Brooklyn ten years ago, and in consequence of the accident one leg had to be amputated above the knee, the other below the knee, and his right arm at the elbow. As mentioned, he also lost three fingers from his left hand. At the time of the boat accident Gilligan was sitting on the shore exhibiting to some other boys a set of artificial limbs recently purchased for him, which he had just removed, and he did not stop to replace them. Such an act of heroism as his certainly deserves recognition, and it will no doubt receive the attention of the humane societies.

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Current Literature.

New York Medical Journal.
May 23, 1908.

1. Pennington, J. R. *The Sigmoidal Factor in Pelvic Diseases.*
2. Abbott, E. G., and Pingree, H. A. *The Restoration of the Normal Balance of the Foot. II.*
3. Nepper, H. *Mucamembranous Enterocolitis. Its Causes and Mechanism.*
4. Freudenthal, W. *A Plea for Systematic Use of Bronchoscopy in Our Routine Work, with Description of a Modified Bronchoscope.*
5. Korshet, M. *Malnutrition.*
6. *Sluder, G. *The Rôle of the Sphenopalatine (or Meckel's) Ganglion in Nasal Headaches.*
7. Bryant, W. S. *Middle Ear Deafness.*
8. Griffith, F. *A New Method of Anatomy Study.*

6. Sluder calls attention to a type of headache which is irregular in the time of appearance and irregular in the part of head involved. Sometimes the pain may be referred to the eyes, nose, teeth or jaw. Often these irregular pains have followed some high-grade inflammatory troubles in the posterior ethmoidal and sphenoidal sinuses. The writer offers the ingenious explanation that the sphenopalatine ganglion has been involved in the inflammatory process. In some cases the use of cocain just over the ganglion relieves the symptoms immediately. The application of silver or formaldehyd in weak solutions either cured or helped the pain. None of the cases were of sufficient severity to warrant operative interference.
[R. I. L.]

The Journal of the American Medical Association.
May 23, 1908.

1. Dudley, F. W. *The Prevalence of Cancer in the Philippine Islands.*
2. *Jordan, E. O., and Harris, N. M. *The Cause of Milksickness or Trembles.*
3. Porter, M. F. *Surgery of the Prostate. A Plea for Early Prostatectomy in Hypertrophy of the Prostate.*
4. Abbott, E. G. *Hypertrophy of the Synovial Fringes of the Knee-Joint.*
5. Berry, W. T. *Hip-Joint Tuberculosis: Its Earlier Symptoms and Treatment.*
6. Herbst, R. H. *Serum Treatment of Gonorrhea, with Report of Cases.*
7. Le Breton, P. *Spinal Sprain: Its Complications and Consequences, with Report of Cases.*
8. Stitt, E. R. *Are There Valid Objections to the Quinine Prophylaxis of Malaria?*

9. CROTHERS, T. D. *Psychic Treatment of Spirit and Drug Neuroses.*
10. PACKARD, F. R. *Pathologic Results of Operations on the Turbinates.*

2. Jordan and Harris have studied an epidemic of milk-sickness, or trembles. They succeeded fairly constantly in isolating in pure culture a spore-bearing bacillus from the blood and organs of animals dead with this disease. This same organism was seen in smears from the various organs. They have reproduced in animals by inoculation of cultures of this bacillus the clinical symptoms and the anatomical changes of the original disease. They recovered from the inoculated animals the original bacillus. The authors name this organism the *Bacillus lactimorbi.* [R. I. L.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.
MAY, 1908.

1. *BREWER, G. E. *An Analysis of One Hundred and Forty Operations on the Kidneys and Ureters.*
2. *HOLT, L. E. *The Epidemiology of Acute Poliomyelitis.*
3. BOVÉE, J. W. *Suppurative Phlegmonous Gastritis, with the Report of a Successful Laparotomy (probably the first) in the Treatment of a Case.*
4. *ROBINSON, G. C. *Gallop Rhythm of the Heart.*
5. *WEBSTER, R. W. *Toxemia from the Standpoint of a Perverted Metabolism.*
6. FREIBERG, A. H. *The Relaxed Knee-joint.*
7. WHITE, E. H. *Primary Colloid Carcinoma of the Vermiform Appendix.*
8. FRY, H. D. *The Management of Labor in Minor Degrees of Pelvic Contraction, with Special Reference to the Relative Indications for Abdominal Cesarean Section.*
9. McCONNELL, G. *The Clinical and Pathological Aspects of Rodent Ulcer.*
10. *JOPSON, J. H. *Erysipeloid of Rosenbach. A Note on Its Occurrence in Laboratory Workers.*
11. ALLEN, A. R. *The Symptom Complex of Transverse Lesion of the Spinal Cord and Its Relation to Structural Changes Therein.*

1. Brewer's article is an analysis of 140 operations upon kidneys and ureters, including 48 nephrectomies, 48 nephrotomies and exploratory operations, 13 decapsulations, 9 emergency operations on traumatic lesions, 15 nephrorrhaphies and 9 operations on the lower ureters. In the whole series 14 deaths occurred, of which 8 occurred in the 48 nephrotomy cases. The calculus cases are discussed with special reference to diagnosis, since in these the difficulty of diagnosis and the percentage of error was great. Of 57 cases where stone was believed to be present, the diagnosis proved correct in but 32; in 19 of the remaining cases some other definite cause of symptoms was found, while in 6 no lesion was demonstrated. Of special interest are the cases of acute unilateral hematogenous infections. These cases result from the coexistence in the body of an acute septic focus, as in pneumonia, tonsillitis, the exanthemata, typhoid, etc., with diminished resistance on the part of one kidney from trauma, calculus, obstructed ureter or previous septic lesion. Clinically the disorder begins with high tempeature, with or without chill, with marked toxemia and with a more or less vague pain in the abdomen or flank. In all cases there is marked costovertebral tenderness. The urinary secretion from the affected kidney is greatly diminished. The condition is easily mistaken for appendicitis or cholecystitis. For purposes of treatment cases are to be divided into three groups: (1) the severest type, in which nephrectomy is necessary to save life; (2) a milder type, in which relief is afforded by decapsulation or incision and drainage of cortical foci; and (3) the mildest type, in which no surgical treatment is necessary.

2. Holt and Bartlett have made a searching analysis of thirty-five epidemics of acute poliomyelitis, with special reference to the distribution of cases. They have reached the conclusion that beyond question acute poliomyelitis is an infectious disease. They further believe that the disease is communicable, although only to a slight degree.

4. Robinson, in his discussion of gallop rhythm of the heart, accepts Potain's definition of the condition as a triple sound of the heart formed by the addition to the two normal sounds of an abnormal third sound. This abnormal sound occurs practically always in diastole. Two classes of cases can be distinguished; in the first of these the extra sound is presystolic; in the second it is protodiastolic. The theories as to the production of these third sounds are discussed at length. Cardiograms of cases are shown illustrating both of these types, and also in one case a third form of gallop rhythm is described in which the abnormal sound was mesodiastolic.

5. Webster's article is a brief enumeration of the disorders which are with good reason believed to be due to toxemia. Intestinal toxemia is first mentioned, an excessive absorption of normal products or a normal absorption of abnormal products derived from food ingested. Hepatic toxemia is next discussed. It is suggested that imperfect performance of function on the part of the liver, the failure of glycogen formation and conversion, deficient urea formation and imperfect neutralization of toxins may produce symptoms analogous to the familiar symptoms which result from imperfect discharge of bile in jaundice. Renal toxemia is next described, and finally thyroid toxemia. It is attempted to show that toxemias, aside from those following bacterial processes, are chiefly the effects of a general metabolic perversion.

10. Jopson reports three cases of erysipeloid or erythema migrans occurring in laboratory workers and originating in wounds received in the performance of autopsies. The disease is an erythematous infection somewhat resembling erysipelas, but without notable constitutional symptoms. It occurs mainly among butchers and fish dealers, and results with special frequency from the bites of crabs. Rosenbach described a staphylococcus as the cause of the disease, but Jopson does not regard this as established. [F. W. P.]

ANNALS OF SURGERY.
JUNE, 1908.

1. MEARS, J. E. *Reminiscences of the Early Days of the American Surgical Association.*
2. *MUMFORD, J. G., AND HARTWELL, J. B. *Psychical End-Results following Major Surgical Operations.*
3. *CRILE, G. *Surgical Aspects of Graves' Diseose, with Reference to the Psychic Factor.*
4. MURPHY, J. B. *Treatment of Perforative Peritonitis.*
5. *MOYNIHAN, B. G. A. *Late Results after Operations for Benign Diseases of the Stomach and Duodenum.*
6. *MAYO, W. J. *A Study of Gastric and Duodenal Ulcers.*
7. DEAVER, J. B. *End-Results following Operation for Benign Diseases of the Stomach and Duodenum.*
8. *RODMAN, W. L. *How Frequently do Gastric Ulcers become Carcinomota?*
9. *ROBERTS, J. B. *Gastric and Duodenal Ulcers Secondary to Wounds of the Urinary Bladder.*
10. BUNTS, F. E. *Infantile Hypertrophic Stenosis of Pylorus.*
11. SHEPHERD, F. J. *Melanotic Sarcoma of the Common Bile Duct and the Ampulla of Vater.*
12. *MONKS, G. H. *Experiments in Flushing the Intestinal Canal with Salt Solution through Multiple Enterotomy Openings.*
13. HARTE, R. H. *Primary Carcinoma and Sarcoma of the Appendix Vermiformis.*
14. LE CONTE, R. G. *Carcinoma of the Appendix, with Metastasis to the Ileocolic Glands.*
15. *SUMMERS, J. E., JR. *Splenectomy in Banti's Disease.*
16. BRISTOW, A. T. *Stone in the Bladder Associated with Intermittent Pneumaturia for Three Years, and the Subsequent Formation of Fecal Fistula.*
17. McCOSH, A. J. *Results of Operation on the Kidney for Calculus and Tuberculosis.*
18. VAUGHAN, G. T. *Stone, Tuberculosis of the Kidney and Perinephritic Abscess.*
19. *BARROW, D. *Nephrolithiasis.*
20. *McMURTRY, L. S. *Primary Carcinoma of the Female Urethra.*
21. *MACLAREN, A. *Pelvic Abscess, with Special Reference to Rectal Drainage.*
22. *ALLIS, I. H. *Treatment of Fractures of the Femur.*

23. Mears, J. E. *Modern Medicine and Surgery in the Orient.*

2. From a large series of cases of elective major surgery, exclusive of emergencies, trauma, malignant disease and plastic operations, Mumford finds that about a third of those with a perfect anatomic result have persistent psychic symptoms which interfere with functional efficiency and prevent complete cure. The percentage of such cases is higher among women than among men. In both sexes this class is almost wholly composed of those who have had operations on the genital organs. Whatever the nature of this relationship, Mumford believes their disability due in large part to apprehension, a condition which he thinks might often be relieved or avoided by the moral influence and encouragement of the surgeon.

3. Whatever the etiology of Graves' disease, psychic excitation produces great and sometimes fatal exacerbation of its symptoms. Crile emphasizes the importance of this psychic factor in the surgical risk of thyroidectomy, and describes the method by which he anesthetizes and operates on such patients without their knowledge. With this technic, which avoids all excitement before operation, he has reduced his operative mortality in exophthalmic goiter from 14% to 0%.

5. From a summary of end-results in a series of 281 cases operated on for benign disease of the stomach or duodenum, Moynihan concludes that in prepyloric, pyloric or duodenal ulcer, whether perforating or not, the ulcer should be excised, if practicable, otherwise infolded and a posterior vertical no-loop gastro-enterostomy done. For ulcer on the lesser curvature of the stomach he believes excision sufficient without gastro-enterostomy. Seven of his cases died of carcinoma of the stomach at the site of an old unexcised ulcer demonstrated at operation from one to four years previously.

6. Mayo's series of 768 benign gastric and duodenal cases leads him to the conclusion that such cases should not be submitted to surgical procedure, except for hemorrhage or perforation, until a reasonable amount of medical treatment has failed, and unless a demonstrable ulcer is found on exploration. He reports 97 cases in which at operation cancer on an ulcer base was demonstrated. He believes that duodenal ulcer seldom undergoes malignant metamorphosis.

8. In coincidence with Moynihan's and Mayo's findings, Rodman reports nine recent cases of gastric carcinoma following ulcer. He cites from numerous sources figures suggesting the frequency of such degeneration, and states his belief that 50% of all gastric carcinomata are due to previous ulcer.

9. Roberts reports from his own practice two cases, and collects from the literature fourteen others, of severe gastro-intestinal hemorrhage following operative or traumatic lesion of the urinary organs. He believes that gastric and duodenal ulcers occasionally occur secondary to wounds of the urinary bladder, just as after extensive burns, and in both instances regards the ulcer as the local expression of a general toxemia.

12. Monks presents a series of studies on cats and on human cadavers proving the practicability of flushing the intestinal canal systematically from above downwards through multiple enterotomy openings. He describes the technic of the procedure and reports a case of general streptococcus peritonitis in which it was employed and followed by recovery. This method of treatment promises to be of definite value in cases of acute, severe intestinal poisoning, because, unlike enterostomy, it removes toxic and mechanically noxious material and replaces it by warm salt solution, which acts as a circulatory stimulant and minimizes shock.

15. Summers reports a case of splenectomy for Banti's disease, followed by thrombosis of the splenic vein and partial occlusion of the inferior mesenteric, with consequent edema of the large intestine and localized moist gangrene of the sigmoid. The patient recovered with a fecal fistula.

19. Barrows reports the successful removal of a renal calculus weighing over a pound, apparently the third largest on record.

20. Primary carcinoma of the female urethra is very rare. McMurtry adds 11 cases from the literature to the 16 previously collected by Percy, and reports 2 more from his own experience, making 29 in all. The first symptom is painful micturition. Successful treatment demands early differential diagnosis from caruncle and syphilis, followed by complete excision of the urethra down to the sphincter.

21. On the analogy of the drainage of abscesses of the female pelvis by vaginal puncture MacLaren recommends the drainage of male pelvic abscess by rectal section, describing his operative method and recording five cases of its application. He regards this procedure as a safe and useful adjunct to laparatomy in the treatment of suppurative appendicitis, and as the operation of choice in serious cases where laparotomy is contra-indicated.

22. Allis treats fracture of the femur by applying a plaster bandage from toes to knee of the injured and from toes to groin of the sound limb. In these bandages he incorporates iron plates carrying a screw-thread bolt and a nut, by which extension of the fractured leg is made on the uninjured as a splint. [R. M. G.]

The Lancet.

May 9, 1908.

1. *French, H. *Goulstonian Lectures on the Influence of Pregnancy upon Certain Medical Diseases and of Certain Medical Diseases upon Pregnancy.*
2. *Hay, J. *The School and its Part in the Prevention of Tuberculosis.*
3. *Bolton, C. *Experimental Production of Gastric Ulceration by Injection of Gastrotoxin.*
4. Hunter, T. *Leprosy; Some Notes on its Causation, Symptoms and Treatment, based on an Experience of 152 Lepers in the Leper Jail of the United Provinces, India.*
5. Smith, H. A. *Aortic Aneurysms; Sudden Deaths; the Capacity of the Pericardium.*
6. Welsh, D. A., and Chapman, H. G. *Precipitin Reaction in Hydatid Disease.*
7. West, C. E., and Scott, S. *The Operative Surgery of Labyrinthitis.*
8. Dardel, J. *The Nursing Difficulty in France.*

1. French, in the second of the Goulstonian Lectures, considers the relation of pregnancy to certain renal affections and the relation of these conditions to the course of pregnancy. He divides the non-suppurative affections of the kidney into three classes: (1) cases in which there has been nephritis previous to the pregnancy; (2) cases in which, during pregnancy, a form of nephritis appears characterized by edema and a urine simulating that of acute Bright's disease; (3) cases without signs of nephritis before pregnancy that developed the well-known symptoms of puerperal eclampsia. He believes it very unwise for a woman with existing nephritis to get married, as pregnancy has such a deleterious effect upon the kidneys. There are, however, numerous exceptions to this rule. The cause of the nephritis occurring during pregnancy is as yet unknown, there being various theories as to the formation of toxins during this condition. The cases of nephritis characterized by edema are not so serious as those which first show themselves in the form of eclampsia, the mortality being about 5% in the first form and 29% in the second. He speaks briefly of the relation of this condition to the number of previous pregnancies, of the occurrence of albuminuric retinitis, the effect of twins and the effect of nephritis upon the child. He takes up the subject of pregnancy in patients who have only one kidney, the relation of tetany to pregnancy and the pathology of this condition, and appendicitis in association with pregnancy.

2. Hay, in an article on the school and its part in the prevention of tuberculosis, comes to the following conclusions: School-going children as a class are healthy, only ½% showing definite signs of pulmonary tuberculosis. About 10% to 15% are predisposed to consumption, and special care should be given to these children. Periodical medical examination of the scholars, teachers and caretakers is essential. School hygiene cannot be divorced from home hygiene. Tuberculosis of infants and children is almost always due to infection with human bacilli, and that infection generally occurs at home. Segregation of incurable, dangerous consumptives will greatly diminish the incidence of infection among infants and young children. Children must be utilized to educate their parents; the scholars should be centers for the

dissemination of accurate information concerning consumption and thus help to form public opinion.

3. Bolton has prepared a gastrotoxic serum by injecting into the peritoneal cavity of rabbits an emulsion obtained from the mucous membrane of guinea-pigs' stomachs. This serum, when injected into a guinea-pig in doses of 10 ccm., has proved fatal in twenty-four hours. The post-mortem lesions are limited to the stomach and always occur during the first twenty-four hours after injection. These lesions consist of necrosed patches forming typical gastric ulcers. He believes that these experiments open up new lines of thought along which to prosecute further research as to the etiology of gastric ulcer in man. It is possible that not only certain endogenous, but also certain exogenous poisons may be capable of initiating self-digestion through the blood stream, and that the production of such lesions may be facilitated not only by hyperacidity of the gastric juice, but also by other bodies introduced with the food. [J. B. H.]

British Medical Journal.
May 9, 1908.

1. *Dawson, B. *Address on the Diagnosis and Operative Treatment of Diseases of the Stomach.*
2. *Moynihan, B. G. A. *Address on Gastro-Enterostomy.*
3. *Herringham, W. P. *Erythrocythemia and Cyanosis.*
4. Potts, W. A. *Recognition and Training of Congenital Mental Defectives.*
5. Roach, S. *An Outbreak of Beri-Beri on Board a Merchant Vessel.*
6. Haig, A. *The Treatment of Bronchial Catarrh by Alkalies.*
7. French, H. *Goulstonian Lectures on the Influence of Pregnancy upon Certain Medical Diseases and of Certain Medical Diseases upon Pregnancy.*

1. Dawson covers the general subject of the diagnosis and operative treatment of diseases of the stomach, with numerous statistics from the reported cases of Krönlein, Mikulicz and others, as well as those which he has done himself. He considers in his article the subjects of gastro-enterostomy for malignant disease of the esophagus and stomach, the diagnosis of gastric ulcer and differential diagnosis from the form which he calls anemic dyspepsia, and from hemorrhagic gastralgia, non-obstructive dilatation and gastroptosis.

2. Moynihan considers gastro-enterostomy and the after-results. In 255 cases which he has done he has had 9 deaths, a mortality of 3.5%. Mere recovery from the operation, in his opinion, is by no means all that is necessary. He operated on 27 cases of perforating ulcer of the stomach or duodenum; 18 recovered. In 9 out of these 18 cases the operation of gastro-enterostomy has been necessary. These are reported now to be quite well. In cases of acute hemorrhage in which gastro-enterostomy was done the results were in the main very favorable. In 205 cases with chronic gastric or duodenal ulcer 214 operations were performed. Of these patients 148 are now living and are classed as cured. He gives his conclusions as follows: (1) That gastro-enterostomy acts best when a gross mechanical obstruction exists in the normal path of the intestinal contents. (2) Experimental work shows that when the pylorus is normal, and there is no impediment to the passage of food through it, the opening made in the operation of gastro-enterostomy does not allow of the escape of any of the gastric contents into the intestine. (3) The operation, therefore, gives the best results where there is organic disease in the pre-pyloric or pyloric regions of the stomach or duodenum, or when performed on the cardiac side of a stenosis in the body of the stomach. (4) In cases of ulcer on the lesser curvature gastro-enterostomy is not necessary, and if performed is either almost useless or entirely harmful. (5) Under no circumstances is gastro-enterostomy to be performed in the absence of demonstrable organic disease. (6) Regurgitant vomiting is dependent upon faults in the operation resulting in some mechanical obstruction to the intestine. (7) Posterior no-loop operation with the vertical application of the bowel to the stomach is the best procedure.

3. Herringham reports a case of erythrocythemia and cyanosis with autopsy and a detailed blood examination, with some remarks on this condition. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 14.
April 2, 1908.

1. Thoms, H. *Modern Hypnotics and the Relation between their Chemical Composition and their Action.*
2. Ziehen. *Chemical Hypnotics in Nervous Affections.*
3. Feldmann. *Sleeping-Sickness in German East Africa.*
4. *Schlippe, P. L. *The Treatment of Diphtheria and of the Persistence of Diphtheria Bacilli in the Throat with Pyocyanase.*
5. Schlesinger, W. *The Source of Diastatic Ferment in the Blood and its Relation to Diabetes Mellitus.*
6. *Ehrhardt, O. *Resections of the Pancreas.*
7. Franck, O. *Cervical Ribs and Accidents.*

4. Schlippe concludes from extended personal observations that pyocyanase apparently hastens the disappearance of the diphtheria membrane from the throat and lessens markedly the fetor of the breath. It is not a specific, however, and should never be used in place of the serum, but in conjunction with it. In severe septic cases it has no effect. Neither is it successful in removing persistent diphtheria bacilli from the throats of those who have recovered from the infection.

6. Ehrhardt reports two cases of resection of the pancreas. Both were cases of carcinoma of the pylorus in which the head of the pancreas was involved, and the operation rendered resection of part of the gland necessary. One patient died a few months after operation from metastasis and the other is alive a year and a half afterwards. In both operations he reached the pancreas through the gastrocolic ligament. In the first case he was obliged to sever the pancreatic-duodenal artery, thus compelling resection of part of the duodenum to prevent gangrene. The bleeding from the pancreas was controlled by fine silk ligatures. In one case the wound did not heal until a large sequestrum of pancreatic tissue had been discharged. He finds in the literature only 40 or 50 cases where the pancreas has been partially or wholly resected for any cause. [L. G. M.]

No. 15. April 9, 1908.

1. *His, W. *Medicine and Overcivilization.*
2. Ortner, N. *True Systolic Retraction of the Apex Beat and Abnormally High Position of the Aorta.*
3. Jaksch, R. v. *Gout with Splenomegaly and Leucopenia.*
4. Hering, H. E. *Occasional Partial Hyposystole of the Ventricles of the Mammalian Heart.*
5. v. Schrötter, H. *A Needle in the Left Bronchus.*
6. Kahler, O. *A Carcino-sarcoma of the Throat.*
7. Ország, O. *The Diagnostic Value of the Ocular Reaction in Typhoid.*
8. *v. Bokay, J. *Bradycardia in Appendicitis in Children.*
9. Balás, D. *Ileus as a Complication of Gonorrheal Epididymitis.*
10. Eichhorst, H. *The Diagnosis of Embolism of the Pulmonary Artery.*

1. His says that we are living in an overcivilized age, and that this, combined with increasing artificiality plus the general security and the lack of incentive to physical effort, are responsible for the prevailing subjective tendency and the development of nerve weaklings. It is the duty of the medical profession to train the will power to normal vigor. Hygienic, dietetic and therapeutic measures are as old as history itself, but when carried to extremes or applied in a one-sided fashion they fall into disrepute. He warns against those who preach too strenously a "return to nature" and various "toughening" measures. "Nervousness" is an affection of the will, not of the sensory nerves. Such patients are extremely susceptible to suggestion. A course of treatment which has some special name inspires more confidence than one without a name. If the unfortunate can be taken out of himself, be made to

feel that he is a useful and indispensable member of society, then his troubles will cease to occupy his mind and will lose their psychic toxicity. Religion is the most effectual factor in this line, and His cites several complete cures of long-persisting nervous disturbances by the establishment of a firm religious faith. We should do everything in out power to promote outdoor sports, etc., to counteract the dangers of one-sided intellectual training, alcohol and the ill-effects of city life. We can also do much in prophylaxis, never forgetting that the indispensable condition of "nervousness" is security and prosperity. He regards the German compulsory term of military service as a valuable means of promoting health and reducing the tendency to "nervousness."

8. Von Bokay reports ten cases of appendicitis in children in which a marked bradycardia appeared during the period of absorption of peritoneal inflammatory products. The pulse dropped as low as 52 in some, in all cases below 80, but no connection could be detected between the pulse and the temperature. The bradycardia appears to be a not unfavorable sign. It points to the beginning of absorption and is probably due to an irritation of the vagus. In some cases it came on after evacuation of abcesses, or followed interval operations and often persisted for some days. [L. G. M.]

Münchener Medizinische Wochenschrift. No. 16. April 21, 1908.

1. *Apelt, F. *Pneumonia Caused by Friedländer's Bacillus.*
2. Zangemeister, W. *The Serum Treatment of Streptococcus Injections.*
3. Jacob, L. *The Karell Milk Cure in Circulatory Disturbances and in Obesity.* (Continued article.)
4. Gellhorn, W. *The Demonstration of Kenotoxin in the Urine and Stools of Infants.*
5. Bauer, J. *Biologic Differentiation of Milks.*
6. v. Notthafft. *An Epidemic Pruritus Due to the Leptus Autumnalis.*
7. Knauth. *Arhovin in the Treatment of Acute and Chronic Gonorrhea.*
8. Fruchtwanger, A. *The Etiology of Asphyxia in the New Born.*
9. Dobrowolsky. *A Case of Fibroma Molle.*
10. Dessauer, F. *Remarks on Keating Hart's Light Treatment.*
11. Lüdke, H. *Tuberculin and Anti-Tuberculin.* (Concluded.)
12. Isserlin, M. *Review of Advances in Experimental Psychology and Psychopathology.*

1. Apelt reviews the subject of pneumonia due to the diplobacillus of Friedländer. In one series of 77 pneumonias autopsied in 1907, 7 were due to this bacillus, 4 of which were mixed infections. These bacilli occur in the blood stream during life as well as in the sputum. The clinical picture differs from the ordinary pneumonia in the absence of herpes and chill and the severe course of the disease. The sputum of the Friedländer pneumonia is slimy and thin. The diagnosis is made by finding the pneumobacillus in the sputum. The prognosis is extremely bad, most of the cases dying. [R. D.]

Berliner Klinische Wochenschrift, No. 15. April 13, 1908.

1. Klapp, R. *The Treatment of Phlegmon of the Tendon Sheaths.*
2. Wagner, L. *Special Nervous Symptoms in Addison's Disease.*
3. Beneke, R. *The Wassermann Syphilis Reaction.*
4. *Porges, O., and Meier, G. *The Rôle of Lipoids in the Wassermann Reaction.*
5. Röder, H. *The Pathogenesis of Salivation.*
6. Scheidemandel, E. *Symptoms of Epithelioma of the Chorion.*
7. Grödel, F. M. *The Characteristics of Gastrectasis and Ptosis of the Pylorus Recognizable by the X-Ray.*
8. Levinsohn, G. *Miosis with Argyll-Robertson Pupils.*
9. *Lehmann. *Sigmoiditis and Perisigmoiditis during the Puerperium.*
10. Rewidzoff, P. M. *A Hitherto Undescribed Symptom of Esophageal Stenosis.*

4. Recent investigations by Porges and Meier show that the most important component in the syphilis reaction is soluble in alcohol. The authors were also able to produce the same specific reaction with pure lecithin as with either alcoholic or watery liver extracts, and lastly the deviation of the complement was performed with the so-called lecithin precipitation method. The authors have carried out a large number of parallel experiments with these three methods (out of 100 cases, in 87 the results agreed exactly). The authors conclude that the substance causing the reaction in the blood of syphilitic patients cannot be an antibody in any sense of the word.

9. Lehmann describes two cases of sigmoiditis occurring during the puerperium. The condition is one of local inflammation in and around the intestinal wall. In both cases there was constipation preceding delivery in multiparæ, and the signs of inflammation (pain and a tender mass in the region of the sigmoid) appeared in the early days of the puerperium. Evacuation of the bowels by means of oil enemata proved curative. [R. D.]

No. 16. April 20, 1908.

1. Stoerk, C. *The Normal Histology of the Suprarenal Cortex.*
2. Isaac, S. *Primary Carcinoma of the Appendix.*
3. Seligmann, E. *The Value of Cresol Soap as a Disinfectant.*
4. Landau, L. *Myoma of the Uterus in Young Individuals.*
5. Hallauer, B. *Narcosis by Suggestion.*
6. Plass, T. *Hyperemia Treatment of Inflammations of Bartholini's Glands.*
7. Heim, P. *Idiopathic Gangrene of the Skin in Infancy.*
8. Diesing. *A Theory of the Action of Sulphur.*
9. Rosenfeld, G. *The Modes of Oxidation of Sugar.*
10. *Ravenel, M. P. *The Etiology of Tuberculosis.*
11. Güterbock, R. *Combined Bile and Urine Gelatine Typhoid Culture Media.*
12. Thower, W. *The Significance of Needle-Work in the Production of Short-sightedness.*
13. Truberbühler, A. W. *Electrolysis in Benign Stenosis of the Esophagus.*
14. Hüberlin. *The Effect of the North Sea Climate on Anemic Children.*

10. The author holds that the tubercle bacillus very often enters the organisms from the digestive tract and that it is possible for the bacilli to pass through the normal mucous membrane. Thence by means of chyle and lymph the bacilli come into the blood stream and are deposited in the lungs. Intestinal infection is most often due to milk, and, therefore, is a frequent mode of entrance in children. [R. D.]

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Miscellany.

HARVARD MEDICAL ALUMNI ASSOCIATION.

The annual meeting of the Association was held on Tuesday, June 23, at 12 o'clock, at the Boston Medical Library, with the President, Dr. Alfred Worcester, in the chair. Three councillors were elected to serve four years, as follows: Vincent Y. Bowditch, M.D., 1879, of Boston; Henry F. Lewis, M.D., 1888, of Chicago; Malcolm Storer, M.D., 1889, of Boston.

The reports of the secretary and treasurer were read and accepted. Dr. Storer reported on the condition of the Alumni Fund, stating that in spite of the hard times it has been possible to make the same contribution for immediate use by the school as in former years and to make an addition to the Permanent Fund. Dr. C. M. Green and Dr. F. C. Shattuck told of the good which the money accomplished in furthering efficient instruction in the school, and of the appreciation by the faculty of medicine of the efforts of the alumni. Dr. George W. Gay described the reunion and dinner of Harvard Medical Alumni at the recent meeting of the American Medical Association in Chicago. It proved to be a very enjoyable affair, and it is proposed to make it a regular feature of the American Medical Association meetings.

Correspondence.

A WINTER'S WORK IN A SUBARCTIC CLIMATE.

St. Anthony's Hospital.
St. Anthony, Newfoundland, May 6, 1908.

Mr. Editor: I thought some account of the medical work up in this subarctic climate might interest your readers. As you can imagine, there are no automobiles here, but the work, though carried on in a different way, is not unlike that at home. In the *Journal of the American Medical Association* of March 28, 1908, I published an account of the medical work done on the mission steamer, *Strathcona*, during the five months of open water last summer. Of the many interesting features connected with this work, and the conditions under which it is carried on, I said nothing, as it was not my intention to touch upon this side, which is more fully narrated in Dr. Grenfell's writings and lectures than I could ever hope to tell it. Moreover, I desired to reach professional men through a paper which could not give space to such description, and thus, perhaps, interest another circle of friends who might not through other channels become acquainted with the work.

I think, perhaps, even those who know something of the conditions will be surprised to learn the number of people treated up here during the winter and the value of the work from a clinical standpoint. They may perhaps be interested in a description of it and how it is carried on. Coming as I do from a temperate climate, I was somewhat doubtful about staying here for the winter, for though I looked forward with pleasure to the outdoor life, I supposed we would be isolated in a small community and that the professional work would amount to next to nothing.

In the summer I had, with Dr. Grenfell, traveled along the east Newfoundland coast as far south as White Bay; on the west coast as far as Flower's Cove; in the Straits of Belle Isle as far west as Harrington in Canadian Labrador; and on the Labrador coast as far north as Cape Chidley, Hudson Straits and Killinek in Ungava Bay. Much of this ground had been covered not once but twice or even three times, and the operative work and supervision of four hospitals had been accomplished, so that in November, I found to my surprise over twelve hundred cases had been seen and treated outside the hospitals, 33 major operations performed, to say nothing of the numerous minor surgical procedures carried out with and without anesthesia.

From this active professional life I expected to retire into the hibernation of a small hospital with, perhaps, two or three chronic cases, and the administration of cathartics and tonics to the small community of about two hundred souls in which the hospital is situated. I had reasoned entirely wrongly. I knew nothing of the modes of travel in this snow and ice bound land, or of their efficacy. I realize now that in the very months in which I had supposed the people were most isolated, they are, on the contrary, the least so, and in fact, this is the time when they do most of their traveling. So now I am surprised to find in looking over the records for the last five months, November to March, that there have been 51 patients in the hospital, on 27 of whom surgical operations have been performed, and that the out-patient record shows 1,012 new cases.

There are at present in hospital 12 cases.

1. A woman recovering from a severe laparotomy for chronic appendicitis, in whom all the structures of the pelvis and lower abdomen were bound together by adhesions. During the operation, the bladder was torn open intraperitoneally for a distance of two inches.
2. A woman with brain tumor on whom we have done a decompression operation.
3. A tubercular hip in the convalescent stage.
4. A woman who has had a radical cure of femoral hernia.
5. A bad heart case.
6. A man of twenty-two years old, blind in both eyes. One eye with optic atrophy following a blow with a football eight years ago. The other eye with traumatic cataract following a blow with a hand ball two years ago. On this eye we have already operated.
7. A man returning home to-morrow, who came in with intestinal obstruction due to cancer, upon whom a lateral anastomosis between ileum and ascending colon was done.
8. A young man with dorsal Pott's disease, at present in plaster, shortly to be sent home in apparatus. This case was found in the acute stage just before serious deformity supervened. He was brought to hospital, one hundred fifty miles, by dog sledge.
9. Suture of patella tendon. The patella had separated from the tubercle of the tibia a distance of six inches, the tendon having been divided with a draw knife, a year ago.
10. Man in fourth week of typhoid fever.
11. Boy of fourteen. Radical cure of double congenital inguinal hernia.
12. Man cured by operation of large hydrocele of the cord.

Also at the orphanage are two cases: A boy cured seemingly of hip disease, — he had a very large abscess which was opened in the gluteal region, — and a boy with only slight thickening as the remains of a tubercular knee-joint which received Bier's hyperemic treatment. This is, by the way, the third tubercular knee-joint in which this treatment has given excellent results. I may add that at the present writing, out of the 13 children at the orphanage, 9 have chicken pox. I would like here to record my appreciation of the indefatigable Johns Hopkins Hospital nurse who runs the hospital and whose zeal and enthusiasm have made possible the work, with the help of the English lady who is giving her life to the care of the orphanage.

We have had 3 deaths in hospital, the first from double pleurisy and pericarditis, the second from heart disease, the last following laparotomy for pelvic suppuration following childbirth. There were abscesses involving both ovaries and tubes and the posterior uterine wall was necrotic. I think perhaps a vaginal puncture would have prolonged her life, but doubt if any procedure could have saved her.

Of other cases of interest we have had in hospital, I will mention only a few. One woman had a ruptured left tubal pregnancy complicated by an appendix adherent by its tip to the left tube at its middle point. Not only was this interesting as a probable cause of the tubal pregnancy, but at the time of operation there was appendicitis and local infection of the hematoma, the result of previous hemorrhage from the tube. This woman made an uninterrupted recovery after her operation.

A chorionic mole was interesting from its very large size and the profuse hemorrhage it caused. Recovery after curettage with dull wire was complete.

A man of seventy-two years old walked sixty miles two weeks after radical cure of hernia without ill effects. This, of course, was not done by our advice.

Another case of hernia in a man of forty-five who came in *in extremis* from strangulation. Last week I met him ten miles from his home, logging in the woods. He had been unable to lead an active life for fifteen years.

I have said enough to show that from a clinical standpoint the material is interesting, but let it not be thought that this material reaches one who sits by the stove in the hospital and waits. Though the people are learning what can be done to relieve their sufferings, still by far the largest number of patients is found and persuaded to go to the hospital by the doctor on his travels.

Up to the last of December, the water is open and patients come in vessels and open boats, and many from distances on the east coast, on the large mail steamer, which up till this time runs every two weeks from St. John's. After this time all traveling is done on *komatiles* or sledges drawn by dogs. I have traveled nearly a thousand miles in this way this winter and, given a good team of dogs that you know, and proper conditions, I know of no sport to beat it. Also, I know of nothing so good for the temper when conditions are unfavorable and things go wrong. To show how conditions alter the aspect, I may say that one stretch of eight miles took from 8 in the morning until 3.30 that afternoon to travel and the same stretch was done in fifty minutes on the way back, five days later.

Besides numerous short trips of from fifteen to fifty miles, I have taken four more extended trips, the first of twenty-three days, on which I got a splendid 36-point caribou and a doe, brought back 3 orphans, 3 patients for operation and 1 upon whom I had operated for acute osteomyelitis of the tibia. I saw 95 patients did four operations, sent a lunatic to the asylum, contracted for the building of a 70-ton schooner and straightened out the business of a lumber mill and general store, the manager having died during my presence in the vicinity,—this was before the mail boat had ceased to run on account of the ice.

My next trip was one of sixteen days, on which I saw 135 patients. This was a trip along the west coast of Newfoundland in the Straits of Belle Isle. The inhabitants were in the clutches of severe influenza. There were also scarlet fever, measles and mumps. Owing to the severity of these epidemics, I decided to go along the shore as far as possible; so with my guide I went as light as possible with 11 dogs on one *komatile*. When we got to a certain settlement, we seemed to "catch up" with the grippe, for the evening I arrived, 5 people were taken down with it.

The next habitations were fifty miles further along shore. The way we had to go was around a bay which had not frozen solid, consequently, nobody had traveled this route except the mail man this winter. As we were now farther than any doctor had been along this coast, my man did not know the way. The mail man arrived that night and the next morning at 5 o'clock I started, using his back track as a guide. We traveled all day over rough ice that lay between the "landwash" on one side and the woods on the other. Neither one of us could get on the sledge during any of this time, but one in front and one behind were pulling it over, under and through the rough ice. At 7 o'clock, after the hardest day's work I have ever known, we arrived at a habitation and a community of some 300 people. Now the thing that interested me was, that beyond this stretch of almost impossible traveling over which before us only one man had passed this winter, there was not one case of grippe, measles, scarlet fever or mumps, while before it, almost every member of every village had been attacked by one or the other. Moreover, in this community there had just been 2 deaths of cerebrospinal meningitis, two sisters who occupied the same bed. (I verified this diagnosis.) Moreover, there have been there no other cases of any of these diseases since, as I have recently learned by letter.

Most of the people had never seen a doctor in their lives, but curiously enough, one little girl, the daughter of the school teacher, had been taken by her mother to the Massachusetts General Hospital the summer before last, and had had a preliminary operation by Dr. C. A. Porter for a congenital absence of the recto-vaginal septum. The trip had cost two hundred dollars. They had received a notice telling them to bring the child again but alas could not get the money. Their astonishment when they found that I had been house surgeon in that very hospital, knew Dr. Porter well and in fact lived within a few doors of his house, was amusing. When I told them to send the child to Battle Harbor Hospital this summer and that I would undertake the further necessary operative procedures, their delight knew no bounds.

On the way back the first day we traveled sixteen hours, saw patients five hours, slept four hours; second day, traveled thirteen hours, saw patients six hours; slept three hours; third day, traveled fourteen hours; fourth day, Sunday, stayed at a hut in the woods; fifth day, in nine hours we arrived at the hospital, having covered 160 miles on the way home. On my third trip, which took ten days, we were traveling an easier country and saw 59 patients. The last trip was one of eight days and we saw 48 patients, covering about 210 miles. On this trip Dr. Grenfell and I went together, each with a *komatile* and six dogs. The weather and ice conditions were practically ideal.

Sometimes it is not all pleasure. A short while ago Dr. Grenfell got on some bad ice and went through. He was alone. He managed to get a small pan of ice with his dogs, but lost his sledge and everything on it. He was left in an open bay, in which there was a heavy sea running. The ice was about a foot thick and as large as a small room. He had on short running trousers, a light sweater vest, but no hat, coat or gloves. He was on this piece of ice which was breaking up and always awash, a day and night during which time he was in the water three times. He drifted 19 miles out to sea. He killed three dogs with his knife though bitten in the legs while doing so. He skinned the dogs and made a wind shield of their bodies, a coat of their skins, puttees of their harnesses and a flag-staff of their legs. His shirt he used as a flag. By an extremely lucky chance he was seen and rescued but his physical condition was rather pitiable when he finally reached the hospital, snow blind, hands and feet frostbitten and looking twenty years older than before he left.

The winter is at last breaking up and we are looking forward to the life afloat on the *Strathcona*, with the new activities and interests that that provides both professionally and in other ways.

Very truly yours,
John M. Little, Jr., M.D., Boston.

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CHELSEA FIRE. PHYSICIANS' RELIEF COMMITTEE.

377 Beacon Street, Boston, June 20, 1908.

Mr. Editor: I enclose to you a final account of the subscriptions received by the Physicians' Relief Committee, and of their expenditure. The distribution of this money was directed by the Chelsea Physicians' Relief Committee, consisting of Dr. Charles Leeds, chairman; Dr. W. E. Hamlin and Dr. F. A. Mahoney.

In addition to the funds distributed as above, generous contributions of supplies, books and instruments were made through the Chelsea Committee by the Tyer Rubber Company, of Andover; the Mellin's Food Company, and by several physicians. Generous terms were also given to the Chelsea physicians for the purchase of instruments and apparatus by the following firms: F. H. Thomas Company, Sampson-Soch Company, J. Frank Gear, Codman and Shurtleff, C. H. Goldthwaite & Co., and Partridge & Co.

It is clear that the assistance offered to the Chelsea physicians has been gratefully accepted.

RECEIVED.		
Previously acknowledged in the Boston Medical and Surgical Journal of May 12, 1908,	$3,451.50	
Dr. M. H. Richardson,	25.00	
Dr. W. H. Robey,	10.00	
Dr. J. F. A. Adams,	5.00	
Dover Med. Soc. (Dover, N. H.),	25.00	
Norfolk South District Med. Soc.,	31.00	
W. H. Merrill,	3.00	
H. P. Mosher,	5.00	
Brookline Medical Club,	112.00	
EXPENDED.		
Clerical expenses,		$7.50
Distributed among 26 registered physicians of Chelsea, who suffered by fire,		3,660.00
	$3,667.50	$3,667.50

Yours very truly,
Robert B. Greenough, M.D.,
Treasurer Physicians' Relief Committee.

RECORD OF MORTALITY

For the Week ending Saturday, June 13, 1908.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	—	—	Quincy	6	1
Chicago	509	140	Waltham	8	2
Philadelphia . . .	—	—	Pittsfield	—	—
St. Louis	—	—	Gloucester	4	—
Baltimore	171	48	Brookline	6	—
Cleveland	—	—	North Adams . .	1	—
Buffalo	—	—	Chicopee	4	4
Pittsburg	—	—	Northampton . .	6	2
Cincinnati	—	—	Medford	7	—
Milwaukee	—	—	Beverly	5	—
Washington . . .	—	—	Leominster . . .	2	1
Providence . . .	52	23	Hyde Park . . .	3	0
Boston	206	63	Melrose	—	—
Worcester	31	8	Newburyport . .	—	—
Fall River	32	15	Woburn	1	—
Cambridge	13	4	Westfield	3	—
Lowell	25	7	Marlboro	4	0
Lynn	14	0	Revere	3	1
New Bedford . .	14	3	Attleboro	2	1
Springfield	14	4	Peabody	—	—
Lawrence	17	3	Adams	4	2
Somerville	15	2	Clinton	5	1
Brockton	11	2	Gardner	4	1
Holyoke	15	9	Milford	3	—
Malden	9	3	Watertown . . .	—	—
Chelsea	8	2	Plymouth	—	—
Newton	8	2	Weymouth . . .	1	0
Salem	13	1	Framingham . .	—	—
Haverhill	15	4	Southbridge . . .	—	—
Fitchburg	—	—	Wakefield	—	—
Everett	4	2	Webster	—	—
Taunton	8	3	Arlington	0	—

OFFICIAL LIST OF THE CHANGES OF STATION AND DUTIES OF COMMISSIONED AND NON-COMMISSIONED OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JUNE 10, 1908.

Stoner, G. W., surgeon. Granted leave of absence for four days from May 31, 1908, under paragraph 189, Service Regulations.

Magruder, G. M., surgeon. Granted leave of absence for one month from July 2, 1908. June 6, 1908.

Stimpson, W. G., surgeon. Granted leave of absence for eleven days from June 7, 1908. June 5, 1908.

Brown, B. W., surgeon. Granted leave of absence for one month and six days from June 25, 1908. June 4, 1908.

Mathewson, H. S., passed assistant surgeon. Granted extension of leave of absence for fifteen days from June 15, 1908. June 8, 1908.

Robinson, D. E., passed assistant surgeon. Granted leave of absence for two days from May 10, 1908, under paragraph 191, Service Regulations.

Ramus, C., passed assistant surgeon. Relieved from duty in Honolulu and directed to report to the chief medical officer, Ellis Island, N. Y., for duty. June 5, 1908.

Bahrenburg, L. P. H., passed assistant surgeon. Granted leave of absence for two days from May 21, 1908, under paragraph 191, Service Regulations.

Ward, W. K., passed assistant surgeon. Granted leave of absence for one day from May 19, 1908, under paragraph 191, Service Regulations.

Herring, R. A., assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Reedy Island Quarantine Station, reporting to the medical officer in command for duty and assignment to quarters. June 6, 1908.

Stiles, Ch. W., chief division of zoölogy (Hygienic Laboratory). Detailed to represent the Service at North Carolina State Medical Society meeting, Winston Salem, N. C., June 17, 1908. June 8, 1908.

Porter, J. Y., sanitary inspector. Directed to inspect Florida quarantine stations from time to time during present season. June 5, 1908.

Bowers, P. E., acting assistant surgeon. Granted leave of absence for seven days from June 6, 1908, and excused without pay for eight days from June 13, 1908. May 26, 1908.

Fisher, C. E., acting assistant surgeon. Granted leave of absence for ten days from June 2, 1908. June 8, 1908.

Foster, J. P. C., acting assistant surgeon. Granted leave of absence for eight days from June 2, 1908. June 5, 1908.

Frissell, C. M., acting assistant surgeon. Granted leave of absence for twenty days from June 6, 1908. June 5, 1908.

Gibson, L. P., acting assistant surgeon. Granted leave of absence for eight days from June 1, 1908. June 4, 1908.

Goldsborough, B. W., acting assistant surgeon. Granted leave of absence for one day — June 18, 1908. June 10, 1908.

Hicks, W. R., acting assistant surgeon. Granted leave of absence for fourteen days from June 1, 1908. June 4, 1908.

Keatley, H. W., acting assistant surgeon. Granted leave of absence for two days from May 9, 1908, under paragraph 210, Service Regulations.

Mason, W. C., acting assistant surgeon. Granted leave of absence for five days from June 22, 1908. June 4, 1908.

Parker, T. F., acting assistant surgeon. Granted leave of absence for ten days from June 1, 1908. June 4, 1908.

Stearns, H. H., acting assistant surgeon. Granted leave of absence for one day — May 24, 1908, under paragraph 210, Service Regulations.

Ryder, L. W., pharmacist. Granted leave of absence for two days from June 12, 1908, under paragraph 210, Service Regulations.

Bierman, C. H., pharmacist. Granted leave of absence for thirty days from July 3, 1908. June 8, 1908.

APPOINTMENT.

Dr. W. D. Bell appointed acting assistant surgeon for duty at St. John's River Quarantine Station, Florida, June 6, 1908.

CHANGES IN THE MEDICAL CORPS U. S. NAVY FOR THE WEEK ENDING JUNE 20, 1908.

G. M. Mayers, passed assistant surgeon. Ordered to the Naval Medical School Hospital, Washington, D. C., for treatment.

W. M. Kerr, acting assistant surgeon. Appointed acting assistant surgeon from June 12, 1908.

J. C. Ziegler, acting assistant surgeon. Detached from the Naval Hospital, Portsmouth, N. H., and ordered to the Naval Hospital, Pensacola, Fla.

S. Englander, pharmacist. Retired from the active service, June 15, 1908, upon completion of thirty years service, in accordance with a provision of the naval appropriation of May 13, 1908.

J. J. Snyder, passed assistant surgeon. Ordered to the "New Hampshire."

W. G. Farwell, passed assistant surgeon. Detached from the "Lancaster" and ordered to duty with marines at Camp Ellicott, Isthmian Canal Zone.

O. J. Mink, passed assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to the Naval Recruiting Station, Chicago, Ill.

A. B. Haywood, assistant surgeon. Detached from the Naval Recruiting Station, Chicago, Ill., and ordered to duty with marines at Camp Ellicott, Isthmian Canal Zone.

D. G. Allen, L. C. Whiteside, O. W. Smith, G. C. Thomas, appointed assistant surgeons from June 15, 1908.

APPOINTMENTS.

Dr. Sutherland Simpson, of the University of Edinburgh, Scotland, has been appointed Professor of Physiology, and Dr. Andrew Hunter, of Leeds University, England, Professor in the new chair of Bio-Chemistry, at Cornell University.

Governor Guild, of Massachusetts, has made the following appointments and reappointments: Dr. Henry P. Walcott, Cambridge, member Metropolitan Water and Sewerage Board; Dr. Julian A. Mead, Watertown, member of the Massachusetts State Board of Health; Dr. Worthington A. Miner, Ware, medical examiner of Hampshire County; Dr. Oliver H. Howe, Cohasset, medical examiner of Norfolk County.

RECENT DEATHS.

Daniel Edward Millerick, M.D., M.M.S.S., of Boston, died in Stoneham, June 18, 1908, aged fifty-two years.

Dr. Thomas W. Small, surgeon on the steamer *St. Louis*, of the American Line, and for a number of years one of the most popular ship's surgeons in the Atlantic passenger service, committed suicide on board the vessel, on June 19, by shooting himself in the right temple.

Dr. Robert Watts, Jr., of New York, the son of Dr. Robert Watts, also of that city, died on June 8. He was graduated from the College of Physicians and Surgeons in 1893, and was especially interested in pediatrics. At the time of his death he was assistant physician to St. Mary's Hospital for Children.

BOOKS AND PAMPHLETS RECEIVED.

Electrical Treatment. By Wilfred Harris, M.D., F.R.C.P. Illustrated. Chicago: W. T. Keener & Co. 1908.

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Biological
& Medical
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medicine
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